

# MCES Forest Lake Interceptor 7029 Rehabilitation Design

Facility Plan





# MCES Forest Lake Interceptor 7029

# Rehabilitation Design Facility Plan

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.

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# MCES Forest Lake Interceptor 7029 Rehabilitation Design Facility Plan

# **Facility Plan Executive Summary**

The Forest Lake Interceptor 7029 was constructed in the early 1970s. This Facility Plan encompasses the section of existing 36-inch Interceptor 7029 in Forest Lake, from MH 113 (Lift Station L01) south to MH 77 (Lift Station L02) on the border of the city of Forest Lake and Hugo. This section of the Interceptor 7029 is routed north-south in a rural area within existing prescribed MCES permanent easements. A portion of this project runs through Tanners Brook Golf Course. Temporary easements will be procured to allow for necessary construction staging and access activities.

This section of Interceptor 7029 is in fair to poor condition and needs rehabilitation to extend its service life.

This recommended solution consists of:

- Trenchless structural rehabilitation of over 11,000 feet of 36-inch interceptor
- Trenchless cleaning only of over 7,000 feet of 36-inch interceptor
- Structural lining of twenty (20) existing manholes (MHs)
- Partial reconstruction of six (6) MHs

Multiple pipe and MH rehabilitation technologies were evaluated based on project characteristics and MCES familiarity with the products and methods.

The recommended rehabilitation methods include:

- Cured in Place Pipe (CIPP) rehabilitation for 36-inch interceptor
- Fiber Reinforced Pipe (FRP) MH structural liner inserts
- Partial reconstruct for the existing Type 4 "doghouse" MHs where base structure is larger than riser sections

Temporary conveyance of existing wastewater flows will be provided in a phased manner from a MH north of Headwaters Parkway to south of the project extents to facilitate cleaning and rehabilitation activities.

The design phase will be completed in 2024 with construction anticipated for 2025 into 2026.

# 1.0 Facility Plan Introduction and Demand Projections

### 1.1 Problem Definition

The Metropolitan Council owns and operates the Forest Lake Interceptor from Lift Station L01 to L78 in White Bear Lake. A 2018 condition assessment revealed approximately 1,000 linear feet (LF) upstream of L02 to be condition 4.5 and the remaining 7,000 LF between manholes (MH) 81 and 94 to be condition rating four (4) as defined by the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP). This 11,000-foot section of 36-inch, single barrel, reinforced concrete pipe (RCP) was installed in the early 1970s and is in Fair to Poor condition. A 35-foot-wide permanent easement exists over the corridor.

Desktop and field analysis of the existing MHs in the 7029 corridor from MH 77A to MH 99 has been completed per Existing Conditions Tech Memo dated July 6, 2023, and Existing Conditions Tech Memo dated Feb 19, 2024. Both memorandums are found in Appendix A.

# 1.2 Flows and Organic Loads

The Metropolitan Council provided TKDA with 10 years of flow rate data from flow meters near lift stations L01 and L02 along with a capacity analysis of the interceptor conducted in 2023. This analysis is in Appendix B: MCES Capacity Analysis. The capacity analysis determined that the 10-year average dry weather flow was 1.5 million gallons per day, and that the 10-year peak wet weather flow was 2.9 million gallons per day.

MCES also provided hourly flow data for the past 10-years. Based on an analysis of this data, the peak hourly wet weather flow was 5.65 million gallons per day for lift station L01, and 6.01 million gallons per day for lift station L02. The capacity analysis concluded that the hydraulic capacity of this section of Interceptor 7029 is adequate through 2040.

# 1.3 Impact on Existing Wastewater Facilities

Interceptor 7029 flows to the south and discharges to MCES Interceptor 6901 which ultimately discharges to the MCES Metro WWTP. This project is not increasing the flow rates or organic loadings. This project will have minimal impact to downstream gravity interceptors, lift stations and wastewater treatment plant.

# 1.4 Project Description

The Metropolitan Council owns and operates the Forest Lake Interceptor 7029 from Lift Station L01 to L78 in White Bear Lake. This project will consist of the following:

- Trenchless structural rehabilitation of 11,000 feet of 36-inch gravity interceptor
- Trenchless cleaning only of over 7,000 feet of 36-inch gravity interceptor
- Structural rehabilitation of 20 MHs
- Partial reconstruction of four (4) doghouse type MHs

Temporary conveyance of existing wastewater flows will be provided in a phased manner from a MH north of Headwaters Parkway to south of the project extents to facilitate cleaning and rehabilitation activities. The temporary conveyance system will consist of suction pits with two (2) pumps and dual 14-inch temporary conveyance pipes.

A 2018 condition assessment revealed approximately 1,000 linear feet (LF) upstream of L02 to be condition 4.5 and the remaining 7,000 LF between manholes (MH) 81 and 94 to be condition rating four (4) as defined by the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP). The 36-inch, single barrel, reinforced concrete pipe (RCP) was installed in 1970. A 35-foot-wide permanent easement exists over the corridor.

As part of the initial work authorization for this project, TKDA completed desktop and field analysis of the existing MHs in the 7029 corridor from MH 77A to MH 99. As seen in the Existing Conditions Tech Memo dated July 6, 2023. The section of interceptor between MH 99 and MH 113 was the subject of a desktop and field analysis that can be seen in Existing Conditions Tech Memo dated Feb 19, 2024.

This report reflects a preliminary design stage of the rehabilitation project which will include lining of the interceptor pipe and MH's south of MH 99. Several MH's and a short portion of interceptor pipe at the downstream (southern) boundary of the site are proposed for replacement.

## 1.5 Location Drawings

The location of Interceptor 7029 is shown in Appendix C: Location Drawings.

### 1.6 Engineering Criteria

This section of interceptor is being rehabilitated and will not have increased function or capacity to existing conditions.

Engineering criteria to be used in design of the project shall be included.

### 1.7 Site Information

Interceptor 7029 in the project area passes through mostly undeveloped rural agricultural area. The topography is mostly flat. Wetlands and other aquatic resources were identified and delineated by Anderson Engineering in October of 2023. A total of 28 wetlands, or portions thereof, were identified and delineated along this project corridor. The wetland delineations are captured in a Wetland Investigation report prepared by Anderson Engineering (this report is within Appendix A). The project alignment is outside of the 100-year flood plain.

According to the Geologic Atlas of Washington County (2016), bedrock geology of the area consists of Jordan Sandstone, St. Lawrence Formation, and Tunnel City Group. Jordan Sandstone is characterized by dominantly white to yellow, very fine- to coarse-grained, friable quartz sandstone. St. Lawrence Formation is principally light gray to yellowish-gray and pale yellowish-green, dolomitic, feldspathic siltstone with interbedded, very fine-grained sandstone and shale. Tunnel City Group is divided into two formations: the Mazomanie and Lone Rock Formations. The Mazomanie Formation is dominantly white to yellowish-gray, fine- to medium-grained, cross-stratified, generally friable, quartz sandstone. The Lone Rock Formation underlies the Mazomanie Formation and consists of pale yellowish green, very fine- to fine-grained glauconitic, feldspathic sandstone and siltstone, with thin, greenish-gray shale partings.

Elevation of the bedrock surface throughout the study area varies from approximately 651 to 850 feet above mean sea level. Depth from the land surface to the bedrock surface throughout the study area varies from approximately 101 to 300 feet. According to the

Minnesota Department of Natural Resources (DNR) Karst Feature Inventory, no sinkholes or karst conditions were identified in the project area.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, there are ten soil types within the study area. The erosion hazard rating included in Table 1.7 indicates the hazard of soil loss from off-road areas after disturbance activities that expose the soil surface. Due to the location of the site and the classification of the soil, the soil types are not rated for an erosion hazard rating, meaning that there is not enough information to make a determination regarding soil erodibility. The soils information is included in Table 1. Project soils do not present any situations that will require unique soil stabilization methods, soil correction, or other measures.

Table 1: Soil Types, per the NRCS Web Soil Survey

Map Unit Symbol	Map Unit Name	Erosion Hazard	Acres within Study area	Percent of Study area
75	Bluffton loam	Not rated	99.4	22.0%
113	Webster loam	Not rated	33.4	7.4%
123	Dundas fine sandy loam	Not rated	227.1	50.2%
132C	Hayden fine sandy loam, 6 to 12 percent slopes	Not rated	0.3	0.1%
169B	Braham loamy fine sand, 1 to 6 percent slopes	Not rated	1.5	0.3%
170	Blomford loamy fine sand	Not rated	27.7	6.1%
225	Nessel fine sandy loam, 1 to 4 percent slopes	Not rated	26.1	5.8%
481	Kratka fine sandy loam	Not rated	4.4	1.0%
544	Cathro muck	Not rated	26.2	5.8%
1055	Aquolls and Histosols, ponded	Not rated	6.0	1.3%

### 1.8 Alternative Selection

### 1.8.1 Pipe Rehabilitation Alternatives

TKDA conducted an alternatives analysis for four (4) potential interceptor rehabilitation alternatives; Do Nothing Alternative, Cured in Place Pipe (CIPP) lining, Spiral Wound lining, Slip Lining. Each alternative was analyzed for capacity reduction, constructability, cost, and its effect on the environment. Fold and Form pipe lining is another technology available on the market. Based on limited local experience with the technology, and it likely requiring the same amount of excavation as slip-lining, the technology was not considered in detail for this project.

The recommended alternative for this project is Alternative 2 - CIPP lining due to its minimal hydraulic capacity reduction (1.5-3" interceptor diameter reduction), its wide adoption within the local construction industry, MCES's familiarity with the method, and its moderate cost and environmental impact compared to the other alternatives.

### 1.8.1.1 Alternative 1 - Do Nothing

Alternative 1 would utilize the existing interceptor without rehabilitation. This section of interceptor has a NASSCO rating ranging from 4 to 4.5 (poor condition). Not rehabilitating this interceptor at this time would allow this RCP interceptor to deteriorate further thus potentially posing a risk to public health and the environment.

### 1.8.1.2 Alternative 2 - CIPP

Cured in place pipe (CIPP) is a trenchless pipe rehabilitation method involving a resin impregnated felt or fiberglass liner inserted into a pipe via a MH. The liner is then pressurized to cause the liner to form a tight fit with the existing pipe. The resin is set via heat or ultraviolet (UV) light. Heat can come from heated water or steam used to pressurize the pipe, this requires the pipe be pressurized and heated over a set duration of time based on the chemical nature of the resin. UV curing of CIPP can be completed in less time, yet is more expensive, but may be a desirable alternative if water to use in curing the pipe proves difficult to source economically. CIPP Liners are watertight and corrosion resistant replacement pipe. This method requires 100% of the flow of the host pipe be diverted.

### 1.8.1.3 Alternative 3 - Spiral Wound

Spiral wound lining is a trenchless pipe rehabilitation method involving a continuous PVC or HDPE strip wound around the walls overlapping itself and forming a watertight seal creating the walls of a new pipe. The annular space between the new and old pipe must then be grouted. Spiral wound lining can be installed in an active pipe with minimal to no diversion of the flow via temporary conveyance. The method would require removing the cone from existing MHs to fit the lining machine setup. Spiral wound pipe varies in the amount of flow that can be handled during construction, with 25% pipe capacity being the typical maximum allowable during construction.

### 1.8.1.4 Alternative 4 - Slip Lining

Slip Lining is a pipe rehabilitation method involving inserting a smaller carrier pipe into an existing damaged pipe. Typically, in gravity sanitary sewer applications, this carrier pipe is made of HDPE, PVC, or FRP material. The carrier pipe is assembled in small sections of pipe that are inserted sequentially, each new section pushing the prior section deeper into the pipe. The annular space left between the host pipe, and the carrier pipe must be grouted. This method requires either digging insertion and receiving pits at each end of a repaired section or by inserting very small segments of pipe into the damaged pipe that are small enough to fit through the existing MH structures. This method requires 100% of the flow of the host pipe be diverted.

### 1.9 Environmental Review

As noted in Section 1.7, 28 wetlands were identified in the site. The Local Government Unit, or LGU, responsible for implementing the state Wetland Conservation Act in this situation is the Rice Creek Watershed District. Any impacts due to construction would be temporary. No permanent impacts to wetlands are proposed as part of the project, so compensatory wetland mitigation will not be required. Any impacts to a wetland would be reviewed and permitted by the Rice Creek Watershed District.

The DNR Public Water Inventory does not show or identify any public waters within the site. The site is also not within any shoreland, floodplain, wild and scenic river, critical corridor, or agricultural preserve.

According to the DNR County Geologic Atlas Program, depth to groundwater within the site area is approximately 0-10 feet below surface. The site is not within any wellhead protection areas or any drinking water supply management areas. The 2024 EAW shows that there are eight wells near the project site.

Within a mile of the project site is Clear Lake and Hardwood Creek. Both are on the MPCA 303d Impaired Waters List. Nine unnamed DNR public water basins and 45 wetlands are within a mile of the site.

The MPCA's *What's in My Neighborhood* (WIMN) database identified two properties within the project site that are or may be contaminated. These were the Tanner's Brook Golf Course, and the intersection of Headwaters Parkway and Fenway Avenue.

Two state listed species (endangered, threatened, or special concern) may be found within the vicinity of the project site, the Blanding's Turtle, and Wilson's Phalarope. There are six species under the Federal Endangered Species Act expected or known to be in or near the project site: Northern Long-eared Bat, Tricolored Bat, Whooping Crane, Salamander Mussel, Monarch Butterfly, and the Rusty Patched Bumble Bee. An avoidance plan for the Blanding's Turtle will be adhered to, if needed. Disturbances to suitable nesting habitats for the Wilson's Phalarope will be avoided during construction in mid-May through July. Any disturbed soils will be reseeded with native seed grasses. No adverse effects to fish, wildlife, plant communities, or sensitive ecological resources are anticipated as a result of the project. Additionally, the project will not result in land cover changes and all land disturbance will be temporary in nature.

Per a search of the Minnesota State Historic Preservation Office's (SHPO) Statewide Inventory conducted in September 2023, there are no archaeological sites identified within the project site. If cultural materials are encountered, a qualified Professional Archaeologist will be contacted to assess the discovery and provide guidance. Due to the site being previously disturbed during the placement of the existing wastewater conveyance pipe, it is anticipated that no archaeological sites will be uncovered during the construction of the project.

# 2.0 Facility Planning

## 2.1 Problem Evaluation and Existing Facility Review

- a. As noted in Sections 1.1 and 1.4, a 2018 condition assessment revealed an approximately 8,000 linear foot section of 36-inch, single barrel, reinforced concrete pipe (RCP) to be in Poor to Very Poor condition. This section was installed in the early 1970s. Additionally, it was discovered that there is significant corrosion between Manhole (MH) 99 and Lift Station L02.
- b. Section VII of the city of Forest Lake's 2040 Comprehensive Plan, adopted in 2020, identifies the existing sanitary sewer system for the city. Forest Lake's 2040 Plan estimates that approximately 75% of the city's residents were served by sewer in 2020. The wastewater flow into Interceptor 7029 was 1.60 million gallons per day (MGD) in 2018, and 1.80 MGD in 2020. The city of Forest Lake's 2040 Plan estimates that flows would increase to 1.98 MGD in 2030, and 2.17 MGD by 2040. Further expansion of the Metropolitan Urban Service Area (MUSA) within the city of Forest Lake is identified in Figures 2-4 and 7-4 in the 2040 Plan.
- c. The southeast portion of the city of Columbus is also served by sewer; an intercommunity agreement between Columbus and Forest Lake was signed in 2001. The agreement requires a minimum available capacity from Forest Lake of 1.13 million gallons per day for flows from Columbus. As of 2020, the current quarterly unmetered data available from the Metropolitan Council was approximately 29,000 gal/day for the sewered areas of Columbus. Portions of Columbus within the Metropolitan Urban Services Area (MUSA) are primarily east of Rice Creek and south of Howard and Mud Lakes. The rest of Columbus is unsewered. The connection from Columbus to the regional sewer system is located near the intersection of 202nd Street and Fenway Avenue in Forest Lake. The city of Columbus' 2040 Comprehensive Plan (adopted in 2019) identifies the current and future sewer service areas in Figures 6.1 – 6.3. Table 6.3 in their 2040 Plan showed wastewater flow of 0.02 MGD in 2010, and estimated flows of 0.06 MGD in 2020, 0.07 in 2030, and 0.08 MGD in 2040. Other areas of the city of Columbus would have to be served by connections from elsewhere; the 2040 Plan for Columbus noted discussions with the cities of Lino Lakes and East Bethel and the Metropolitan Council regarding options for future service connections.
- d. The Metropolitan Council's 2040 Water Resources Plan (adopted in 2015 and amended in 2018) balances the demands of growth identified in Thrive 2040 (the Council's development framework for the seven-county metropolitan region) with the protection and management of lakes, rivers, streams, wetlands, and groundwater. The community forecasts of sewered populations are found in Table A-3, which are consistent with the forecasts in the 2040 comprehensive plans for Forest Lake and Columbus. Table A-4 includes wastewater flow projections, which are also consistent the projections in the 2040 comprehensive plans for Forest Lake and Columbus. Appendix F in the 2040 Water Resources Plan identifies the long-term service areas of the regional wastewater system within the metropolitan region; these are consistent with the future service areas identified in the 2040 comprehensive plans for Forest Lake and Columbus.

## 2.2 Planning and Service Area

Existing land uses around the interceptor includes agricultural, farmsteads and farmland, single family detached, golf course, and undeveloped land. Adjacent existing land uses are similar but include multifamily and retail/other commercial to the north, and the city of Hugo to the south. There are no parks, cemeteries, or trails within the vicinity of the study area; however, the study area runs through Tanners Brook Golf Course and Hardwood Creek Trail is located approximately one half-mile west of the study area.

The city of Forest Lake's 2040 Comprehensive Plan identifies future land uses for land within the city. Future land use designations of the land around the interceptor are identified in Figure 2-3 in their Plan. The designations include *Highway Business*, *Low-Medium Density Residential*, *Park and Recreation*, and *Mixed Use*. *Highway Business* is intended for businesses that require proximity to the regional transportation infrastructure. *Low-Medium Density Residential* is intended to provide one-family detached and attached homes as well as two-family homes. *Park and Recreation* is primarily intended for public active recreation activities. *Mixed Use* is intended to provide areas for compact, walkable, mixed-use development along key community corridors.

The 2040 Plan for Forest Lake also identifies staging areas for future development and expansion of the MUSA within the city limits on Figures 2-4 and 7-4 in their Plan. Development Stage 2 (areas to be developed by 2030) includes land near Interstate 35 and US Highway 61. Development Stage 3 (areas to be developed by 2040) identify development occurring in the southwest quadrant of the city near the Forest Lake Interceptor. This includes areas near Tanners Brook Golf Course, and on land near County Road 50 and Harrow Avenue North. Areas within the city south of County Road 50 and east of US Highway 61 are identified as being developed and served with sewer post-2040.

# 2.3 Population Projection and Planning Period

The 2020 decennial census reported the city of Forest Lakes's population at 20,611. The Metropolitan Council's annual population estimates for 2023 estimated the city's population at 21,502.

As part of the 2040 comprehensive planning cycle (Thrive 2040), the Metropolitan Council forecasted that the city of Forest Lake will have a population of 25,200 in 2030, and a population of 28,900 in 2040. The forecasts for 2030 also included a total population of 20,730 being sewered, while 4,470 would be unsewered. 2040 was forecasted to have 24,430 sewered, with 4,470 again being unsewered.

The Metropolitan Council's preliminary forecasts for the 2050 comprehensive planning cycle (Imagine 2050) estimate that population growth will continue in Forest Lake but will occur at a slower rate than previously thought, as shown in Table 2 below.

Forecast Year	Thrive 2040	Imagine 2050
2030	25,200	23,832
2040	28,900	26,127
2050	N/A	29,601

The 2020 decennial census showed Columbus with a population of 4,159. The Metropolitan Council's annual population estimates for 2023 estimated the city's population at 4,151.

As part of the 2040 comprehensive planning cycle (Thrive 2040), the Metropolitan Council forecasted that the city of Columbus will have a population of 4,950 in 2030, and a population of 5,500 in 2040. The forecasts for 2030 estimated a total population of 680 being sewered, while 4,270 would be unsewered. 2040 was forecasted to have 830 residents sewered, with 4,670 being unsewered.

Similar to the preliminary forecast for Forest Lake, the Metropolitan Council's preliminary forecasts for the 2050 comprehensive planning cycle (Imagine 2050) estimate that population growth will continue in Columbus but will occur at a slower rate than previously thought, as shown in Table 3 below.

Table 3: Population forecasts for Columbus

Forecast Year	Thrive 2040	Imagine 2050
2030	4,950	4,636
2040	5,500	5,113
2050	N/A	5,670

# 2.4 Hydraulic Capacity

Flow definitions and identification, hydraulic capacity to serve existing or new collection systems, and consideration of combined sewer interceptors does not apply to this project. The proposed project involves the replacement and rehabilitation of an existing interceptor. Lift Stations and WWTPs are not a part of this project.

### 2.4.1 Flow Definitions and Identification

The following flows for the design year shall be identified and used as a basis of design for sewers, lift stations, wastewater treatment plants, treatment units, and other wastewater handling facilities. Where any of the terms defined in this Paragraph are used in these design standards, the definition contained in this Paragraph applies.

- a. Design Average Flow
  - The design average flow is the average of the daily volumes to be received for a continuous 12-month period expressed as a volume per unit time. However, the design average flow for facilities having critical seasonal high hydraulic loading periods (e.g., recreational areas, campuses, industrial facilities) shall be based on the average of the daily volumes to be received during the seasonal period.
- b. Design Maximum Day Flow
  The design maximum day flow is the largest volume of flow to be received during a
  continuous 24-hour period expressed as a volume per unit time.
- c. Design Peak Hourly Flow
  The design peak hourly flow is the largest volume of flow to be received during a one-hour period expressed as a volume per unit time.

Design Peak Instantaneous Flow
 The design peak instantaneous flow is the instantaneous maximum flow rate to be received.

# 2.4.2 Hydraulic Capacity for Wastewater Facilities to Serve Existing and New Collection Systems

a. Not Applicable.

### 2.4.3 Combined Sewer Interceptors

Interceptor 7029 is not a combined interceptor.

### 2.5 Organic Capacity

This project is for the rehabilitation of an existing gravity interceptor with no treatment component. The waste stream consists of domestic and commercial wastewater with no industrial loading. Waste stream characteristics are not anticipated to change. Organic loadings were not evaluated.

## 2.6 Wastewater Treatment Facility Design Capacity

This project is for the rehabilitation of an existing gravity interceptor with no treatment component.

### 2.7 Initial Alternative Development

As noted in the Preliminary Design Report, the possibility of realigning this section of interceptor was considered at a conceptual level upon request of the city of Forest Lake. Said concept would involve building a new interceptor along Fenway Avenue North. Relocation would provide an expected lifespan of 80 years, while a rehabilitation of the existing interceptor would have a lifespan of 50 years. The predicted cost of relocation was approximately \$22 million, compared to an estimated cost of rehabilitation of approximately \$11 million. Due to costs, rehabilitation was determined to be the route to pursue.

Three potential interceptor rehabilitations were analyzed: cured in place pipe (CIPP) lining, spiral wound lining, and slip lining. The fourth alternative reviewed in Section 2.8 is to maintain status quo (do nothing). Fold and Form pipe lining, while an available technology on the market, was not considered in detail for this project due to limited local experience with this technology, and similar excavation requirements to slip lining.

CIPP lining, due to its minimal hydraulic capacity reduction (1.5-3" interceptor diameter reduction), its wide adoption within the local construction industry, MCES's familiarity with the method, and its moderate cost and environmental impact compared to the other alternatives, was then determined to be the best alternative for this project.

### 2.8 Detailed Alternative Evaluation

The following shall be included for the alternatives to be evaluated in detail.

- Sewer System Revisions Proposed revisions to the existing sewer system including adequacy of portions not being changed by the project shall be evaluated.
- b. Wet Weather Flows Facilities to transport and treat wet weather flows in a manner that complies with federal, state, and local regulations shall be provided.
- c. Wet Weather Flow Equalization If the ratio of design peak hourly flow to design average flow is 3:1 or more, flow equalization shall be considered. This may be

- accomplished by either building a wet weather retention basin and gradually returning the excess flow to the treatment plant during off-peak periods or by providing a plant large enough to handle all flows.
- d. Site Evaluation Site evaluation shall consider the following criteria. When a site must be used which is critical with respect to the following items, appropriate measures shall be taken to minimize adverse impacts.
  - 1. Compatibility of the treatment process with the present and planned future land use, including noise, potential odors, air quality, and anticipated sludge processing and disposal techniques, shall be considered. Non-aerated lagoons should not be used if excessive sulfate is present in the wastewater. Wastewater treatment facilities should be separate from habitation or any area likely to be built up within a reasonable future period and shall be separated in accordance with state and local requirements.
  - 2. Zoning and other land use restrictions shall be identified.
  - 3. The accessibility and topography of the site shall be evaluated.
  - 4. Area for future plant expansion shall be identified.
  - 5. Direction of prevailing wind shall be identified.
  - Flood considerations, including the 25- and 100-year flood levels, impact on floodplain and floodway, and compliance with applicable regulations regarding construction in flood-prone areas, shall be evaluated. Paragraph 51.2 contains requirements for protection from flooding.
  - 7. Geologic information, depth to bedrock, karst features, or other geologic considerations of significance to the project shall be included. Lagoons shall not be in karst areas unless the specific geologic and construction details are acceptable.
  - 8. Protection of groundwater including public and private wells is of utmost importance. Demonstration that protection will be provided shall be included. The regulatory agency shall be contacted for required separation.
  - 9. Soil type and suitability for construction and depth to normal and seasonal high groundwater shall be determined.
  - 10. The location, depth, and discharge point of any field tile in the immediate area of the proposed site shall be identified. Present and known future effluent quality requirements as determined by the regulatory agency shall be included. Access to receiving stream for the outfall line shall be discussed and displayed.
  - 11. A preliminary assessment of site availability shall be included.
- e. Unit Sizing Unit operation and unit process sizing and basis shall be provided.
- f. Flow Diagram Flow diagram of treatment facilities including all recycle flows shall be included.
- g. Flexibility Compliance with requirements of Paragraph 5.3.6 Arrangement of Units shall be assured.
- Removal Efficiencies Loadings to and removal efficiencies through each unit operation shall be provided in addition to total removal efficiency and effluent quality (both concentrations and mass).

- Emergency Operation Emergency operation requirements as outlined in Section 47 and Paragraph 56.1 shall be provided. MPCA and local agencies may have more stringent requirements.
- j. Technology Not Included In Ten States Standards Paragraph 5.3.2 outlines procedures for introducing and obtaining approval to use technology not included in these standards. Proposals to use technology not included in these standards shall address the requirements of Paragraph 5.3.2. A contingency plan, in the event that such new technology fails to meet the expected performance, may be required by the reviewing authority in the absence of three separate and representative full-scale installations successfully using the same technology. Each representative full-scale installation should have sufficient monitoring and appropriate testing results that demonstrate reliable and effective compliance with the design performance criteria and have been operated for not less than three years at or near design capacity without major failure of either the process or equipment. Sludge
- k. The solids disposal options considered, and method selected shall be included. This is critical to completion of a successful project. Compliance with requirements of Chapter 80, Sludge Processing, Storage, and Disposal shall be assured.
- I. Treatment During Construction A plan for the method and level of treatment (including sludge processing, storage, and disposal) to be achieved during construction shall be developed and included in the Facility Plan submitted to the regulatory agency for review and approval. This approved treatment plan shall be implemented by inclusion in the plans and specifications to be bid for the project. Refer to Paragraph 20.15 and Section 2.1.
- m. Operation and Maintenance Portions of the project which involve complex operation or maintenance requirements shall be identified including laboratory requirements for operation, industrial sampling, and self-monitoring.
- n. Cost Estimates for capital, operation, and maintenance (including basis), shall be included.
- Environmental Review Consideration shall be given to minimizing any potential adverse environmental effects of the proposed project. Compliance with planning requirements of federal, provincial, state, and local regulatory agencies shall be documented.

Table 4: Alternative Criteria Review

Criteria to Review	Alternative #1 Do Nothing/Status Quo	Alternative #2 Cured in place pipe (CIPP)	Alternative #3 Spiral Wound	<b>Alternative #4</b> Slip Lining
Sewer System	N/A. Under this alternative, no revisions would be made to the existing interceptor.	Sewer cleaning would occur as a preparatory step prior to rehabilitation work.	Sewer cleaning would occur as a preparatory step prior to rehabilitation work.	Sewer cleaning would occur as a preparatory step prior to rehabilitation work.
Revisions		CIPP would involve either a steam/hot water curing, or a UV curing process to rehab the existing pipe.	This would involve a continuous PVC or HDPE strip wound around the walls of the existing pipe.	This would involve inserting a smaller carrier pipe into the existing pipe sequentially.
Wet Weather Flows	Peak hourly: L1 – 5.65 MGD L2 – 6.01 MGD	N/A	N/A	N/A
Wet Weather Flow Equalization	N/A	N/A	N/A	N/A
·	Under this alternative, no revisions would be made to the existing interceptor.	A minimal construction footprint would be required for this alternative.	A minimal construction footprint would be required for this alternative.	This alternative would require significant excavation for insertion pits compared to other
Site Evaluation		UV-cured CIPP is advantageous for reaching MHs with limited access to water.	This would require less water than other alternatives and would not require 100% conveyance during construction.	alternatives.
Unit Sizing	Inside Diameter: 36" Manning's N: 0.015 Flow Capacity: 10.33 MGD	Inside Diameter: 34.5" – 35.5" Manning's N: 0.010 Flow Capacity: 13.8 MGD (Steam/Hot Water), 14.4 MGD (UV)	Inside Diameter: 30" Manning's N: 0.010 Flow Capacity: 9.53 MGD	Inside Diameter: 29.5" Manning's N: 0.010 Flow Capacity: 7.6 MGD
Flow Diagram	N/A	N/A	N/A	N/A
Flexibility	N/A. Under this alternative, no revisions would be made to the existing interceptor.	N/A	N/A	N/A
Removal Efficiencies	N/A. Under this alternative, no revisions would be made to the existing interceptor.	N/A	N/A	N/A
Emergency Operation	N/A. Under this alternative, no revisions would be	N/A	N/A	N/A

	made to the existing			
	interceptor.	NI/A	NI/A	NI/A
'Tech not included in ten states' standards	N/A. Under this alternative, no revisions would be made to the existing interceptor.	N/A	N/A	N/A
Solids Disposal Options	N/A. Under this alternative, no revisions would be made to the existing interceptor.	N/A	N/A	N/A
Treatment During Construction	N/A. Under this alternative, no revisions would be made to the existing interceptor.	Temporary conveyance pipes will be sized to provide the greater of 1.5 times the daily maximum flow or one half of the maximum system design capacity. Multiple alignment options for temporary conveyance routes are available to pursue.	Temporary conveyance pipes will be sized to provide the greater of 1.5 times the daily maximum flow or one half of the maximum system design capacity. Multiple alignment options for temporary conveyance routes are available to pursue.	Temporary conveyance pipes will be sized to provide the greater of 1.5 times the daily maximum flow or one half of the maximum system design capacity. Multiple alignment options for temporary conveyance routes are available to pursue.
Operation & Maintenance	N/A	N/A	N/A	N/A
Cost Estimates	\$0/foot.  The possibility of relocation of this section of interceptor was considered at a conceptual level.  The predicted cost of relocation was approximately \$22 million.	\$275/foot (Steam/Hot Water) \$225/foot (UV)	\$400/foot	\$200/foot
Environmental Review	Maintaining status quo could allow the interceptor to deteriorate further, thus posing a potential risk to public health and the environment.	Minimal impact is anticipated for this alternative, beyond accessing MHs. Use of UV-cured CIPP could reduce water needs and transportation of water.	Minimal impact is anticipated for this alternative, beyond accessing MHs. This would require less water than other alternatives and would not require 100% conveyance during construction.	This alternative would be anticipated to create more ground disturbance and wetland impacts than other alternatives

## 2.9 Final Project Selection

Based on initial alternative development, and the detailed alternative evaluation, the recommendation is to pursue UV cured CIPP lining due to its increase in capacity compared to water or steam cured CIPP (Due to the thinner wall thickness of UV cured CIPP) and lower cost. The primary cost difference between these methods is the cost of removing and replacing MH cones, with quotes given by contractors making UV CIPP approximately \$50/linear foot cheaper than steam or water cured CIPP due to the ability for it to be installed through a smaller MH opening. Steam cured CIPP may be included in bidding documents as an alternative method.

Additionally, due to the need to move water to the project site the cost of moving water is a notable concern. While hot water cured CIPP allows for longer inversions, of up to 1,000 feet or more compared to 500 feet for UV and Steam cured. However, runs of up to 1,000 feet may be possible so long as a MH exists within 700 ft of the start and end MH, liner material could be inserted from either end of a 1,000-foot run, with a winch pulling from a central MH in each direction.

Water cured CIPP would potentially reduce the amount of site restoration required for this project. Based on analysis of a typical section of the project, it is assumed that costs saved due to not using water with UV curing outweighs the added restoration costs, making UV cured CIPP likely to be the most economical method for this project. This is demonstrated in the table below comparing the cost for each method between MH 90 and MH 94.

Table 5: CIPP Curing Methods Cost Sample Area, MH 90-94

Curing Method	UV	Steam	Hot Water
Length of Sample Area, in linear feet (LF)	1,650	1,650	1,650
Cost of Liner	\$365,000	\$450,000	\$450,000
Water Volume	0	16,000	84,000
Required (gallons)			
Water Cost	\$0	\$250	\$1,400
Water Trucking Cost	\$0	\$19,000	\$56,000
Restoration Cost	\$28,000	\$28,000	\$14,000
Estimated Cost	\$393,000	\$497,250	\$605,400

<sup>\*</sup>Values are initial estimates used for comparison purposes, and may not be accurate for this project

# 3.0 List of Report Tables and Appendices

Table 1 – Soil Types – Section 1.7

Table 2 – Population Forecasts for Forest Lake – Section 2.3

Table 3 – Population Forecasts for Columbus – Section 2.3

Table 4 – Alternative Criteria Review – Section 2.8

Table 5 – CIPP Curing Methods – Section 2.9

Appendix A – Existing Conditions Memorandums

Appendix B – MCES Capacity Analysis

Appendix C – Location Drawing



# Appendix A

**Existing Conditions Memorandums** 



# **Memorandum**

To:	Paul Herubin, PE	Project Reference:	Contract 18P061D		
			Work Release Number 23002763		
Copies To:	Chris Remus, PE				
-	Dan Nesler, PE	_			
		TKDA Project No.:	17060.013		
From:	Scott Frost, EIT,	Client No.:	808601: North Area Rehabilitation		
	Ben Meemken, PE	_			
Date:	February 19, 2024	_			

### Forest Lake Interceptor Existing Conditions Technical Memorandum

### **Introduction and Background**

The Forest Lake Interceptor 7029 was constructed in approximately 1971. The portion north of Headwaters Parkway to 210<sup>th</sup> St. North consists of a 36-inch reinforced concrete pipe (RCP). In 2018 a condition assessment was performed by MCES on the interceptor, and it was determined that approximately 2300-feet of the pipe in this reach had a condition rating of 3.5 and 4050-feet of pipe had a condition rating of 3.

To aid in determining alternatives for future rehabilitation of the interceptor, a desktop and field condition evaluation was performed on the section of the Forest Lake interceptor between maintenance holes 99 and 113. This memorandum will summarize the tasks performed and details of this evaluation. A prior analysis and condition evaluation of maintenance holes 77A to maintenance hole 99 was documented with a July 6, 2023, Technical Memorandum by TKDA. That memorandum can be viewed in Appendix B.

### **Objectives**

The objective of this memo is to summarize existing conditions of the site, and the preliminary data collected to date that will be used to inform the Preliminary design, and subsequent phases of the project. The intent is to proceed with sediment removal and cleaning of the interceptor from maintenance holes 99- 113, and full rehabilitation of MH 77A – MH 99. At this time, there does not appear to be any significant data gaps or additional information required to proceed with preliminary design. Limited additional data will be collected during the next design phases of the project as needed, including a geotechnical investigation.

Currently, the critical path is for MCES to initiate the land acquisition process for temporary construction easements. TKDA is assisting by preparing a detailed property acquisition work map and exhibits with legal descriptions of easement areas.

### **Desktop Analysis**

TKDA conducted a desktop review of existing utility locations provided by companies operating in the project area, MPCA pollution data, FEMA flood data and an original geotechnical report from the interceptor construction.

### Gopher State One Call Utility Locate No. 232583177

TKDA received utility request responses from companies as shown in Table 1. The information has been imported into the project's AutoCAD base files and will be used in the design going forward. No conflicts were found in this data that would significantly alter or inhibit the design of this project.

Table 1. Utility Locate 232683177 Responses

Company	Utility(s) Provided		
Century Link	Phone/Internet		
City of Forest Lake	Sanitary Sewer, Culverts, Storm, Watermain		
Connexus Energy	Power		
Consolidated	Phone/Internet		
Communications			
KorTerra	Internet		
Metropolitan Council	Sanitary Sewer		
XCEL Energy	Power, Gas		
Zayo Bandwidth	Internet		

### City of Forest Lake:

TDKA obtained record plans for the 2006 Headwaters – 1<sup>st</sup> Addition Utility and Street improvements project. Record plans are dated 2009 and 2012. This plan set has the most up to date location of existing Municipal sanitary and water, along with existing conditions of maintenance holes 98 to 107. Most notably the set contains the existing conditions in the vicinity of MH 99. This information will be used to locate and design the temporary conveyance pumping pit and temporarily connect the municipal sanitary connection to the interceptor.

### MPCA What's in my Neighborhood:

TKDA reviewed the MPCA information on pollution in the project area. Appendix C contains all noted areas of pollution. No significant pollution was found such that it would inhibit or alter the project.

### **FEMA National Flood Hazard Map:**

TKDA reviewed FEMA FIRMette panels 27163C0040E, 27163C0126E, 27163C0128E which contain the entirety of the project area. No flood risk areas were found within the project area. Appendix D-1, D-2, D-3 shows the FIRMette panels.

#### Geotechnical Report #15054:

TKDA reviewed geotechnical report #15054 dated March 11<sup>th</sup>, 1970, conducted by the Soil Exploration Company. Borings #33, #36, #38, #40, #42 are the borings closest to the relevant areas of the project. The borings reveal that the southern part of the project has an average of 1ft of lean clay (CL-OL) topsoil, with sandy clay (CL) lying underneath. The Northern portion of the project has a mixture of silty sand and sandy clay surface, with a mix of sandy clay, clayey sand, organic silty clay, and fine sand underneath. Borings averaged 25ft in depth, with a minimum depth of 12ft and a maximum depth of 32ft. Bedrock was not encountered in any of the borings. Appendix E includes the referenced boring logs. As part of the preliminary design phase TKDA will assess the need for additional boring locations. It is assumed a limited number of borings will be required to gain an understanding of existing groundwater conditions.

#### Field Data Collection

#### **Wetland Delineation:**

TKDA retained a subconsultant, Anderson Engineering, to conduct a wetland delineation in accordance with the USACE Wetland Delineation Manual. The study area was focused on an approximately 135-foot-wide corridor along the interceptor alignment. The area was based on the existing 35-foot-wide permanent easement, plus the 100-foot temporary construction easement to the east that was recorded on the original construction documents. Approximately 30 individual wetland bodies with a range of classifications were delineated. See Appendix F for the wetland delineation report.



### **Topographic Survey and Aerial Photography:**

TKDA's survey conducted by drone collected aerial imagery and point data via lidar that was converted into topography. The survey was conducted along an approximately 200-foot corridor of coverage between maintenance holes 77 and 102 with Forest Lake Interceptor 7029 as its centerline.

### **Additional Topographic and Imagery Data:**

TKDA also obtained and reviewed aerial imagery and topographic contour information that will be used for background data outside of the project data collection boundaries using Maxar arial imagery and MnTOPO Lidar.

All collected information has been imported into the AutoCAD base files and will be used for design.

### **Maintenance Hole Condition Assessment**

In December of 2023 an inspection of maintenance holes 101 to 113 was conducted. From this inspection it was determined that most of the MHs were found to be in fair condition. MH 102 showed signs of minor concrete deterioration, and MH 113 showed signs of erosion. Most manholes showed at least 4 inches of sediment. A sludge judge was used to determine sediment depth but had variable accuracy. A representative selection of maintenance holes were evaluated by making physical entry, inspection, and measurement of sediment depth. Physical sediment depth measurements were correlated with the sludge judge measurements, and estimations of total sediment depth were made for instances where the sludge judge was thought to be inaccurate. Table 2 displays the condition rating descriptions of existing sanitary sewer MHs. Table 3 summarizes the observations from the MH inspections including total sediment depth. Appendix G shows photos from the MH inspections and the MH inspection forms. Appendix A contains the report for MH 77A to MH 99.

**Table 2. MH Condition Ratings** 

Rating	Description
1	New Newly installed, No significant defects Failure unlikely
2	Good Minor Defects, No Significant Deterioration Evident Rehabilitation not Recommended
3	Fair Moderate Defects, Deterioration Evident Rehabilitation Recommended
4	Poor Moderate to Severe Defects, Moderate Deterioration Rehabilitation Recommended
5	Very Poor Severe Defects, Severe Deterioration Failure Likely



**Table 3. MH Inspection Summary** 

MH	Rating	Description	Sediment Depth
100	N/A	NOT INSPECTED	
101	3	Steps and walls in fair condition, root intrusion in upper maintenance hole, signs of erosion around pipe inlet and outlet	6"
102	2	Steps in fair condition, signs of seeping, concrete deteriorating	No Sediment
103	N/A	NOT INSPECTED	
104	2	Steps in fair condition, signs of minor deterioration and erosion	Sludge Judge: 4" By Feel 6-7"
105	2	Steps in fair condition, heavy debris on steps	No Sediment
106	2	Steps in fair condition, concrete casting shows minor signs of deterioration	10"
107	2	Steps in fair condition, concrete casting shows minor signs of deterioration.	4"
108	2	Steps in good condition concrete shows signs of infiltration	Sludge Judge: 5" By Feel: 8"
109	2	Steps in fair condition concrete shows signs of infiltration	Sludge Judge: 3" By Feel: 12"
110	2	Steps in fair condition, signs of erosion around pipes and bench	8"
111	2	Steps in fair condition, signs of erosion around pipe inlet and outlet	12"
112	2	Steps in fair condition casting appears to be in good condition	6"
113	3	Signs of deterioration around inlet pipe and around force main, signs of erosion near water level.	No Sediment

### **Condition Evaluation**

In 2018 the Metropolitan Council conducted a condition assessment that included televising the interceptor between MH 99 and MH 112. This inspection revealed consistent spalling across the pipe, regular signs of erosion and sediment buildup. And increased flow velocity between MH 102 and 106 due to a change in slope and sag in the pipe. This is consistent with the 2023 maintenance hole inspections conducted by TKDA.

### Conclusion

The data collected as part of this inspection and analysis generally aligns with and supplements the previously understood site conditions. The information gathered supports the need to clean and remove sediment from the section of interceptor between maintenance holes 99 and 113, but complete rehabilitation of the pipe and structures will not be considered for this portion of the project area. This information also seems to be adequate to begin preliminary design on such a rehabilitation project.



Forest lake Interceptor Existing Conditions Tech Memo February 19, 2024 Page 5

### **Attachments**

Appendix A – MCES Forest Lake Overall Site Exhibit

Appendix B – 2023-07-06 7029 Analysis and Field Inspection Report

Appendix C – MPCA Noted Spills

Appendix D-1 – FEMA FIRMette

Appendix D-2 – FEMA FIRMette

Appendix D-3 – FEMA FIRMette

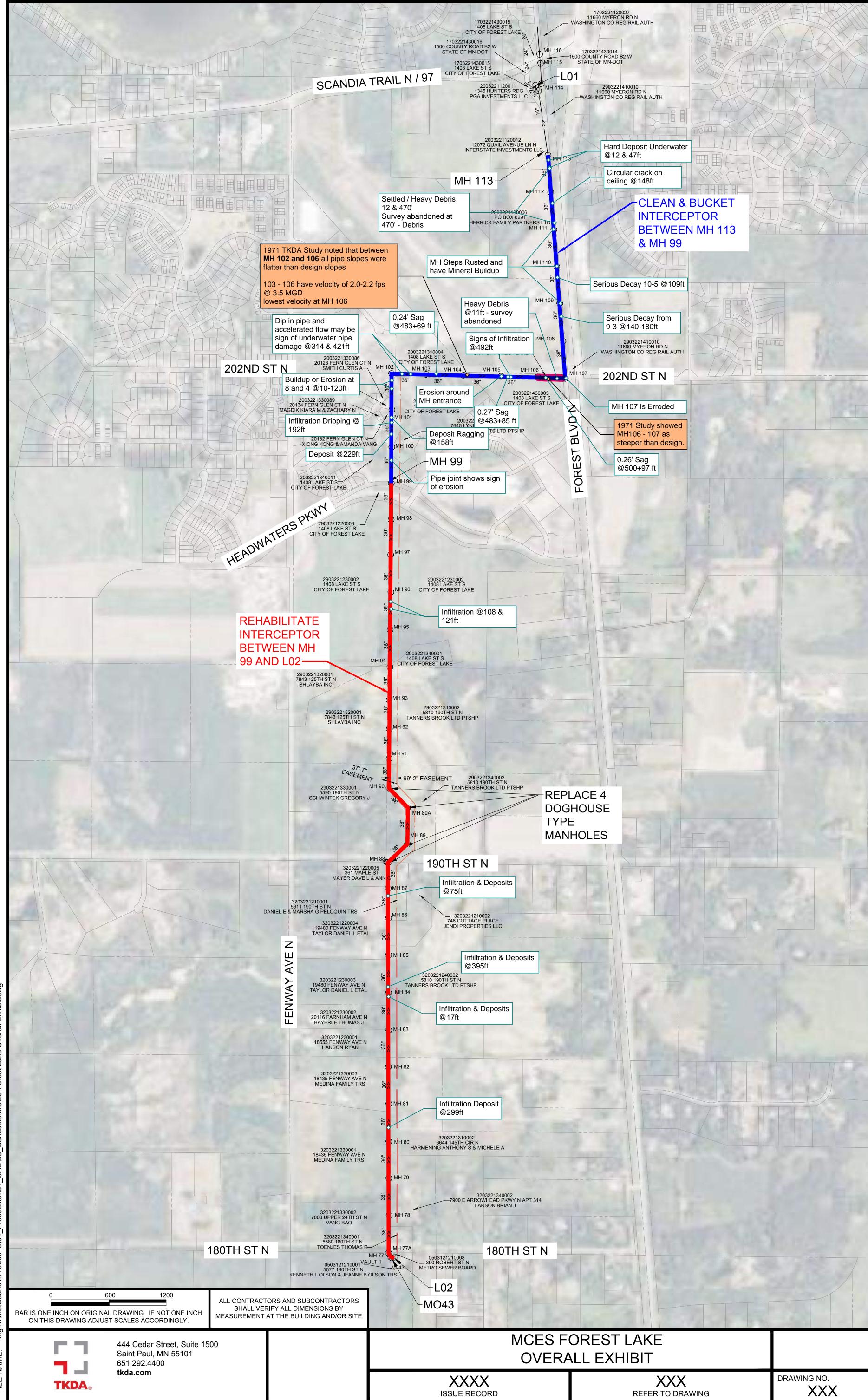
Appendix E – Forest Lake Geotechnical Report

Appendix F - TKDA\_MCES Forest Lake Wetland Report

Appendix G – MH Assessment Forms

WSF:BJM:add





PLOT DATE: Sep 22, 2023 - 8:56am FILE NAME: K:\g-m\MetCouncil\17060013\04\_Production\01\_CAD\03\_Concepts\MCES Forest Lake Overall I



# Memorandum

To: Paul Herubin, PE Project Reference: Contract 18P061D

Amanda Mondor, PE Work Release Number 23002763

Copies To: Chris Remus, PE TKDA Project No.: 17060.011

Dan Nesler, PE

From: lan Johnson, PE, Client Project No.: 808601: North Area Rehabilitation

Ben Meemken, PE

Date: July 6, 2023

### Forest Lake Interceptor 7029 North Area Rehabilitation Analysis and Field Inspection Report

The Forest Lake Interceptor 7029 was constructed in approximately 1971. The portion north of 180<sup>th</sup> Street, to what is now Headwaters Parkway consists of a 36-inch reinforced concrete pipe (RCP). In 2018 a condition assessment was performed by MCES on the interceptor and it was determined that approximately 1,000-feet of the pipe in this reach had a condition rating of 4.5 and 7,000-feet of pipe had a condition rating of 4. To aid in determining alternatives for future rehabilitation of the interceptor, a desktop and field analysis were performed. This memorandum will summarize the tasks performed and details the findings from these analyses.

### **Desktop Analysis**

The analysis was completed along Interceptor 7029 between maintenance hole (MH) 99 and Lift Station 2 (L02), as shown on Figure 1. Upon reviewing the CCTV from 2018 it was determined that the condition ratings of the existing RCP interceptor pipe were accurate. Most of the segments appeared to have visible signs of corrosion presenting as surface spalling of the concrete pipe. Less corrosion is present upstream near MH 99 and more significant corrosion near L02.

Record drawings and a capacity analysis provided by MCES were also reviewed. While MCES has determined the current pipe capacity may not be sufficient for ultimate projected flows, this evaluation did not include deeper capacity analysis. It is assumed that rehabilitation of the interceptor will maintain or slightly improve the system capacity due to introducing smoother walled pipe, reducing the Manning's n value, and reducing inflow and infiltration.

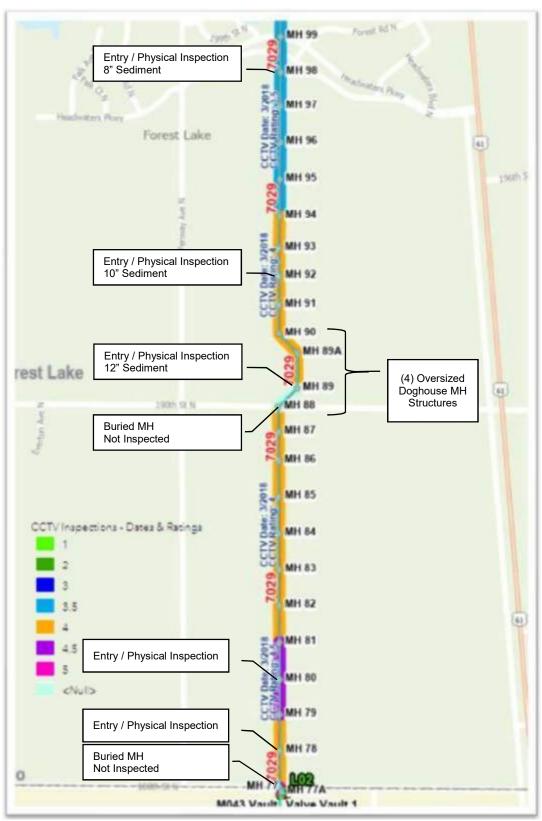


Figure 1 - Site Map & Inspection Highlights



### Site Reconnaissance

TKDA conducted a site reconnaissance to locate, mark, and inspect the maintenance holes along Interceptor 7029 from MH 99 to L02 from April 27 through May 4. Prior to the field reconnaissance TKDA coordinated with MCES to inform impacted land owners including Tanners Brook Golf Course. The Interceptor lies within a 35 foot wide MCES easement that cuts through farmland, and heavily vegetated and wooded areas where access is limited to foot traffic. The maintenance holes within the golf course were accessed via golf cart. Each MH was first field located and marked with only MHs 88 and 77 not being unearthed as they lie under the road surface of 190th St, and 180th St., respectively. For the remaining structures, each structure was visually inspected from the surface, photographed using a 360° camera, and scanned using a 3D laser scanner. The casting, rings, cone section, riser sections, and sump were visually inspected and recorded in Appendix A. Overall the manholes appeared to be in fair to poor condition with moderate corrosion near the rings and casting and growth along the walls. Signs of micro-biological growth was noted in all MHs along with mineral deposits where water was entering the structure. The micro-biological growth along the cone and riser sections was more extreme the farther downstream (south) or closer to L02. The pipe appeared to be over 50% full inhibiting the view of any MH bench. The inspection confirmed the presence of a service connection at MH 99. The only other service connection was identified at MH 77A, where a 4" or 6" PVC lateral with a P-trap inside the MH was observed. It is undetermined at this point where this service lateral originates from, but it is suspected it may be an undocumented sump pump discharge from within the lift station dry well.

The MHs were photographed using a 360° camera with photos taken approximately every 5 feet down the structure as well as a photo at the casting and near the surface of the water at the bottom of the MH. 360° video was also captured at each located structure from invert to rim. These photos and video were used to help with the MH assessments as well as to help determine which structures were good candidates to make entry for physical inspections. These photos and video will be provided to MCES in an electronic submittal.

Each located structure was finally scanned using a 3D laser scanner, creating a point cloud of the inside surface of the MH from rim to the invert. These scans will be a valuable tool in any future rehabilitation projects as the data collected is a highly precise view of the MH that can more accurately display the conditions and measurements of the MH. These 3D laser scans will be provided to MCES in an electronic submittal. A screen shot of the laser scanner point cloud from MH 89 is presented below. This point cloud was used to confirm the diameter of the oversized 72" diameter doghouse structure at the bottom. An anomaly on the surface was also detected, which was confirmed with the 360 degree photos, and was later inspected by hand to reveal exposed rebar.

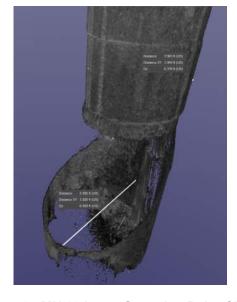


Figure 2 - MH 89 Laser Scanning Point Cloud



Generally, the laser scanning data compared well to the 360 degree imagery, and was useful in determining dimensions, as well as indicating anomalies that required more attention. A snip below is from within MH 92.

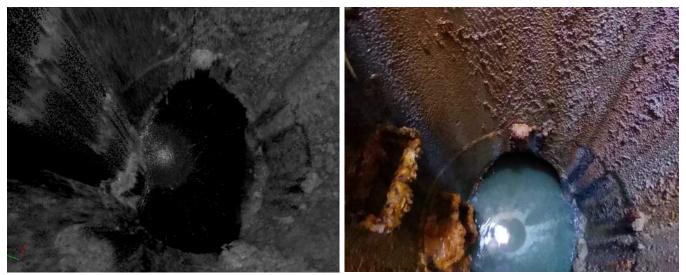


Figure 3 - MH 92 Point Cloud and 360 Degree Imagery Comparison

The Lift Station 2 wetwell was also accessed with the 360 camera, and laser scanner. The intent was to confirm the wetwell and influent pipe configuration to inform the future detailed design of a temporary conveyance connection. While the lighting was not sufficient in the 360 camera images to determine much, a partial laser scan of the wetwell was able to conclude the wetwell is a 36 foot diameter half-moon shape, which deviates from the original design drawings for the project. TKDA has located some drawings of a cast-in place concrete wetwell-dry well design that is assumed to be issued as an addendum to the original project. The original design drawings detailed a rectangular wetwell with a pre-manufactured dry well pump station. A screen capture of the wetwell laser scan point cloud is presented below. The scan was able to confirm the 36 foot diameter wetwell, the 42" diameter influent pipe, and the 48" diameter MH Riser.

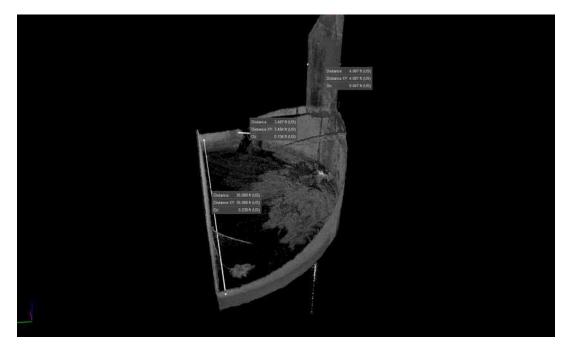


Figure 4 - MH 89 Laser Scanning Point Cloud



Forest lake Interceptor 7029 Analysis and Field Inspection Report July 6, 2023 Page 5

### MH Entry and Physical Inspections

Once the initial site reconnaissance and MH inspections were completed, five structures along the interceptor were selected to be entered and inspected. The five structures that were entered were determined based on spacing out the inspections along the interceptor as well as observations from the visual inspections. Photographs from these inspections can be found in Appendix B. MH 98 and MH 92 were selected based on the ease of access and similarities to other structures upstream and downstream. MH 89 was selected based on ease of access and due to it being one of four oversized structures with a 72" diameter "Doghouse" structure with a top slab, dissimilar to the other typical 48-inch diameter concrete structures. MH 78 was selected based on the significance of micro-biological growth but was unable to be fully inspected due to high levels of hydrogen sulfide, lower explosive limit (LEL) gases, and low levels of oxygen. MH 80 was then selected as an alternative to MH 78 as it also was showing signs of significant micro-biological growth with having better air quality.

During the physical inspections, areas of micro-biological growth were scraped away to reveal the concrete underneath. In MH 92, MH 89, MH 80 and MH 78 exposed aggregate was found underneath this growth however the degradation of the concrete wall was not significant. A portion of the wall inside MH 89 had exposed rebar in the oversized dog house section. MH 98 had minimal concrete degradation under the micro-biological growth. The MH steps had significant mineral buildup without showing signs of surcharging. Large mineral deposits were also located near the bench of each MH. Each MH had signs of infiltration at the riser sections with moderate to significant mineral buildup at these locations. Overall it was found that the MHs were in fair shape and would be good candidates for future rehabilitation liners.

The interceptor pipe was visually inspected while entering the MHs and photographed. Signs of significant corrosion, consistent with those found in the 2018 condition assessment were confirmed during these entries. Sediment ranging from 8" to 12" was found at the invert of interceptor pipe at MH 98, MH 92, and MH 89. The invert at MH 80 was clear of any sediment.

#### Conclusions

The data collected as part of this inspection and analysis effort generally aligns with, and supplements, previously understood information. Collectively, the information currently on file seems adequate to embark on an alternatives evaluation and preliminary design for a rehabilitation project on this segment of interceptor. While subsurface conditions are now well understood, updated topographic survey information may be beneficial to collect as the project design progresses.

### <u>Attachments</u>

Appendix A – MH Reconnaissance Inspection Reports Appendix B – MH Physical Inspection Photographs

IJJ:bjm:dan

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444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400 tkda.com

# MH ASSESSMENT FORM

TKDA								
Inspector(s):		Date:	Time:		Street:		Cross Street/House #	
ME DP	4	1/27/2023	9:10ar	n	Headwate		West of Forest Rd N	
MH ID#	N	ИН Dia. (1	ft) Mater	ial	Rim to Be	nch (ft):	Photo's	
99	4	•	☐ Bric ☑ Con ☐ Poly	crete /mer nbination	(.,)		through	
	·							
	Outlet P				Influent Pipe 1			
Clock Pos: 6	5 Dept	th (Rim to	Inv.) 15.34'	Clock F	Clock Pos: 12 Depth (Rim to Inv.) 15.42'			
Pipe ID#:				Pipe ID	#			
Material/Size:	Concrete 36"			Materia	I/Size: Cond	rete 36"		
Comments:				Comme	ents:			
Flow (% full): (	0% 25% <b>50%</b>	75% 100	)%	Flow (%	6 full): 0% 2	5% <b>50%</b>	75% 100%	
,	Influent Pipe 2				Influent Pipe 3			
Clock Pos:			to Inv.) 13.86'	Clock F	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:				Pipe ID	Pipe ID#			
Material/Size: PVC 10"				Materia	Material/Size:			
Comments: So	ome flow surgin	g occurre	ed	Comme	Comments:			
Flow (% full): 0% <b>25%</b> 50% 75% 100%			Flow (%	Flow (% full): 0% 25% 50% 75% 100%				
				1				
	Weather			unoff / Inflo	off / Inflow Infiltration			
☐ Heavy Rain ☐ Light Rain ☐			<ul><li>☑ None</li><li>☐ Sheeting</li><li>☐ Ponding</li><li>☐ Inundated</li></ul>			<ul> <li>□ None</li> <li>☑ Stain</li> <li>□ Weeping</li> <li>□ Dripping</li> <li>□ Gushing</li> <li>□ Roots</li> <li>Component:</li> <li>Chimney Cone Wall Bench</li> <li>Channel Pipe Inlet / Outlet</li> </ul>		
					15.6.4	I		
MH Type	Evidence of Surcharge	Debri	is Deposits	Structur	al Defects		Comments	
☐ Concentric ☑ Eccentric ☐ Flat Top ☐ Other	□ No □ Yes Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Chimn Bench	e: mponent: ey Cone Wall Channel Pipe	Chimney Bench Ch	conent: Cone Wall	rungs wer RCP Rise Cone in g	okay condition, couple of re clean, most had buildup er is good condition ood condition n good condition	







Photo 2: MH 99 Casting



Photo 3: MH 99

Photo 4: MH 99, 10" PVC inlet at lower left



TKDA						
Inspector(s):	Date:	Time:		Street:	Cross Street/House #	
ME DP	4/27/2023	3 11:00am	l	In grassy field	Next to standing water, 4 wooden posts	
MH ID#	MH Dia. (	ft) Material		Rim to Bench (ft):	Photo's	
98	4'	☐ Brick ☐ Concre ☐ Polyme ☐ Combi ☐ Other	er	10.35'	through	
	Outlet Pipe	- lm/ \ 11 77'	Clock F	Influent I	•	
Clock Pos: 6	Depth (Rim to	o inv.) 11.77	Clock Pos: 12 Depth (Rim to Inv.) 11.85'			
Pipe ID#:			Pipe ID#			
Material/Size: Concre	te 36"		Material/Size: Concrete 36"			
Comments:	Comments:			Comments:		
Flow (% full): 0% 25% <b>50%</b> 75% 100%			Flow (%	6 full): 0% 25% <b>50%</b>	75% 100%	
Inf	Influent Pipe 2			Influent l	Pipe 3	
Clock Pos:	Depth (Rim to I	nv.)	Clock F	Pos: Depti	n (Rim to Inv.)	
Pipe ID#:			Pipe ID#			
Material/Size:	Material/Size:			Material/Size:		
Comments:			Comments:			
Flow (% full): 0% 25% 50% 75% 100%			Flow (% full): 0% 25% 50% 75% 100%			
Weathe	er		off / Inflo		Infiltration	
☐ Dry		⊠ None		□ None		
☐ Heavy Rain		☐ Sheeting		⊠ Stair		

Weather	Runoff / Inflow	Infiltration
□ Dry ⊠	☑ None	□ None
☐ Heavy Rain ☐	☐ Sheeting	⊠ Stain
□ Light Rain, Cloudy     □	☐ Ponding	☐ Weeping
□ Snow □	☐ Inundated	□ Dripping on W side
☐ Saturated		☐ Gushing
☐ Damp		☐ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	⊠ No	⊠ No	
	☐ Yes	☐ Yes	☐ Yes	Steps in poor condition, lots of buildup
☐ Flat Top	Component:	Describe:	Describe:	RCP Riser is good condition
☐ Other	Chimney			Cone in good condition
	Cone Wall			Casting in okay condition, rusted
	Bench	Component:	Component:	
	Channel Pipe	Chimney Cone Wall	Chimney Cone Wall	
	Inlet / Outlet	Bench Channel Pipe	Bench Channel Pipe	
		Inlet / Outlet	Inlet / Outlet	







Date:	Time:		Street:	Cross Street/House #
4/27/2023	11:45am		In grassy field	4 wooden posts
MH Dia. (ft)	Material		Rim to Bench (ft):	Photo's
4'	□ Polyme	er	13.64'	through
et Pipe			Influent	Pipe 1
Depth (Rim to Inv.) 15.28		Clock P	os: 12 De	pth (Rim to Inv.) 15.27
Pipe ID#:			#	
Material/Size: Concrete 36"		Materia	I/Size: Concrete 36"	
	4/27/2023  MH Dia. (ft)  4'  et Pipe Depth (Rim to Inv.	4/27/2023 11:45am  MH Dia. (ft) Material  □ Brick □ Concre □ Polyme □ Combin □ Other  et Pipe Depth (Rim to Inv.) 15.28	4/27/2023  11:45am  MH Dia. (ft)  Brick  Concrete  Polymer  Combination Other  et Pipe  Depth (Rim to Inv.) 15.28  Clock P  Pipe ID:	4/27/2023  11:45am  In grassy field  MH Dia. (ft)  Brick  Concrete  Polymer Combination Other  13.64'  et Pipe Depth (Rim to Inv.) 15.28  Clock Pos: 12  Depth (Pipe ID#

Outlet Pipe					Influent Pipe 1		
Clock Pos: 6		•	o Inv.) 15.28	Clock Pos: 12	Depth (Rim to Inv.) 15.27		
Pipe ID#:				Pipe ID#			
Material/Size:	Concrete 36"			Material/Size: Conc	rete 36"		
Comments:				Comments:	Comments:		
Flow (% full): 0	0% 25% <b>50%</b> 7	75% 10	0%	Flow (% full): 0% 25	5% <b>50%</b> 75% 100%		
	Influent Pi	pe 2			Influent Pipe 3		
Clock Pos:	Depth	(Rim to I	nv.)	Clock Pos:	Depth (Rim to Inv.)		
Pipe ID#:				Pipe ID#			
Material/Size:				Material/Size:			
Comments:			Comments:				
Flow (% full): 0% 25% 50% 75% 100%		0%	Flow (% full): 0% 25	Flow (% full): 0% 25% 50% 75% 100%			
	Weather		Ru	noff / Inflow	Infiltration		
□ Dry, Cloudy			⊠ None		□ None		
☐ Heavy Rain			☐ Sheeting		⊠ Stain		
☐ Light Rain			☐ Ponding		☐ Weeping		
☐ Snow			☐ Inundated		□ Dripping on W side		
□ Saturated					☐ Gushing		
□ Damp					☐ Roots		
☐ Very Dry					Component:		
					Chimney Cone Wall Bench		
					Channel Pipe Inlet / Outlet		
MH Type	Evidence of	Debr	is Deposits	Structural Defects	Comments		

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	⊠ No	□ No	⊠ No	
	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition, lots of buildup
☐ Flat Top	Component:	Describe: <u>Under steps</u>	Describe:	RCP Riser is good condition
□ Other	Chimney			Cone in good condition
	Cone Wall	Component:		Casting in okay condition, rusted
	Bench	Chimney Cone Wall	Component:	
	Channel Pipe	Bench <b>Channel</b> Pipe	Chimney Cone Wall	
	Inlet / Outlet	Inlet / Outlet	Bench Channel Pipe	
			Inlet / Outlet	



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Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	4/27/2023	1:25pm	In grassy field	3 wooden posts, 1 was laying on the ground
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
		□ Concrete		through
96	4'	☐ Polymer	13.07'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1
Clock Pos: 6 Depth (Rim to Inv.) 14.60'	Clock Pos: 12 Depth (Rim to Inv.) 14.65
Pipe ID#:	Pipe ID#
Material/Size: Concrete 36"	Material/Size: Concrete 36"
Comments:	Comments:
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
☑ Dry, Cloudy 58°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		□ Gushing steady flow from 1st
☐ Damp		joint above inlet pipe
☐ Very Dry		☐ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

МН Туре	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	□ No	⊠ No	
⊠ Eccentric	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition, lots of buildup
☐ Flat Top	Component:	Describe: diaper on	Describe:	RCP Riser is good condition
☐ Other	Chimney Cone Wall	east side and other debris		Cone in good condition Casting in okay condition, rusted
	Bench		Component:	
	Channel Pipe	Component:	Chimney Cone Wall	
	Inlet / Outlet	Chimney Cone Wall	Bench Channel Pipe	
		Bench <b>Channel</b> Pipe	Inlet / Outlet	
		Inlet / Outlet		





Photo 1: MH 96 Rim and Casting

Photo 2: MH 96 Rings and Cone



Photo 3: MH 96



Photo 4: MH 96 Light on the leaking joint

# **T**KDA

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Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	4/27/2023	2:15pm	In woods	4 wooden posts, next to big tree
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
				through
95	4'	☐ Polymer	12.7'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1
Clock Pos: 6 Depth (Rim to Inv.) 14.21'	Clock Pos: 12 Depth (Rim to Inv.) 13.32'
Pipe ID#:	Pipe ID#
Material/Size: Concrete 36"	Material/Size: Concrete 36"
Comments:	Comments:
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
□ Dry	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
⊠ Light Rain, Cloudy	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		⊠ Gushing
□ Damp		⊠ Roots Casting pushed up and
□ Very Dry		rings broken
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	□ No	⊠ No	
⊠ Eccentric	☐ Yes	⊠ Yes	□ Yes	Strong sewer gas smell when first
☐ Flat Top	Component:	Describe: diaper on	Describe:	approached
☐ Other	Chimney	east side and other		Steps in poor condition,
	Cone Wall	<u>debris</u>		RCP Riser is okay condition, very
	Bench		Component:	weathered concrete surface
	Channel Pipe	Component:	Chimney Cone Wall	Cone in okay condition
	Inlet / Outlet	Chimney Cone Wall	Bench Channel Pipe	Casting in okay condition, rusted
		Bench <b>Channel</b> Pipe	Inlet / Outlet	pushed up by roots
		Inlet / Outlet		



Photo 3: MH 95 Weathered Concrete



Photo 4: MH 95 Pushed up Casting and Broken Rings



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/1/2023	8:45am	In woods North of golf course	4 wooden posts next to barbed wire fence
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
94	4'	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	15.22' (Rim 1' above ground)	through

Outlet Pipe		Influent Pipe 1			
Clock Pos: 6 Depth (Rim to	o Inv.) 16.74'	Clock Pos:	12	Depth (Rim to Inv.) 16.53'	
Pipe ID#:		Pipe ID#			
Material/Size: Concrete 36"		Material/Size	e: Concre	ete 36"	
Comments:		Comments:			
Flow (% full): 0% 25% <b>50%</b> 75% 100	0%	Flow (% full)	: 0% 25	% <b>50%</b> 75% 100%	
Influent Pipe 2			Ir	nfluent Pipe 3	
Clock Pos: Depth (Rim to I	nv.)	Clock Pos:		Depth (Rim to Inv.)	
Pipe ID#:		Pipe ID#			
Material/Size:		Material/Size	e:		
Comments:		Comments:			
Flow (% full): 0% 25% 50% 75% 100%		Flow (% full): 0% 25% 50% 75% 100%			
Weather	Run	off / Inflow		Infiltration	
D. D	N N I - I - I			□ Name	

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy, sunny	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
☐ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		□ Gushing on N wall over inlet
☐ Damp		pipe
☐ Very Dry		☐ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	□ No	□ No	
	☐ Yes	⊠ Yes	⊠ Yes	Steady stream of water gushing in and
☐ Flat Top	Component:	Describe: build up	Describe: <u>leaking joint</u>	also running down N wall
☐ Other	Chimney Cone Wall	on North wall	between barrel sections Component:	Steps in poor condition, RCP Riser in poor condition, buildup
Steps 3:00 Clock Position	Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Chimney Cone <b>Wall</b> Bench Channel Pipe Inlet / Outlet	on walls Cone in poor condition Casting in okay condition, rusted





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/1/2023	9:30am	Next to trees between 2 fairways	N end of golf course
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
93	4'	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	19.56 (Rim 2.1' above ground)	through

Outlet Pipe	Influent Pipe 1
Clock Pos: 6 Depth (Rim to Inv.) 21.07'	Clock Pos: 12 Depth (Rim to Inv.) 20.93'
Pipe ID#:	Pipe ID#
Material/Size: Concrete 36"	Material/Size: Concrete 36"
Comments:	Comments:
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 45 <sup>0</sup>	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain 12:00 position
□ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
☐ Damp		⊠ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	⊠ No	□ No	⊠ No	
⊠ Eccentric	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe: build up	Describe:	RCP Riser in poor condition, buildup
☐ Other	Chimney	on bottom step		on walls
	Cone Wall		Component:	Cone in poor condition
Steps 3:00	Bench	Component:	Chimney Cone Wall	Casting in okay condition, rusted
Clock Position	Channel Pipe	Chimney Cone	Bench Channel Pipe Inlet	
Old dit i delileri	Inlet / Outlet	Wall Bench	/ Outlet	
		Channel Pipe Inlet		
		/ Outlet		







Material/Size:

Flow (% full): 0% 25% 50% 75% 100%

Comments:

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#### MH ASSESSMENT FORM

TKDA						
Inspector(s):	Date:	Time:		Street:		Cross Street/House #
ME DP	5/1/2023	10:20am	ı	Next to trees		North of Hole 12 tee box
MH ID#	MH Dia. (ft)	Material		Rim to Benc	h (ft):	Photo's
92	4'	☐ Brick ☐ Concre ☐ Polym ☐ Combi ☐ Other	er	19.54'		through
Outl	ot Pino			In	fluent F	Pine 1
Clock Pos: 6 Depth (Rim to Inv.) 21.07'		Clock Pos: 12 Depth (Rim to Inv.) 21.19				
Pipe ID#:			Pipe ID	#		
Material/Size: Concrete 3	6"		Material/Size: Concrete 36"			
Comments:		Comments:				
Flow (% full): 0% 25% <b>50%</b> 75% 100%		Flow (% full): 0% 25% <b>50%</b> 75% 100%				
Influe	nt Pipe 2			In	fluent F	Pipe 3
Clock Pos: De	epth (Rim to Inv.)		Clock F	os:	Depth	Rim to Inv.)
Pipe ID#:			Pine ID	#		

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 48 <sup>0</sup>	⊠ None	□ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain lower barrel sections
□ Light Rain	☐ Ponding	
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		⊠ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

Material/Size:

Flow (% full): 0% 25% 50% 75% 100%

Comments:

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
☐ Concentric	⊠ No	□ No	⊠ No	
	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe: build up	Describe:	RCP Riser in poor condition, buildup
☐ Other	Chimney	<u>under steps</u>		on walls
	Cone Wall		Component:	Cone in poor condition
Steps 3:00	Bench	Component:	Chimney Cone Wall	Casting in okay condition, rusted
Clock Position	Channel Pipe	Chimney Cone	Bench Channel Pipe Inlet	
	Inlet / Outlet	Wall Bench	/ Outlet	
		Channel Pipe Inlet		
		/ Outlet		







Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/1/2023	11:11am	West of Hole 14 green	South of hole 15 tee
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick ☐ Concrete		through
91	4'	☐ Polymer	18.31'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6 Depth (Rim to Inv.) 19.89'	Clock Pos: 12 Depth (Rim to Inv.) 19.78'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 49 <sup>0</sup>	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	
☐ Light Rain	☐ Ponding	
☐ Snow	☐ Inundated	☑ Dripping Steps side
☐ Saturated		☐ Gushing
□ Damp		⊠ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	⊠ No	⊠ No	⊠ No	
	☐ Yes	☐ Yes	□ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe:	Describe:	RCP Riser in poor condition, buildup
☐ Other	Chimney	<u></u>		on walls
-	Cone Wall	Component:	Component:	Cone in poor condition
Steps 3:00	Bench	Chimney Cone Wall	Chimney Cone Wall	Casting in okay condition, rusted
Clock Position	Channel Pipe	Bench <b>Channel</b> Pipe	Bench Channel Pipe Inlet	
0.00.00	Inlet / Outlet	Inlet / Outlet	/ Outlet	





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/1/2023	11:55am	In woods	4 wooden posts (West of 14th Fairway)
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		□ Brick		th was a sele
00	4,	⊠ Concrete	40.00	through
90	4'	□ Polymer	16.99'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 4:30 Depth (Rim to Inv.) 18.56'	Clock Pos: 12 Depth (Rim to Inv.) 18.14'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 51 <sup>0</sup>	⊠ None	□ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain lower barrel sections
□ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☑ Dripping Above inlet and outlet
☐ Saturated		pipes
□ Damp		☐ Gushing
☐ Very Dry		☐ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

МН Туре	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	⊠ No	□ No	⊠ No	
	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe: <u>Next to</u>	Describe:	RCP Riser in okay
	Chimney Cone	outlet pipe		condition, buildup on
bottom barrel	Wall Bench	Component:	Component:	walls, Cone in okay condition
section	Channel Pipe	Chimney Cone Wall	Chimney Cone Wall Bench	Casting in okay condition,
	Inlet / Outlet	Bench <b>Channel</b> Pipe	Channel Pipe Inlet / Outlet	,
Steps 9:00 Clock		Inlet / Outlet		rusted
Position				



Photo 3: MH 90





Photo 4: MH 90 Image Capture from 360<sup>o</sup> Camera, Showing inlet pipe on left and outlet pipe on right



Comments:

Flow (% full): 0% 25% 50% 75% 100%

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#### MH ASSESSMENT FORM

TKDA					
Inspector(s):	Date:	Time:		Street:	Cross Street/House #
ME DP	5/1/2023	1:35pm		Right side of 14th Fairway (East)	Flush with grass
MH ID#	MH Dia. (ft)	Material		Rim to Bench (ft):	Photo's
89A	4' upper, Larger bottom section	☐ Brick ☐ Concre ☐ Polyme ☐ Combin	ər	16.84'	through
		•			
Outle	et Pipe		Influent Pipe 1		
Clock Pos: 6:00	Depth (Rim to Ir	าง.) 18.64'	Clock Pos: 11 Depth (Rim to Inv.) 18.65'		
Pipe ID#:			Pipe ID#		
Material/Size: Concrete 36	)"		Material/Size: Concrete 36"		
Comments:			Comments:		
Flow (% full): 0% 25% <b>5</b> 0	<b>%</b> 75% 100%		Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe 2			Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)			Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:			Pipe ID#		
Material/Size:			Material/Size:		

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 53°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	
☐ Light Rain	☐ Ponding	
☐ Snow	☐ Inundated	□ Dripping Across from steps
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

Comments:

Flow (% full): 0% 25% 50% 75% 100%

MH Type	Evidence of	Debris	Structural Defects	Comments
	Surcharge	Deposits		
□ Concentric	⊠ No	□ No	⊠ No	
	☐ Yes	⊠ Yes	☐ Yes	Steps in poor condition 2:30
☐ Flat Top	Component:	Describe:	Describe:	position,
Other larger	Chimney Cone	<u>under steps</u>		RCP Riser in okay condition,
bottom barrel	Wall Bench	Component:	Component:	buildup on walls,
section	Channel Pipe	Chimney Cone	Chimney Cone Wall Bench	Cone in okay condition Casting in okay condition,
	Inlet / Outlet	Wall <b>Bench</b>	Channel Pipe Inlet / Outlet	,
Steps 9:00		Channel Pipe		rusted
Clock Position		Inlet / Outlet		











Photo 4: MH 89A Image Capture from 360<sup>o</sup> Camera, Showing inlet pipe and stained walls



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/1/2023	2:20pm	Left side of 14th tee (West)	Surrounded by tall grass
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
89	4' upper, Larger bottom section	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	17.26'	through

Outlet Pipe			Inf	luent Pipe 1
Clock Pos: 7:30 Depth (F	Rim to Inv.) 19.44'	Clock Pos:	12:30	Depth (Rim to Inv.) 19.45'
Pipe ID#:		Pipe ID#		
Material/Size: Concrete 36"		Material/Size	e: Concrete	e 36"
Comments:		Comments:		
Flow (% full): 0% 25% <b>50%</b> 75%	100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe	2		Inf	luent Pipe 3
Clock Pos: Depth (Rin	n to Inv.)	Clock Pos:		Depth (Rim to Inv.)
Pipe ID#:		Pipe ID#		
Material/Size:		Material/Size	<b>e</b> :	
Comments:		Comments:		
Flow (% full): 0% 25% 50% 75%	100%	Flow (% full)	: 0% 25%	50% 75% 100%

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy 22 mph, sunny 53°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	Stain lower barrel section
☐ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☑ Dripping Under steps
☐ Saturated		⊠ Gushing
☐ Damp		□ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	□ No	⊠ No	□ No	Steps in poor condition,
⊠ Eccentric	⊠Yes	⊠ Yes	⊠ Yes	RCP Riser in poor
☐ Flat Top	Component:	Describe:	Describe: <u>Concrete</u>	
	Chimney		Spalling on wall above inlet	condition, milky like
larger bottom barrel section	Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone <b>Wall</b> Bench Channel Pipe Inlet / Outlet	substance on walls, Cone in okay condition Casting in okay condition, rusted
Steps 4:00 Clock Position				





Photo 1: MH 89 Rim and Cover

Photo 2: MH 89 Rim and Casting



Photo 3: MH 89



Photo 4: MH 89 Image Capture from 360<sup>o</sup> Camera, Showing inlet pipe, concrete spalling and stained walls



☐ Concentric

☐ Eccentric

☐ Flat Top

☐ Other

□ No

☐ Yes

Component:

Chimney Cone

Wall Bench

**Channel Pipe** 

Inlet / Outlet

444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400 **tkda.com** 

#### MH ASSESSMENT FORM

TKDA					1		
Inspector(s):	Da	te:	Time:		Street:	Cross Street/House #	
ME DP	5/1	/2023	3:00pm		South side of 190	Oth West of 5611 190th St	
MH ID#	MH	l Dia. (fi	t) Material		Rim to Bench (f	t): Photo's	
88 (Did Not Ins	spect)		☐ Brick ☐ Concre ☐ Polym ☐ Combi ☐ Other	er		through	
	Outlet Pip				Influe	nt Pipe 1	
Clock Pos:	Depth (Rim			Clock F		Rim to Inv.)	
Pipe ID#:				Pipe ID	#		
Material/Size:				Materia	I/Size:		
Comments:				Comments:			
Flow (% full): 0	Flow (% full): 0% 25% 50% 75% 100%				Flow (% full): 0% 25% 50% 75% 100%		
	Influent Pip			Influent Pipe 3			
Clock Pos:	Depth (F	Rim to Ir	ıv.)	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:				Pipe ID#			
Material/Size:				Material/Size:			
Comments:				Comments:			
Flow (% full): 0	% 25% 50% 75	5% 100	%	Flow (% full): 0% 25% 50% 75% 100%			
	No othor		Dive	aff / lafta		lufiliusti sus	
	Weather		□ None	off / Inflow		Infiltration  None	
│ ⊠ Dry, windy 22 │ □ Heavy Rain	mpn, sunny 55°		☐ Sheeting			Stain	
☐ Light Rain			☐ Ponding		Veeping		
☐ Snow				□ Dripping			
☐ Saturated						Gushing	
☐ Damp						Roots	
□ Very Dry						Component:	
						nney Cone Wall Bench Channe Inlet / Outlet	
	Τ=			T -			
MH Type	Evidence of Surcharge	Debi	ris Deposits	Stru	ctural Defects	Comments	

□ No

☐ Yes

Describe: \_

Component:

Chimney Cone Wall Bench

Channel Pipe Inlet / Outlet

Did not inspect.

metal detector.

on it.

Per Homeowner there is

Just a post with manhole

no top structure here.

Could not locate with

□ No

☐ Yes

Describe: \_

Component:

Chimney Cone Wall

Bench Channel Pipe

Inlet / Outlet



Photo 1: Manhole sign, but no top structure per homeowner



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/2/2023	8:50am	In grassy field	South of 190th St, 3 wooden posts
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
87	4'	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	15.79'	through

Outlet Pipe	Influent Pipe 1			
Clock Pos: 6:00 Depth (Rim to Inv.) 17.30'	Clock Pos: 12:00 Depth (Rim to Inv.) 17.42'			
Pipe ID#:	Pipe ID#			
Material/Size: Concrete 36"	Material/Size: Concrete 36"			
Comments:	Comments:			
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%			
Influent Pipe 2	Influent Pipe 3			
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:	Pipe ID#			
Material/Size:	Material/Size:			
Comments:	Comments:			
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%			

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy, sunny 43°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
☐ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	□ Dripping At joint behind steps
☐ Saturated		☐ Gushing
☐ Damp		□ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric ☐ Eccentric ☐ Flat Top ☐ Other  Steps 3:00 Clock Position	□ No □ Yes Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	□ No □ Yes Describe: under steps Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	No     ☐ Yes     Describe:      Component:     Chimney Cone Wall Bench     Channel Pipe Inlet / Outlet	Standing water around structure, grass was wet Steps in poor condition, RCP Riser in poor condition, milky like substance on walls, Cone in okay condition Casting in okay condition, rusted







Inspector(s):	Date:	Time:		Street:		Cross Street/House #
ME DP	5/2/2023	9:30am			d	SW of Grey house South of 190th St, 2 wooden posts (2 laying on the ground)
MH ID#	MH Dia. (f	t) Material		Rim to Bend	h (ft):	Photo's
86	4'	☐ Brick ☐ Concre ☐ Polyme ☐ Combin ☐ Other	er	17.68'	(14)1	through
Outlet Pipe Influent Pipe 1						Pipe 1
				os: 12:00		oth (Rim to Inv.) 19.69'
Pipe ID#:			Pipe ID:	#		
Material/Size: Concrete 36	"		Materia	I/Size: Concre	te 36"	
Comments:	Comments:			Comments:		
Flow (% full): 0% 25% <b>50</b>	<b>%</b> 75% 100	%	Flow (% full): 0% 25% <b>50%</b> 75% 100%			
Influer	nt Pipe 2		Influent Pipe 3			
Clock Pos: De	pth (Rim to Ir	ıv.)	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:			Pipe ID#			
Material/Size:			Material/Size:			
Comments:			Comments:			
Flow (% full): 0% 25% 50	% 75% 100	%	Flow (% full): 0% 25% 50% 75% 100%			
Weather			off / Inflo	W		Infiltration
☑ Dry, windy, sunny 46°		⊠ None			☐ None	
☐ Heavy Rain ☐ Sheeting				Stain     Weer     Weer     Weer     Weer     Note    Note		
☐ Light Rain ☐ Snow		<ul><li>□ Ponding</li><li>□ Inundated</li></ul>			☐ Weep	ing <b>At joint behind steps</b>
☐ Saturated		_ munuated			☐ Gush	
☐ Damp					☐ Roots	<u> </u>
☐ Very Dry						Component:
, ,						/ Cone <b>Wall</b> Bench
					Channel	Pipe Inlet / Outlet

МН Туре	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	□ No	⊠ No	⊠ No	
	⊠ Yes	⊠ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe	Describe:	RCP Riser in poor
□ Other	Chimney			condition, milky like
Steps 3:00 Clock Position	Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall <b>Bench</b> Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	substance on walls, Cone in okay condition Casting in okay condition, rusted





Photo 5: MH 86 Image Capture from 360<sup>o</sup> Camera, Showing stained walls and dripping coming the steps



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/2/2023	10:00am	In woods (about 6')	South of grey house grass field
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
				through
85	4'	☐ Polymer	23.56'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6:00 Depth (Rim to Inv.) 25.18'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.12'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration	
☑ Dry, windy, sunny 49°	⊠ None	☐ None	
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>	
□ Light Rain	☐ Ponding	⊠ Weeping <b>on upper East Side</b>	
☐ Snow	☐ Inundated	☐ Dripping	
☐ Saturated		☐ Gushing	
☐ Damp		□ Roots	
☐ Very Dry		Component:	
		Chimney Cone Wall Bench	
		Channel Pipe Inlet / Outlet	

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
☐ Concentric	⊠ No	⊠ No	⊠ No	
	☐ Yes	☐ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe	Describe:	RCP Riser in poor
☐ Other	Chimney Cone			condition, milky like
Steps 3:00 Clock Position	Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	substance on walls, Cone in poor condition Casting in okay condition, rusted







Inchestor(s):	Date:	Time:	Street:	Cross Street/House #
Inspector(s):	Date.	i iiile.	Street.	Cross Street/House #
ME DP	5/2/2023	11:50am	In clearing in woods	4 wooden posts
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
				through
84	4'	□ Polymer	23.23'	
		☐ Combination		
		□ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6:00 Depth (Rim to Inv.) 24.85'	Clock Pos: 12:00 Depth (Rim to Inv.) 24.84'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy, sunny 53°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
□ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	□ Inundated	☑ Dripping under steps at joint
☐ Saturated		☐ Gushing
□ Damp		□ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	⊠ No	⊠ No	Cover .5' above grade
⊠ Eccentric	☐ Yes	☐ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe	Describe:	RCP Riser in poor
☐ Other	Chimney Cone			condition, milky like
Steps 3:00 Clock Position	Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	substance on walls, Cone in poor condition Casting in okay condition, rusted







Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/2/2023	12:35pm	In clearing in woods	Surrounded by trees 4 wooden posts
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
83	4'	☐ Brick ☑ Concrete ☐ Polymer ☐ Combination ☐ Other	23.88'	through
	•		•	

Outlet Pipe	Influent Pipe 1
Clock Pos: 6:00 Depth (Rim to Inv.) 25.55'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.55'
Pipe ID#:	Pipe ID#
Material/Size: Concrete 36"	Material/Size: Concrete 36"
Comments:	Comments:
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%
Comments:	Comments:

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy, sunny 54°		☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
□ Light Rain	☐ Ponding standing water to the	⊠ Weeping
☐ Snow	West of the structure, but not at the	☑ Dripping under steps above
☐ Saturated	structure when inspected	cone/barrel joint
☐ Damp	☐ Inundated	☐ Gushing
☐ Very Dry		□ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric ☐ Eccentric ☐ Flat Top ☐ Other  Steps 3:00 Clock Position	□ No □ Yes Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	No	No	Cover 2.07' above grade. Lots of sewer gas when cover removed Steps in poor condition, RCP Riser in poor condition, Cone in poor condition Casting in okay condition, rusted





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Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/2/2023	1:20pm	In clearing in woods	4 wooden posts Barbed wire to the West
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
82	4'	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	23.90'	through

Outlet Pipe	Influent Pipe 1			
Clock Pos: 6:00 Depth (Rim to Inv.) 25.56'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.53'			
Pipe ID#:	Pipe ID#			
Material/Size: Concrete 36"	Material/Size: Concrete 36"			
Comments:	Comments:			
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%			
Influent Pipe 2	Influent Pipe 3			
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:	Pipe ID#			
Material/Size:	Material/Size:			
Comments:	Comments:			
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%			

Weather	Runoff / Inflow	Infiltration
☑ Dry, windy, sunny 55°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	Stain walls
□ Light Rain	☐ Ponding standing water to the	⊠ Weeping
☐ Snow	West of the structure, but not at the	□ Dripping
☐ Saturated	structure when inspected	⊠ Gushing Between barrel
□ Damp	☐ Inundated	sections, heavy flow
☐ Very Dry		☐ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	⊠ No	⊠ No	Cover 1.86' above grade.
⊠ Eccentric	☐ Yes	☐ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top ☐ Other	Component: Chimney Cone	Describe	Describe:	RCP Riser in poor condition and very weathered,
Steps 3:00 Clock Position	Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Cone in poor condition Casting in okay condition, rusted.





Photo 5: MH 82 Image Capture from 360<sup>0</sup> Camera, Showing stained, wet walls. The red circle shows where water is gushing is as infiltration

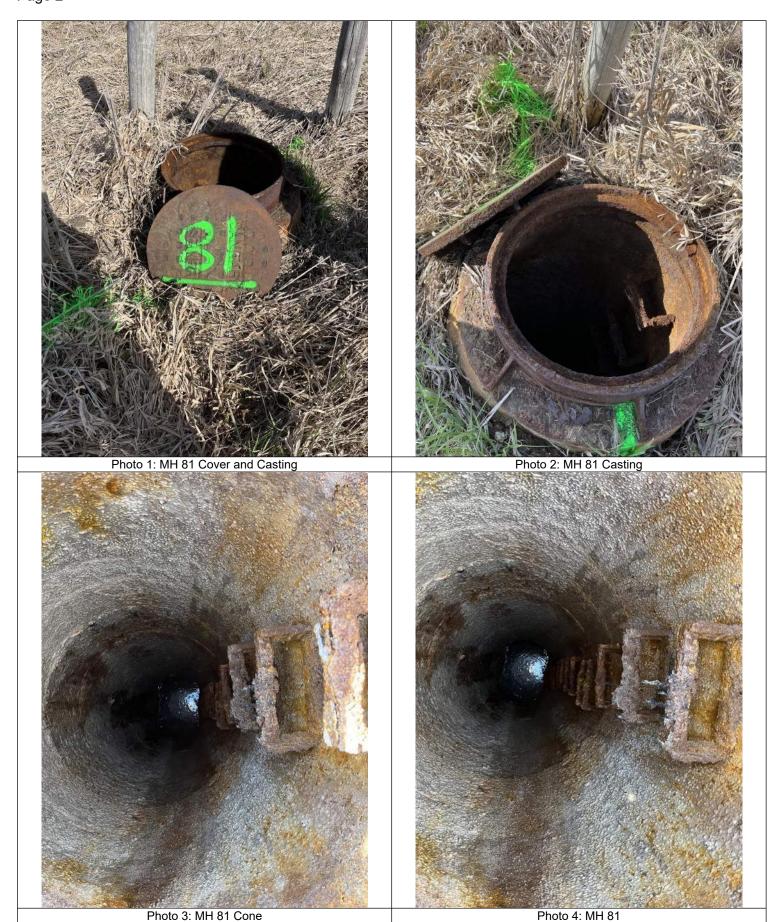


Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/3/2023	9:15am	In grassy area	4 wooden posts
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
		□ Concrete		through
81	4'	☐ Polymer	22.82'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6:00 Depth (Rim to Inv.) 24.54'	Clock Pos: 12:00 Depth (Rim to Inv.) 24.68'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% <b>25%</b> 50% 75% 100%	Flow (% full): 0% <b>25%</b> 50% 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Pipe ID#: Material/Size:	Pipe ID# Material/Size:		
•	!		
Material/Size:	Material/Size:		

Weather	Runoff / Inflow	Infiltration
☑ Dry, sunny 49°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
☐ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		□ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

МН Туре	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	□ No	⊠ No	Cover 1.37' above grade.
	☐ Yes	⊠ Yes	□ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe: under	Describe:	RCP Riser in poor
☐ Other	Chimney Cone	<u>steps</u>		condition,
Steps 9:00 Clock Position	Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall <b>Bench</b> Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Cone in poor condition Casting in okay condition, rusted.





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444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400

Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/3/2023	10:00am	In tall grassy area	4 wooden posts
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
		⊠ Concrete		through
80	4'	☐ Polymer	23.69'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6:00 Depth (Rim to Inv.) 25.32'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.33'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% <b>25%</b> 50% 75% 100%	Flow (% full): 0% <b>25%</b> 50% 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry, sunny 57°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	Stain walls, milky substance
☐ Light Rain	☐ Ponding	⊠ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		□ Roots
□ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
□ Concentric	□ No	□ No	⊠ No	Cover .87' above grade.
	⊠ Yes	⊠ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe: across	Describe:	RCP Riser in poor
☐ Other	Chimney	from steps		condition,
Steps 9:00 Clock Position	Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall <b>Bench</b> Channel <b>Pipe Inlet</b> / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Cone in poor condition Casting in okay condition, rusted.







Inspector(s):	Date:	Time:	Street:	Cross Street/House #
				3 wooden posts
ME DP	5/3/2023	10:45am	Row of small trees	1 post laying on ground
				NW of tan pole shed
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'		24.17'	through
79		☐ Polymer		
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6:00 Depth (Rim to Inv.) 25.92'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.65'		
Pipe ID#:	Pipe ID#		
Material/Size: Concrete 36"	Material/Size: Concrete 36"		
Comments:	Comments:		
Flow (% full): 0% <b>25%</b> 50% 75% 100%	Flow (% full): 0% <b>25%</b> 50% 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Matarial/Circ.		
Waterial/0126.	Material/Size:		
Comments:	Comments:		

Weather	Runoff / Inflow	Infiltration
☑ Dry, sunny 58°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
□ Light Rain	☐ Ponding to the west of structure	☐ Weeping
☐ Snow	□ Inundated	☑ Dripping on steps side
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

МН Туре	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
<ul><li>☐ Concentric</li><li>☒ Eccentric</li></ul>	□ No ⊠ Yes	⊠ No ⊠ Yes	⊠ No □ Yes	Cover at grade. Steps in poor condition,
□ Flat Top □ Other	Component: Chimney Cone Wall	Describe: Component:	Describe: Component:	RCP Riser in poor condition, Cone in poor condition
Steps 9:00 Clock Position	Bench Channel Pipe Inlet / Outlet	Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Casting in okay condition, rusted.







Inspector(s):	Date:	Time:	Street:	Cross Street/House #
				4 wooden posts
ME DP	5/3/2023	11:30am	In woods	West of brown house
				with long driveway
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
				through
78	4'	☐ Polymer	24.70'	
		□ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1			
Clock Pos: 6:00 Depth (Rim to Inv.) 26.28'	Clock Pos: 12:00 Depth (Rim to Inv.) 25.26'			
Pipe ID#:	Pipe ID#			
Material/Size: Concrete 36"	Material/Size: Concrete 36"			
Comments:	Comments:			
Flow (% full): 0% <b>25%</b> 50% 75% 100%	Flow (% full): 0% <b>25%</b> 50% 75% 100%			
Influent Pipe 2	Influent Pipe 3			
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:	Pipe ID#			
Material/Size:	Material/Size:			
Comments:	Comments:			
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%			

Weather	Runoff / Inflow	Infiltration
⊠ Dry, sunny 60°	⊠ None	□ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
□ Light Rain	☐ Ponding	
☐ Snow	☐ Inundated	□ Dripping on steps side and also
☐ Saturated		above both pipes, higher up
☐ Damp		☐ Gushing
☐ Very Dry		☐ Roots
		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	□ No	⊠ No	⊠ No	Cover .5' above grade.
	⊠ Yes	☐ Yes	☐ Yes	Steps in poor condition,
☐ Flat Top	Component:	Describe:	Describe:	RCP Riser in poor
☐ Other	Chimney			condition,
Steps 3:00 Clock Position	Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Cone in poor condition Casting in okay condition, rusted.





Photo 5: MH 78 Image Capture from 360<sup>o</sup> Camera, Showing stained, wet and milky like substance on walls



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
ME DP	5/4/2023	8:30am	Inside fence of LS 02 in grass	South of 180th Street
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
				through
77A	4'	☐ Polymer	24.70'	
		☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1			
Clock Pos: 4:00 Depth (Rim to Inv.) Could	Clock Pos: 11:30 Depth (Rim to Inv.) 24.86'			
not measure				
Pipe ID#:	Pipe ID#			
Material/Size: Concrete 36"	Material/Size: Concrete 36"			
Comments: too far away from MH cover to measure	Comments:			
Flow (% full): 0% 25% <b>50%</b> 75% 100%	Flow (% full): 0% 25% <b>50%</b> 75% 100%			
Influent Pipe 2	Influent Pipe 3			
Clock Pos:7:00 Depth 13.31' to top of pipe	Clock Pos: Depth (Rim to Inv.)			
Pipe ID#:	Pipe ID#			
Material/Size: PVC 4" or 6"	Material/Size:			
Comments: Could not determine where it was coming from	Comments:			
Flow (% full): 0% less than 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%			

Weather	Runoff / Inflow	Infiltration
⊠ Dry, sunny 61°	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain <b>walls</b>
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		Component:
		Chimney Cone Wall Bench
		Channel Pipe Inlet / Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
<ul><li>☐ Concentric</li><li>☒ Eccentric</li></ul>	□ No ⊠ Yes	⊠ No □ Yes	⊠ No □ Yes	Cover at grade. Steps in poor condition,
☐ Flat Top ☐ Other  Steps 9:00 Clock Position	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Describe: Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Describe: Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	RCP Riser in poor condition, Cone in poor condition Casting in okay condition, rusted.



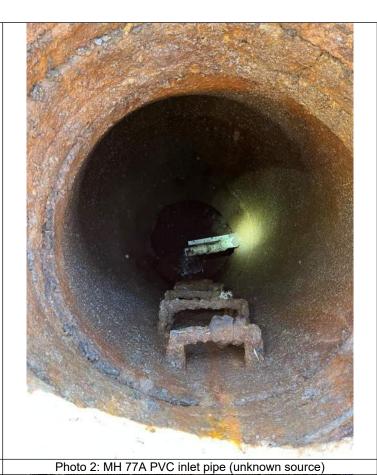


Photo 1: MH 77A Cover and Casting



Photo 3: MH 77A



Photo 4: MH 77A Looking North at 180th Street





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TKDA								
Inspector(s):	Da	ate:	Time:		Street:		Cross Street/House #	
ME DP	5/-	4/2023	8:00am		180th Street		NW of Lift Station 02	
MH ID#	М	H Dia. (	ft) Material		Rim to Benc	h (ft):	Photo's	
77 (Did Not Ins			☐ Brick ☐ Concrete ☐ Polymer ☐ Combination ☐ Other				through	
	Outlet Pi			ļ		fluent		
Clock Pos:	Depth (Rim	to Inv.)		Clock P	os: Dep	oth (Rir	n to Inv.)	
Pipe ID#:				Pipe ID:	#			
Material/Size:				Materia	I/Size:			
Comments:				Comme	ents:			
Flow (% full): 0	% 25% 50% 7	75% 100	0%	Flow (%	full): 0% 25%	6 50%	75% 100%	
	Influent Pi	pe 2		Influent Pipe 3				
Clock Pos:	Depth (	Rim to I	nv.)	Clock Pos: Depth (Rim to Inv.)				
Pipe ID#:				Pipe ID#				
Material/Size:				Materia	Material/Size:			
Comments:				Comme	ents:			
Flow (% full): 0	% 25% 50% 7	75% 100	0%	Flow (%	full): 0% 25%	6 50%	75% 100%	
				1				
	Veather			off / Inflow Infiltration				
□ Dry, sunny 61	0		None			□ None		
☐ Heavy Rain			☐ Sheeting			☐ Stain		
☐ Light Rain			☐ Ponding			☐ Weeping		
☐ Snow			│	☐ Inundated		☐ Dripping		
☐ Saturated					☐ Gushing			
□ Damp					Roots			
□ Very Dry					Component: Chimney Cone Wall Bench Chann			
							let / Outlet	
MILTura	Fuidance of	Dak	wie Democite	C4	atural Dafa ata	. 1	Comments	
MH Type	Evidence of Surcharge	Dec	oris Deposits	Stru	ctural Defects		Comments	
☐ Concentric	□ No	□ No		□No				
□ Eccentric	☐ Yes	☐ Yes	S	☐ Yes			Did not inspect.	
☐ Flat Top	Component:		ibe:	Describe	:		Buried under 6" of gravel	
☐ Other	Chimney Cone						per MCES Operator.	
	Wall Bench Component:		Component:  Chimney Cone Wall Bench up with more gravel.		I			
	Channel Pipe Chimney Cone Wall		Chimney Cone Wall Bench up with more gravel.  Channel Pipe Inlet / Outlet		ap with more gravel.			
	Inlet / Outlet Bench Channel Pipe Inlet / Outlet		Chaillei Fipe Illiet / Outlet					

Forest Lake Interceptor 7029

Analysis and Field Inspection Report



Photo 1 – MH 78 Cone Section Wall Condition – Growth Removed



Photo 2 – MH 78 Steps

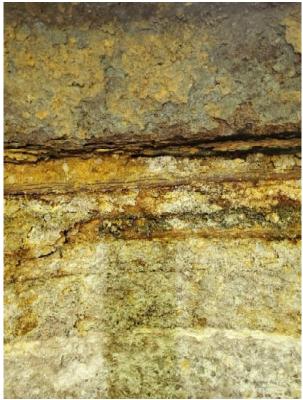


Photo 3 – MH 78 Rings

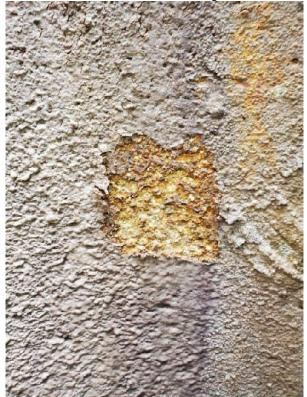


Photo 4 – MH 80 Top Riser Section Wall Condition – Growth Removed



Photo 5 – MH 80 Steps



Photo 6 - MH 80 Wall Condition



Photo 7 - MH 80 Growth at Riser Joint



Photo 8 – MH 80 Wall Condition at Riser Joint – Growth Removed



Photo 9 – MH 80 Mineral Buildup



Photo 10 – Interceptor Pipe Looking North at MH 80



Photo 11 - MH 80 Bottom Section Looking South



Photo 12 – MH 89 Wall Condition



Photo 13 - MH 89 Wall Condition - Growth Removed



Photo 14 - MH 89 Wall Condition - Exposed Rebar



Photo 15 – MH 89 Doghouse Ceiling



Photo 16 – MH 89 Wall Condition



Photo 17 - MH 92 Wall Condition



Photo 18 – MH 92 Wall Condition at Interceptor Pipe



Photo 19 – Interceptor Pipe Looking North at MH 92



Photo 20 – MH 98 Steps

### Appendix B – Maintenance Hole Physical Inspection Photographs

Forest Lake Interceptor 7029 Analysis and Field Inspection Report 5/25/2023



Photo 21 - MH 98 Wall Condition



Photo 22 – MH 98 Wall Condition – Growth Removed

Appendix B – Maintenance Hole Physical Inspection Photographs

Forest Lake Interceptor 7029 Analysis and Field Inspection Report 5/25/2023



Photo 23 – MH 98 Infiltration Buildup

Photo 24 - MH 98 Wall Condition at Interceptor Pipe

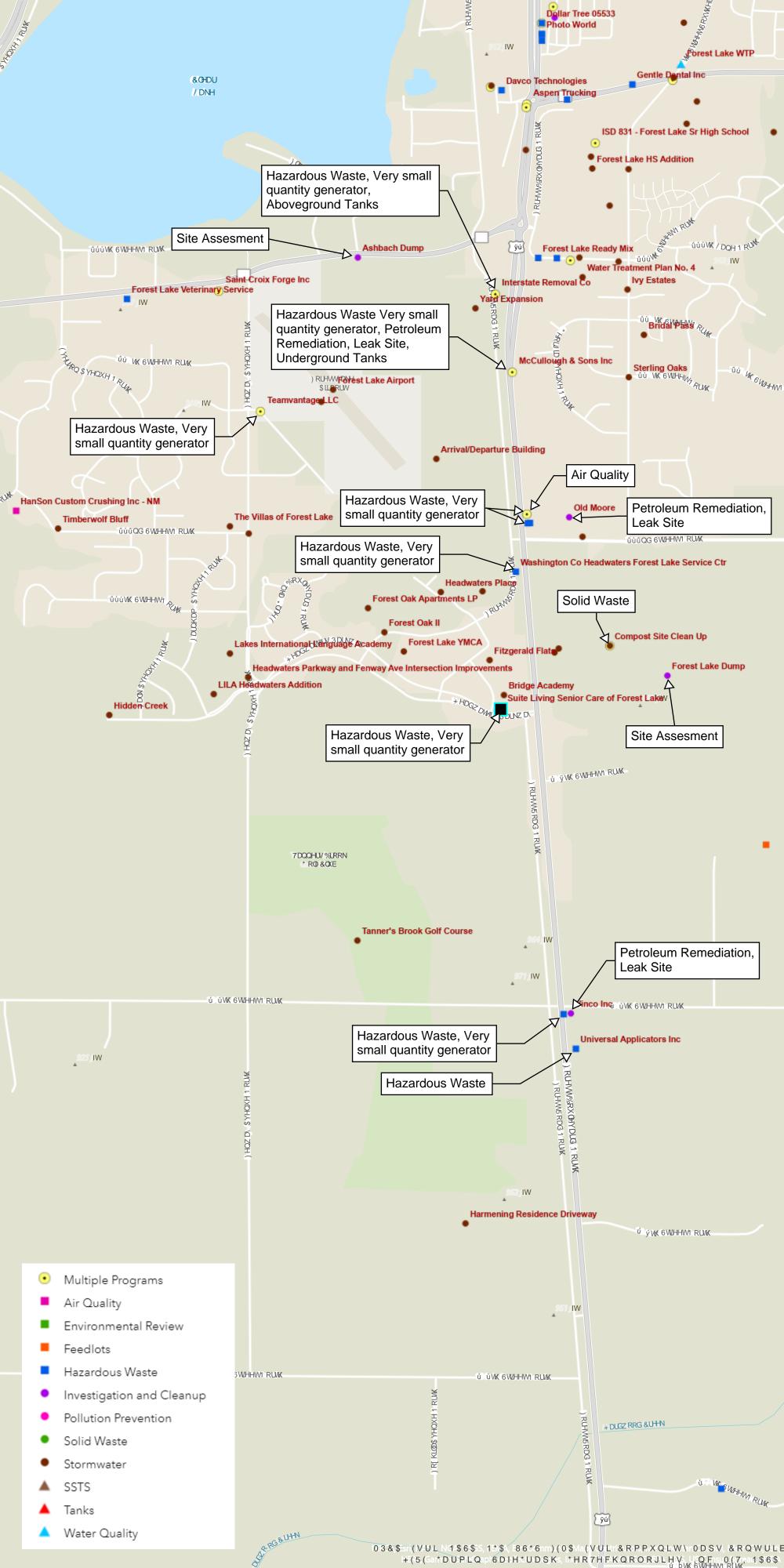
### Appendix B – Maintenance Hole Physical Inspection Photographs

Forest Lake Interceptor 7029 Analysis and Field Inspection Report 5/25/2023





Photo 26 – Interceptor Pipe Looking South at MH 98



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Spatial Reference System Division National Geodetic Survey, NOAA Silver Spring Metro Center 1315 East-West Highway Silver Spring, Maryland 20910 (301) 713-3191

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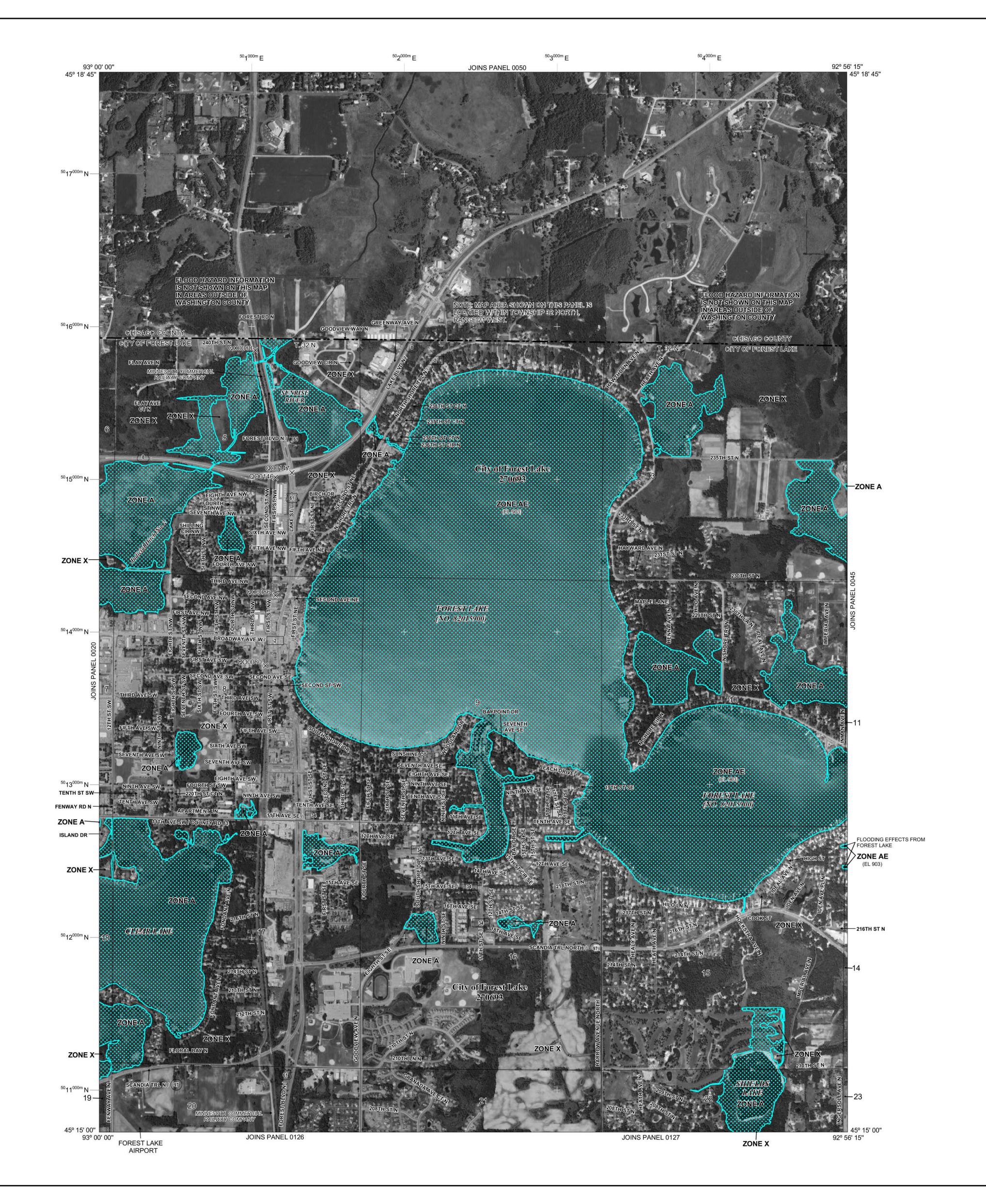
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### LEGEND

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 Base Flood Elevations determined.

Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations

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.

NE 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.

Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

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

OTHER FLOOD AREAS

ZONE V

**ZONE X** 

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

Areas determined to be outside the 0.2% annual chance floodplain.

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.

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 Cross section line

23)----- (23) Tr 45° 02' 08", 93° 02' 12" Ge 19

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

02' 08", 93° 02' 12" G
15

4989<sup>000m</sup> N 10

ML5510 × B
pi

M1.5 R

1000-meter Universal Transverse Mercator grid values, zone 15

Bench mark (see explanation in Notes to Users section of this FIRM panel)

River Mile

MAP REPOSITORIES
Refer to listing of Map Repositories on Map Index
EFFECTIVE DATE OF COUNTYWIDE

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

FEBRUARY 3, 2010

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METERS
300 0 300 600

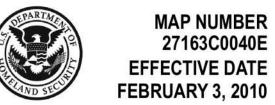
PANEL 0040E

# FIRM FLOOD INSURANCE RATE MAP WASHINGTON COUNTY, MINNESOTA AND INCORPORATED AREAS PANEL 40 OF 456 (SEE MAP INDEX FOR FIRM PANEL LAYOUT) CONTAINS: COMMUNITY NUMBER PANEL SUFFIX FOREST LAKE, CITY OF 270693 0040 E 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 27163C0040E

Federal Emergency Management Agency



### NOTES TO USERS

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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.

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

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. Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR

> protection from the 1% annual chance or greater flood. Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined. Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

ZONE V

ZONE X

ZONE D

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  $\frac{1}{2}$ mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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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\* Base Flood Elevation value where uniform within zone; elevation in

\*Referenced to the North American Vertical Datum of 1988 A Cross section line

(23)----(23)

Geographic coordinates referenced to the North American Datum of 45° 02' 08", 93° 02' 12" 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator grid values, zone 15 Bench mark (see explanation in Notes to Users section of this FIRM ML5510 \ M1.5 River Mile

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EFFECTIVE DATE OF COUNTYWIDE FEBRUARY 3, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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PANEL 0126E

**FIRM** FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY, **MINNESOTA** AND INCORPORATED AREAS

PANEL 126 OF 456

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY NUMBER PANEL SUFFIX FOREST LAKE, CITY OF 270693 0126 E

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



MAP NUMBER 27163C0126E **EFFECTIVE DATE** 

FEBRUARY 3, 2010 Federal Emergency Management Agency

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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 obtained from the Minnesota Land Management Information Center (LMIC). The orthophotos have a resolution of one meter and are dated 2008.

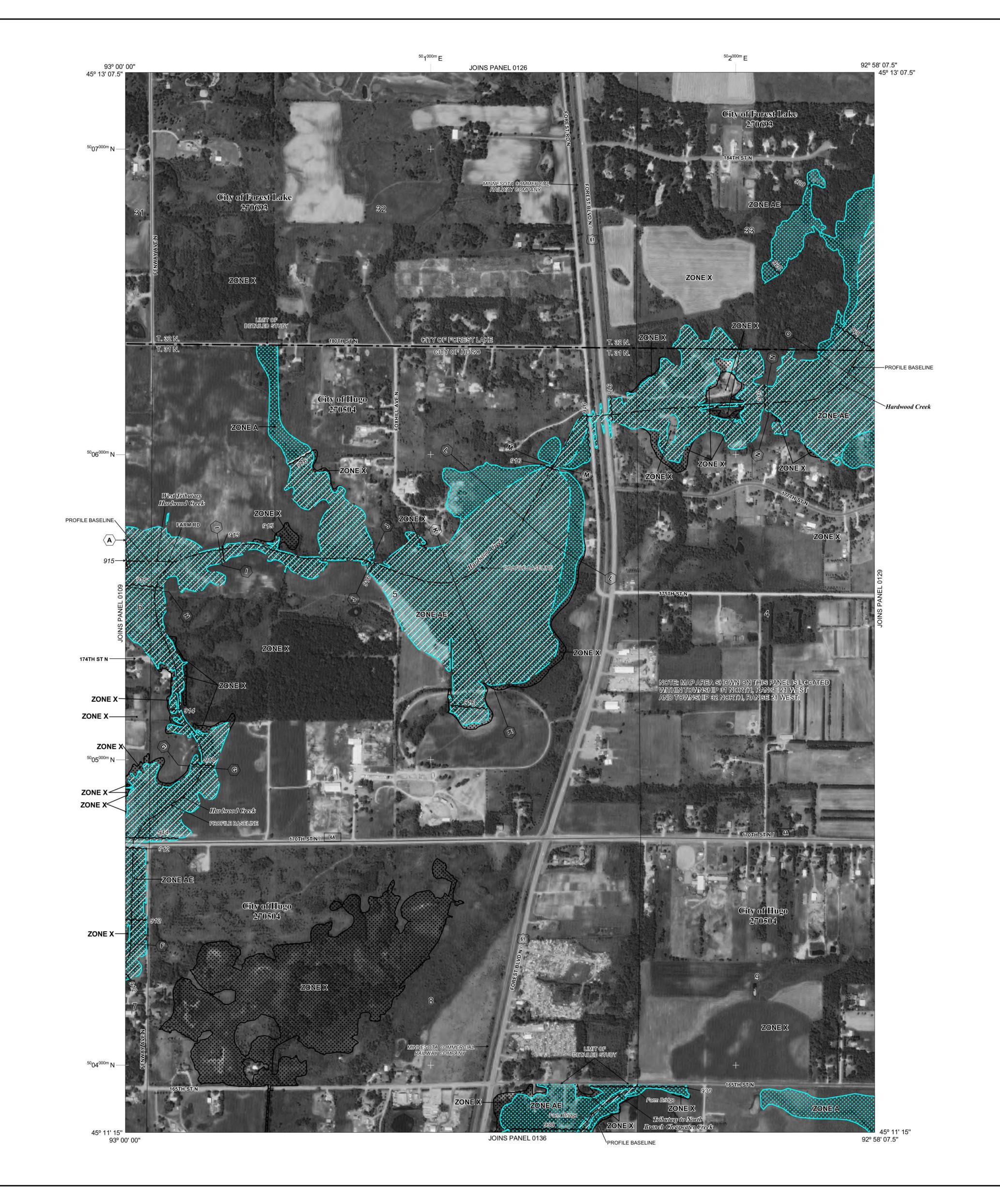
The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the Special Flood Hazard Area.

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

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://www.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 <a href="http://www.fema.gov/business/nfip.">http://www.fema.gov/business/nfip.</a>



**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.

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

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. 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. Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined. Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations

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

OTHER FLOOD AREAS

ZONE V

ZONE X

ZONE D

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  $\frac{1}{2}$ 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. 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\*

Base Flood Elevation value where uniform within zone; elevation in \*Referenced to the North American Vertical Datum of 1988

A Cross section line (23)----(23)

Geographic coordinates referenced to the North American Datum of 45° 02' 08", 93° 02' 12" 1983 (NAD 83), Western Hemisphere 1000-meter Universal Transverse Mercator grid values, zone 15 Bench mark (see explanation in Notes to Users section of this FIRM ML5510 \

M1.5 River Mile

> MAP REPOSITORIES Refer to listing of Map Repositories on Map Index EFFECTIVE DATE OF COUNTYWIDE

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

FEBRUARY 3, 2010

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" = 500'

### PANEL 0128E **FIRM**

FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY, **MINNESOTA** AND INCORPORATED AREAS

PANEL 128 OF 456

(SEE MAP INDEX FOR FIRM PANEL LAYOUT) CONTAINS:

COMMUNITY FOREST LAKE, CITY OF 270693 0128 HUGO, CITY OF 270504 0128

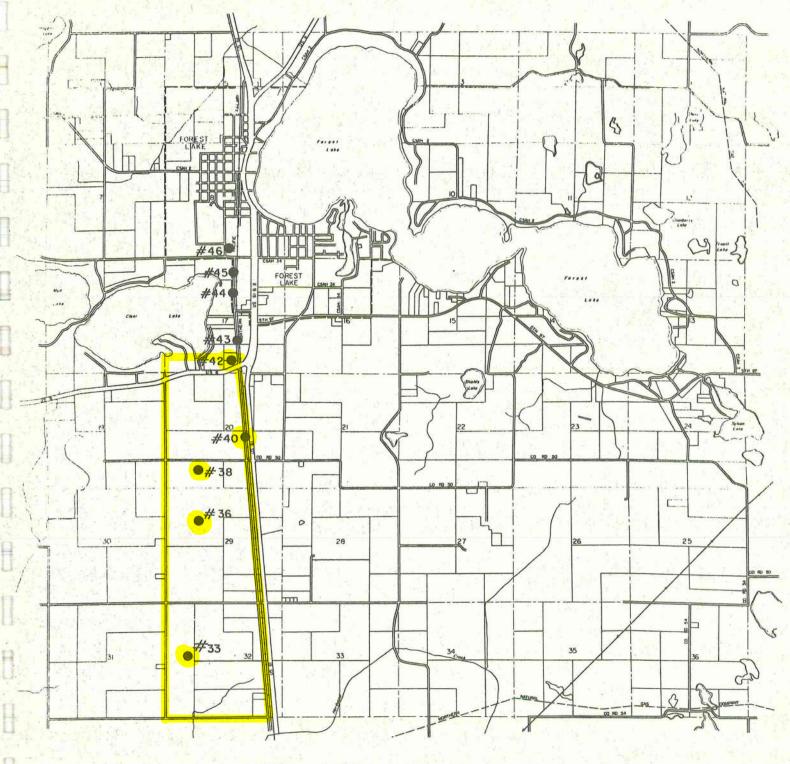
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject



MAP NUMBER 27163C0128E **EFFECTIVE DATE** 

FEBRUARY 3, 2010 Federal Emergency Management Agency

### Borings that fall within/close to project site



SOIL TEST BORINGS

township of

FOREST LAKE

WASHINGTON CO



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### **WETLAND INVESTIGATION**

### METROPOLITAN COUNCIL ENVIRONMENTAL SERVICES SANITARY SEWER INTERCEPTOR

FOREST LAKE, MINNESOTA

NOVEMBER 17, 2023

AE JOB NO. 17628



### ANDERSON

13605 1<sup>st</sup> Avenue North #100, Plymouth, MN 55441 **P** 763.412.4000 **F** 763.412.4090 **ae-mn**.com



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EXECUTIVE SUMMARY	
BACKGROUND	
METHODOLOGY	
RESOURCE REVIEW	
CONCLUSION	42

### **APPENDICES**

Appendix A FIGURE

Appendix B ROUTINE ON-SITE DETERMINATION METHOD DATASHEETS

Appendix C ANTECEDENT PRECIPITATION RECORD

Appendix D CREDENTIALS

November 17, 2023

### **CONTACT INFORMATION**

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Ben Hodapp Environmental Services Manager Certified MN Wetland Delineator #1016 bhodapp@ae-mn.com

Anderson Engineering of Minnesota, LLC 13605 1<sup>st</sup> Avenue North
Suite 100
Plymouth, MN 55441

Phone: (763) 412-4000 Fax: (763) 412-4090

### **EXECUTIVE SUMMARY**

Anderson Engineering of Minnesota, LLC was retained to provide professional wetland services using the 1987 United States Army Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1; January 1987) and all supplemental guidance documents to identify areas meeting wetland criteria starting south of Scandia Trail North (45.21079, -92.99373) to 202nd Street North (45.24310, -92.99416) located in Forest Lake, Washington County, Minnesota. This project area is in Sections 20, 29 and 32, Township 32 North, Range 21 West.

Delineated aquatic resources or, portions thereof, were identified and delineated within the project area and summarized in Table 1 and depicted in Appendix A, Figure 5.

Table 1. Summary of delineated aquatic resources, corresponding sizes, and wetland type classifications.

RESOURCE RESOURCE		APPROXIMATE		RESOURCE TYP	PE CLASSIFICATION
RESOURCE	TYPE		CIRCULAR 39	COWARDIN	EGGERS & REED
1	Wetland	0.02 Ac	Type 1	PEM1Ad	Seasonally Flooded Basin
2	Wetland 0.06 Ac		Type 1	PFO1A	Floodplain Forest
3	Wetland	0.05 Ac	Type 1	PEM1Ad	Seasonally Flooded Basin
4	Wetland	0.01 Ac	Type 1	PEM1Ad	Seasonally Flooded Basin
5	Wetland	0.11 Ac	Type 1	PEM1Ad	Seasonally Flooded Basin
6	Wetland	0.05 Ac	Type 1/3	PEM1C/A	Seasonally Flooded Basin/Shallow Marsh
7	Wetland	4.62 Ac	Type 1/3/6	PEM1C/SS1/FO1/Af	Seasonally Flooded Basin/Floodplain Forest/Shallow Marsh/Shrub-Carr
8	Wetland	0.11 Ac	Type 1	PEM1Ad	Seasonally Flooded Basin
9	Wetland	0.04 Ac	Type 6	PSS1A	Shrub-Carr
10	Wetland	0.02 Ac	Type 1	PFO1A	Floodplain Forest
11	Wetland	0.49 Ac	Type 1/3	PEM1C/A	Seasonally Flooded Basin/Floodplain Forest/Shallow Marsh
12	Wetland	0.48 Ac	Type 1/3	PEM1C/A	Seasonally Flooded Basin/Shallow Marsh
13	Wetland	0.08 Ac	Type 1	PEM1A	Seasonally Flooded Basin
14	Wetland	0.39 Ac	Type 3	PEM1Cx	Shallow Marsh
15	Wetland	0.03 Ac	Type 1/2	PEM1B/Ad	Seasonally Flooded Basin/Fresh Wet Meadow
16	Wetland	0.02 Ac	Type 1/2	PEM1B/Ad	Seasonally Flooded Basin/Fresh Wet Meadow
17	Wetland	0.33 Ac	Type 3/4/6	PABH/EM1C/SS1A	Shallow Marsh/Deep Marsh/Shrub- Carr
18	Wetland	0.14 Ac	Type 1	PFO1A	Floodplain Forest

19	Wetland	0.47 Ac	Type 1	PFO1A	Floodplain Forest
20	Wetland	0.26 Ac	Type 1	PEM1Af	Seasonally Flooded Basin
21	Wetland	0.22 Ac	Type 1	PEM1Af	Seasonally Flooded Basin
22	Wetland	0.13 Ac	Type 1	PEM1A	Seasonally Flooded Basin
23	Wetland	0.55 Ac	Type 1	PEM1Af	Seasonally Flooded Basin
24	Wetland	0.01 Ac	Type 1	PEM1Ax	Seasonally Flooded Basin
25	Wetland	0.58 Ac	Type 3	PEM1Cx	Shallow Marsh
26	Wetland	3.68 Ac	Type 1/3/5	PABH/EM1C/Ax	Seasonally Flooded Basin/Shallow Marsh/Open Water
27	Wetland	0.22 Ac	Type 5	PUBHx	Open Water
28	Wetland	0.32 Ac	Type 5	PUBHx	Open Water

### **BACKGROUND**

As requested by TKDA, Anderson Engineering of Minnesota, LLC completed a wetland investigation at Washington County starting south of Scandia Trail North (45.21079, -92.99373) to 202nd Street North (45.24310, -92.99416) located in Forest Lake, Washington County, Minnesota (Appendix A, Figure 1). This project area is in Sections 20, 29 and 32, Township 32 North, Range 21 West.

The wetland delineation was completed in accordance with the 1987 United States Army Corps of Engineers Wetland Delineation Manual and the published regional supplement to the Army Corps Wetland Delineation Manual, North central northeast Regional Supplement.

The purpose of this study was to identify areas meeting the technical criteria for wetlands, delineate the jurisdictional extent of the wetland basins, and classify the wetland habitats in the project area.

Fieldwork for this site investigation was completed by Dylan Kruzel and Garrett Wee, on October 12 and October 19, 2023. The weather was cloudy both days and approximately 50 degrees Fahrenheit.

### **METHODOLOGY**

U.S. Geologic Service 7.5" Topographic Quadrangle maps, U.S. Fish and Wildlife Service National Wetland Inventory (NWI) maps, Minnesota Department of Natural Resources Public Water Inventory (PWI) maps, U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey, and available aerial photographs were consulted to initially locate potential wetland habitats.

Routine On-site Determination Method was used during this investigation. In this method, the following procedures were used:

- 1. The vegetative community was sampled in all present strata to determine whether it met hydrophytic vegetation criteria based on the indicators identified in the North central northeast Regional Supplement.
- 2. Soil pits were dug using a Dutch auger to depths of twenty-four to forty-two inches. The soil profile was noted in addition to any hydric soil characteristics.
- 3. Signs of wetland hydrology were noted and compared to field criteria such as depth to shallow water table and depth of soil saturation found in the soil pits.

Data from sample points were recorded on Army Corps of Engineers North central northeast Region Wetland Determination Data Forms (Appendix B). At least one sample point transect crosses the delineated wetland edge. This transect consists of an upland sample point and a wetland sample point. Other sample points may be in areas which have one or more other wetland criteria present; where questionable conditions exist; or to verify the absence of wetland criteria. Photographs of each resource is included in the resource review summary pages.

Sample points were marked in the field with orange flags. The identified aquatic resource was marked with sequentially numbered pink flags. All sample points and the delineated aquatic resource extent were located using a Trimble Geo XH sub-meter GPS unit.

### **RESOURCE REVIEW**

The below described data were reviewed as part of the aquatic resource field delineation. A summary of each resource contained within the project area follows.

### NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory identifies nine PEM1A, five PEM1C, four PUBHx, two PEM1F, and one PUBFx, PFO1/EM1C, PSS1/EM1C, and R2UBFx in the project area (Appendix A, Figure 2).

### **USDA – NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY**

Soil survey data for Washington County was obtained and reviewed prior to the delineation. Table 2 provides a list of the mapped soils in the project area. Figure 3 in Appendix A depicts USDA Natural Resources Conservation Service mapped soils within the project categorized by total percentage of hydric components.

Table 2. Summary of mapped soil units in the project area.

MAP UNIT SYMBOL	MAP UNIT NAME	HYDRIC STATUS	HYDRIC RATING	DRAINAGE CLASSIFICATION	PERCENT COVER
123	Dundas fine sandy loam	Non-Hydric Soil Unit	95%	Poorly drained	61%
75	Bluffton loam	Hydric Soil Unit	100%	Very poorly drained	20%
225	Nessel fine sandy loam, 1 to 4 percent slopes	Non-Hydric Soil Unit	3%	Moderately well drained	7%
113	Webster loam	Hydric Soil Unit	100%	Poorly drained	5%
544	Cathro muck	Hydric Soil Unit	97%	Very poorly drained	3%
1055	Aquolls and Histosols, ponded	Hydric Soil Unit	100%	Very poorly drained	2%
169B	Braham loamy fine sand, 1 to 6 percent slopes	Non-Hydric Soil Unit	7%	Well drained	2%

Hydric soils are defined in the Field Indicators of Hydric Soils in the United States: Guide for Identifying and Delineating Hydric Soils, version 8.2, 2018; The 1987 United States Army Corps of Engineers Wetlands Delineation Manual; and The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North central Northeast Region (Version 2.0).

### MINNESOTA DEPARTMENT OF NATURAL RESOURCES PUBLIC WATER INVENTORY

The Minnesota Department of Natural Resources Public Water Inventory for Washington County does not identify public water in the project extent (Appendix A, Figure 4).

### **30-DAY ROLLING PRECIPITATION DATA**

A review of the 30-day rolling precipitation data collected from the University of Minnesota Climatology Working Group (Appendix C) indicates that precipitation totals for the weeks prior to the site visit were above the range of average in the general project area. The overall hydrologic conditions were suitable for completing an accurate wetland determination and boundary delineation.

TOTAL AREA WITHIN ECB

RESOURCE 1 FIELD DELINEATED 10/12/2023

TILLD INVESTIGATIO	IN CONCLUSION _
Wetland	RESOURCE TYPE

Seasonally Flooded Basin	EGGERS & REED
Type 1	CIRCULAR 39
PEM1Ad	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Acer negundo	Boxelder
Sambucus nigra	Black elderberry
Cornus alba	Red osier
Phalaris arundinacea	Reed canary grass
Circaea alpina	Small enchanter's
•	nightshade
Vitis riparia	River-bank grape
,	<b>5</b> 1
HYDRIC SOIL INDICATORS	
Sandy Redox	S5
WETLAND HYDROLOGY DETERMINATION	
Drainage Patterns	B10
Geomorphic Position	D2
FAC-Neutral Test	D5

Viewing Southeast | Moderate Transition to Wetland

DES		

HYDRIC RATING - SOIL UNIT(S)	Hydric - Cathro muck, 97% (258)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type connected to resource 3 to the north via a culvert. The resource receives hydrology via overland flow and surface flow from resource 3. Overall, the resource was delineated based on a lack of wetland hydrology forming a moderate boundary in most areas. Upland vegetation communities are generally dominated by smooth brome ( <i>Bromus inermis</i> ), reed canary, common burdock ( <i>Arctium minus</i> ), black elderberry and boxelder.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was well above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is not consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI does not map any wetlands at the sampled location.

Wet Point(s):

Up Point(s):

1A

1B

WETLAND INVESTIGATION
TKDA MCES SANITARY SEWER
FOREST LAKE, MN
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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

**RESOURCE 2** FIELD DELINEATED 10/12/2023

FIELD INVESTIGATIO	N CONCLUSION1
Wetland	RESOURCE TYPE

	vvelianu	KLOOOKOL III L
	0.06-Acre	TOTAL AREA WITHIN ECB
,	Floodplain Forest	EGGERS & REED
,	Type 1	CIRCULAR 39
	PFO1A	COWARDIN
	DOMINANT HYDROPHYTIC VEGETATION	
	Fraxinus pennsylvanica	Green ash
	Ulmus americana	American elm
	Rhamnus cathartica	European buckthorn
	Acer negundo	Box elder
	Vitis riparia	River-bank grape
	, , , , , , , , , , , , , , , , , , , ,	3 17 3
	HYDRIC SOIL INDICATORS	
	Depleted Below Dark Surface	A11
	Depleted Matrix	F3
	Redox Dark Surface	F6
	WETLAND HYDROLOGY DETERMINATION	
	Sparsely Vegetated Concave	B8
	Surface	
	Geomorphic Position	D2
	FAC-Neutral Test	D5
		_ •

2B

Viewing West | Gradual Transition to Wetland

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam, 95% (123)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None
	Trene

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type as an isolated basin generally containing bare ground in a mature forest. The resource receives hydrology via overland flow and appears to only receive hydrology seasonally. Overall, the resource was delineated based on a lack of wetland hydrology forming a gradual boundary in most areas.
	Upland tree vegetation communities are generally green ash and eastern cottonwood (Populus deltoides); however,
	the understory of most areas is sparsely vegetated with FAC-FACU species.
	Analysis of antecedent precipitation revealed that the area was well above average at the time of the field investigation,
ATYPICAL/PROBLEMATIC CONDITIONS	however, surface hydrology was not observed in most areas. This is not consistent with the time of year and preceding
	months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI does not map any wetlands at the sampled location.

Wet Point(s): 2A <sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Up Point(s):

WETLAND INVESTIGATION TKDA MCES SANITARY SEWER FOREST LAKE, MN

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FIELD INVESTIGATION CONCLUSION<sup>1</sup>

**RESOURCE 3** FIELD DELINEATED 10/12/2023

### Wetland RESOURCE TYPE TOTAL AREA WITHIN ECB 0.05-Acre Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1Ad DOMINANT HYDROPHYTIC VEGETATION Eastern cottonwood Populus deltoides Fraxinus pennsylvanica Green Ash HYDRIC SOIL INDICATORS Redox Dark Surface F6 WETLAND HYDROLOGY DETERMINATION Sparsely Vegetated Concave B8 Surface Water-Stained Leaves **B9 Drainage Patterns** B10 Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing North | Abrupt Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY None PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type generally containing bare ground. The resource contributes hydrology to resource 1 to the south via a culvert under the road. The resource receives hydrology via overland flow and lateral flow from resource 4 via a culvert. Overall, the resource was delineated based on a lack of hydric soil profile

ATYPICAL/PROBLEMATIC CONDITIONS

CONSISTENCY WITH DESKTOP REVIEW

RATIONALE FOR DETERMINATION

months' drought condition. The investigated soil profile at 3B revealed a restrictive layer, but the profile was determined non-hydric based on an absence of a wetland hydrology and located in a mapped non-hydric soil unit. NWI does not map any wetlands at the sampled location. Wet Point(s):

and a lack of wetland hydrology forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated by quaking aspen (Populus tremuloides), green ash, eastern cottonwood, European buckthorn,

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding

Up Point(s):

3B

and toothache tree (Zanthoxylum Americanum).

WETLAND INVESTIGATION **TKDA MCES SANITARY SEWER** FOREST LAKE, MN

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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

RESOURCE 4 FIELD DELINEATED 10/12/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE TOTAL AREA WITHIN ECB 0.01-Acre Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1Ad DOMINANT HYDROPHYTIC VEGETATION Fraxinus pennsylvanica Green ash Cornus racemosa Gray dogwood Vitis riparia River-bank grape HYDRIC SOIL INDICATORS Redox Dark Surface F6 WETLAND HYDROLOGY DETERMINATION Sparsely Vegetated Concave B8 Surface В9 Water-Stained Leaves Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing Southeast | Abrupt Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY None PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type generally containing bare ground. The resource contributes hydrology to resource 3 to the west via a culvert. The resource receives hydrology via overland flow and the continuation of the drainage system offsite. Overall, the resource was delineated based on a lack of wetland hydrology RATIONALE FOR DETERMINATION forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated by silver maple (Acer saccharinum), European buckthorn, smooth goldenrod (Solidago gigantea) and northern meadow sedge (Carex praticola). Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. CONSISTENCY WITH DESKTOP REVIEW NWI does not map any wetlands at the sampled location. 4A

<sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): resource: Up Point(s):

Up Point(s): 4B

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Reed canary grass

**RESOURCE 5** FIELD DELINEATED 10/12/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE TOTAL AREA WITHIN ECB 0.11-Acre

Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1Ad DOMINANT HYDROPHYTIC VEGETATION

Phalaris arundinacea

HYDRIC SOIL INDICATORS

Depleted Below Dark Surface Depleted Matrix

A11 F3 F6

WETLAND HYDROLOGY DETERMINATION

Geomorphic Position **FAC-Neutral Test** 

Redox Dark Surface

D2 D5

Viewing West | Gradual Transition to Wetland

### **DESKTOP REVIEW**

HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton Ioam, 100% (75)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR	RDETERMINATION

The resource consists of a single wetland community type connected and is part of a larger wetland complex that continues to the west outside the Environmental Clearance Boundary (ECB). The resource receives hydrology via overland flow and discharges to the west. Overall, the resource was delineated based on a lack of wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by green ash, peachleaf willow (Salix amygdaloides), European buckthorn, toothache tree, American elm, common red raspberry (Rubus idaeus) and river-bank grape.

ATYPICAL/PROBLEMATIC CONDITIONS

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

CONSISTENCY WITH DESKTOP REVIEW

NWI does not map any wetlands at the sampled location.

Wet Point(s): 5A Up Point(s): 5B

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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

**RESOURCE 6** FIELD DELINEATED 10/12/2023

## Viewing Northwest | Gradual Transition to Wetland

Wetland	RESOURCE TYPE
0.05-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded	EGGERS & REED
Basin/Shallow Marsh	
Type 1/3	CIRCULAR 39
PEM1C/A	COWARDIN

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

DOMINANT HYDROPHYTIC VEGETATION
Rhamnus cathartica
Populus tremuloides
Fraxinus pennsylvanica
Solidago gigantea
Phalaris arundinacea

European buckthorn Quaking aspen Green ash Smooth goldenrod Reed canary grass

### HYDRIC SOIL INDICATORS

Thick Dark Surface Redox Dark Surface F6

A12

### WETLAND HYDROLOGY DETERMINATION Geomorphic Position

**FAC-Neutral Test** 

D2 D5

### DESKTOP REVIEW

HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton Ioam, 100% (75)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of multiple wetland community types and is part of a larger wetland complex that continues to the west outside the ECB. The resource receives hydrology via overland flow and discharges to the west. Overall, the resource was delineated based on a lack of wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by quaking aspen, European buckthorn, smooth goldenrod, Canada goldenrod (Solidago altissima) and reed canary grass.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI does not map any wetlands at the sampled location.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

Wet Point(s): 6A Up Point(s): 6B

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FIELD INVESTIGATION CONCLUSION<sup>1</sup>

RESOURCE 7 FIELD DELINEATED 10/12/2023

### Wetland RESOURCE TYPE 4.62-Acre TOTAL AREA WITHIN ECB Seasonally Flooded Basin/Floodplain Forest/Shallow **EGGERS & REED** Marsh/Shrub-Carr Type 1/3/6 CIRCULAR 39 PEM1C/SS1/FO1/Af COWARDIN DOMINANT HYDROPHYTIC VEGETATION Sandbar willow Salix interior Fraxinus pennsylvanica Green ash Solidago gigantea Smooth goldenrod HYDRIC SOIL INDICATORS Depleted Below Dark Surface A11 Depleted Matrix F3 WETLAND HYDROLOGY DETERMINATION Saturation A3 C2 **Dry-Season Water Table** Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing West | Gradual to Moderate Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Hydric - Bluffton loam, 100% (75) NATIONAL WETLAND INVENTORY PFO1/EM1C PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of multiple wetland community types and is part of a much larger wetland complex continuing to the west. The resource receives hydrology via overland flow, primarily from the surrounding agricultural fields. RATIONALE FOR DETERMINATION Overall, the resource was delineated based on a lack of hydric soil profile and wetland hydrology forming a gradual to moderate boundary in most areas. Upland vegetation communities are generally dominated by reed canary, smooth goldenrod, and Canada goldenrod. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation,

however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding

NWI inventoried areas were found to be generally smaller then depicted; however, it appears to match the mapped

<sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): 7A Up Point(s): 7B

months' drought condition.

hydric soil unit.

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ATYPICAL/PROBLEMATIC CONDITIONS

CONSISTENCY WITH DESKTOP REVIEW

### **RESOURCE 7**

### FIELD INVESTIGATION PHOTOS



Viewing Southeast | A portion of the type 6 wetland found within resource 7



Viewing North | Agricultural field abutting resource 7



Viewing South | Resource 7 continuing beyond the ECB to the west where much of the shrub and tree stratum has been removed



**Viewing North** | Small amounts of hydrophytic vegetation emerging in the agricultural field where the ECB ends. Soil cracking was observed.

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

RESOURCE 8 FIELD DELINEATED 10/12/2023

### Wetland RESOURCE TYPE TOTAL AREA WITHIN ECB 0.11-Acre Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1Ad DOMINANT HYDROPHYTIC VEGETATION Populus tremuloides Quaking aspen Cornus racemose Gray dogwood Cornus alba Red osier Phalaris arundinacea Reed canary grass Vitis riparia Riverbank grape HYDRIC SOIL INDICATORS Depleted Below Dark Surface A11 Thick Dark Surface A12 WETLAND HYDROLOGY DETERMINATION Saturation A3 Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing South | Gradual Transition to Wetland at 8-1 **DESKTOP REVIEW** Hydric - Bluffton loam, 100% (75) HYDRIC RATING - SOIL UNIT(S) NATIONAL WETLAND INVENTORY PEM1A PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type and are part of a larger wetland complex to the west. The resource receives hydrology via overland flow. A low-lying area resembling a drainage ditch was investigated and was determined to be a portion of resource 8 continuing to the north bordering the ECB. Overall, the resource was RATIONALE FOR DETERMINATION delineated based on a lack of hydric soil profile and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by green ash, bur oak (Quercus macrocarpa) European buckthorn, nannyberry (Viburnum lentago), gray dogwood (Cornus racemose) and river-bank grape.

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation,

however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding

Wet Point(s):

Up Point(s):

8A

8B

<sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated resource:

months' drought condition.

NWI inventoried areas were found to be generally correct.

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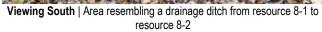
ATYPICAL/PROBLEMATIC CONDITIONS

CONSISTENCY WITH DESKTOP REVIEW

### **RESOURCE 8**

### FIELD INVESTIGATION PHOTOS







Viewing Northwest | Resource 8-2

RESOURCE 9 FIELD DELINEATED 10/12/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> RESOURCE TYPE TOTAL AREA WITHIN ECB 0.04-Acre Shrub-carr EGGERS & REED Type 6 **CIRCULAR 39** COWARDIN PSS1A DOMINANT HYDROPHYTIC VEGETATION Salix amygdaloides Peachleaf willow Phalaris arundinacea Reed canary grass Carex bebbii Bebb's sedge HYDRIC SOIL INDICATORS Depleted Matrix F3 WETLAND HYDROLOGY DETERMINATION Water-Stained Leaves **B9** Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing Northeast | Moderate Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY None PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type and the resource receives hydrology via overland flow. RATIONALE FOR DETERMINATION Overall, the resource was delineated based on a lack of wetland hydrology forming a moderate boundary in most areas. Upland vegetation communities are generally dominated by smooth goldenrod and reed canary grass. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. CONSISTENCY WITH DESKTOP REVIEW NWI does not map any wetlands at the sampled location. 9A

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Page 17

9B

<sup>&</sup>lt;sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated wet Point(s): resource: Up Point(s):

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

10A

10B

RESOURCE 10 FIELD DELINEATED 10/12/2023

### Wetland RESOURCE TYPE 0.02-Acre TOTAL AREA WITHIN ECB Floodplain Forest EGGERS & REED **CIRCULAR 39** Type 1 PFO1A COWARDIN DOMINANT HYDROPHYTIC VEGETATION Fraxinus pennsylvanica Green ash Ulmus americana American elm Tilia americana American basswood Rhamnus cathartica European buckthorn Fraxinus nigra Black ash HYDRIC SOIL INDICATORS Thick Dark Surface A12 WETLAND HYDROLOGY DETERMINATION Sparsely Vegetated Concave В8 Surface Geomorphic Position D2 Microtopographic Relief D4 **FAC-Neutral Test** D5 Viewing Northeast | Moderate Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY None PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type generally containing bare ground. The resource receives hydrology via overland flow. Overall, the resource was delineated based on a lack of hydric soil profile and wetland RATIONALE FOR DETERMINATION hydrology forming a moderate boundary in most areas. Upland vegetation communities are generally dominated by green ash, quaking aspen, European buckthorn and American basswood. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

NWI does not map any wetlands at the sampled location.

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CONSISTENCY WITH DESKTOP REVIEW

<sup>&</sup>lt;sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): Up Point(s):

RESOURCE 11 FIELD DELINEATED 10/12/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE 0.49-Acre TOTAL AREA WITHIN ECB Seasonally Flooded Basin/Floodplain Forest/Shallow **EGGERS & REED** Marsh Type 1/3 CIRCULAR 39 COWARDIN PEM1C/A DOMINANT HYDROPHYTIC VEGETATION Fraxinus pennsylvanica Green ash Rhamnus cathartica European buckthorn Phalaris arundinacea Reed canary grass HYDRIC SOIL INDICATORS F6 Redox Dark Surface WETLAND HYDROLOGY DETERMINATION Water-Stained Leaves **B9** Geomorphic Position D2 **FAC-Neutral Test** D<sub>5</sub> Viewing East | Gradual Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Hydric - Aquolls and Histosols, ponded, 100% (1055) NATIONAL WETLAND INVENTORY PEM1A PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of multiple wetland community types and are part of a larger wetland complex to the south. The resource receives hydrology via overland flow. Overall, the resource was delineated based on a lack of hydric soil RATIONALE FOR DETERMINATION profile and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by green ash, red oak (Quercus rubra), American elm, European buckthorn, eastern prickly gooseberry (Ribes cynosbati) and toothache tree. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. NWI inventoried areas were found to be generally smaller then depicted; however, it seems that the boundary matches CONSISTENCY WITH DESKTOP REVIEW

<sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): 11A resource: Up Point(s): 11B

the mapped hydric soil unit.

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FIELD INVESTIGATION CONCLUSION<sup>1</sup>

**RESOURCE 12** FIELD DELINEATED 10/12/2023

### Wetland RESOURCE TYPE 0.48-Acre TOTAL AREA WITHIN ECB Seasonally Flooded **EGGERS & REED** Basin/Shallow Marsh CIRCULAR 39 Type 1/3 PEM1C/A COWARDIN DOMINANT HYDROPHYTIC VEGETATION Phalaris arundinacea Reed canary grass Solanum ptychanthum Eastern black nightshade Cirsium arvense Canada thistle Myosoton aquaticum Giant-chickweed HYDRIC SOIL INDICATORS F6 Redox Dark Surface WETLAND HYDROLOGY DETERMINATION Saturation A3 Geomorphic Position D2 Viewing Northeast | Gradual Transition to Wetland **DESKTOP REVIEW** Hydric - Cathro Muck, 97% (544) HYDRIC RATING - SOIL UNIT(S) NATIONAL WETLAND INVENTORY PEM1A PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of multiple wetland community types and is part of a larger wetland complex to the west. The resource receives hydrology via overland flow. Overall, the resource was delineated based on a lack of hydric soil, RATIONALE FOR DETERMINATION hydrophytic vegetation and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by peachleaf willow, European buckthorn, common red raspberry, reed canary, foxtail bristlegass (Setaria italica), and hairy crab grass (Digitaria sanguinalis). Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation,

NWI inventoried areas were found to be generally correct. <sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated

months' drought condition.

Wet Point(s): 12A Up Point(s): 12B

however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding

Wetland appeared to be previously tilled and cropped for wildlife and/or hunting activities. Turnips were found around

November 17, 2023

ATYPICAL/PROBLEMATIC CONDITIONS

CONSISTENCY WITH DESKTOP REVIEW

resource:

**RESOURCE 13** FIELD DELINEATED 10/19/2023

### Viewing North | Gradual Transition to Wetland **DESKTOP REVIEW**

### FIELD INVESTIGATION CONCLUSION<sup>1</sup>

Wetland | RESOURCE TYPE

VVCIIAITA	KLOOOKOL III L
0.08-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded Basin	EGGERS & REED
Type 1	CIRCULAR 39
PEM1A	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Ulmus americana	American elm
Fraxinus pennsylvanica	Green ash
Phalaris arundinacea	Reed canary grass
Echinocystis lobata	Wild cucumber
·	
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
•	
WETLAND HYDROLOGY DETERMINATION	
Geomorphic Position	D2
FAC-Neutral Test	D5
FAC-Neutral Test	טט
FAC-Neutral Test	D3
FAC-Neutral Test	D3
FAC-Neutral Test	D3

HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton loam, 100% (75)
NATIONAL WETLAND INVENTORY	PEM1A
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type and is part of a larger wetland complex to the west. The resource receives hydrology via overland flow. Overall, the resource was delineated based on a lack of wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by green ash and reed canary and are adjacent to the golf course trail.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI inventoried areas were found to be generally correct.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): 13A resource: Up Point(s): 13B

November 17, 2023

RESOURCE 14 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup>



Viewing I	Fast I	Gradual to	Abrupt T	ransition	to Wetland

_	Wetland	RESOURCE TYPE
	0.39-Acre	TOTAL AREA WITHIN ECB
	Shallow Marsh	EGGERS & REED
	Type 3	CIRCULAR 39
	PEM1Cx	COWARDIN
	DOMINANT HYDROPHYTIC VEGETATION	
	Salix bebbiana	Gray willow
	Salix interior	Sandbar willow
	Cornus alba	Red osier
	Carex lacustris	Lakebank sedge
	Phalaris arundinacea	Reed canary grass
	Poa pratensis	Kentucky blue grass
	p	
	HYDRIC SOIL INDICATORS	
	HYDRIC SOIL INDICATORS Depleted Below Dark Surface	A11
		A11 F3
	Depleted Below Dark Surface	
	Depleted Below Dark Surface Depleted Matrix	F3
	Depleted Below Dark Surface Depleted Matrix	F3
	Depleted Below Dark Surface Depleted Matrix Redox Dark Surface  WETLAND HYDROLOGY DETERMINATION Geomorphic Position	F3
	Depleted Below Dark Surface Depleted Matrix Redox Dark Surface WETLAND HYDROLOGY DETERMINATION	F3 F6
	Depleted Below Dark Surface Depleted Matrix Redox Dark Surface  WETLAND HYDROLOGY DETERMINATION Geomorphic Position	F3 F6
	Depleted Below Dark Surface Depleted Matrix Redox Dark Surface  WETLAND HYDROLOGY DETERMINATION Geomorphic Position	F3 F6
	Depleted Below Dark Surface Depleted Matrix Redox Dark Surface  WETLAND HYDROLOGY DETERMINATION Geomorphic Position	F3 F6

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Nessel fine sandy loam, 1 to 4 percent slopes, 3% (225)
NATIONAL WETLAND INVENTORY	PEM1A
PUBLIC WATER INVENTORY	None
DISCUSSION	
RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type where the wetland exists in the fairway of the golf course where portions of the wetland are actively mowed. The resource receives hydrology via overland flow from the surrounding golf course. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming a gradual to abrupt boundary in most areas. Upland vegetation communities are generally dominated by birds-foot trefoil ( <i>Lotus tenuis</i> ), and Kentucky blue grass.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI inventoried areas were found to be generally correct; however, they are combined in the northernmost area.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): 14A Up Point(s): 14B

RESOURCE 15 FIELD DELINEATED 10/19/2023

### Wetland RESOURCE TYPE 0.03-Acre TOTAL AREA WITHIN ECB Seasonally Flooded Basin/Fresh Wet Meadow Type 1/2 CIRCULAR 39 PEM1B/Ad COWARDIN DOMINANT HYDROPHYTIC VEGETATION Soliv interior Sounder willow

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

### Salix interior Phalaris arundinacea Poa pratensis Solidago altissima Solidago gigantea

Sandbar willow Reed canary grass Kentucky blue grass Canada goldenrod Smooth goldenrod

### HYDRIC SOIL INDICATORS Depleted Below Dark Surface Depleted Matrix

A11 F3

### WETLAND HYDROLOGY DETERMINATION Geomorphic Position

**FAC-Neutral Test** 

D2 D5

	200	CONTRACTOR OF THE PARTY OF THE	100
<b>Viewing North</b>	Gradual	Transition to	Wetland

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam, 95% (123)
NATIONAL WETLAND INVENTORY	R2UBFx
PUBLIC WATER INVENTORY	None

		ION

RATIONALE FOR DETERMINATION	The resource consists of multiple wetland community types where the wetland exists near the fairway of the golf course and the resource receives hydrology via overland flow from the surrounding golf course and discharges into resource 16 via a culvert under a bituminous trail. Overall, the resource was delineated based on a lack of hydrophytic vegetation and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by boxelder, American elm, Canada goldenrod, Canada thistle, reed canary grass, Kentucky blue grass and smooth brome.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI maps R2I IBEx at the sampled location, our assessment of the wetland determined the wetland to be a PEM1B/Ad

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): 15A Up Point(s): 15B

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RESOURCE 16 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup>



Wetland	RESOURCE TYPE
0.02-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded Basin/Fresh Wet Meadow	EGGERS & REED
Type 1/2	CIRCULAR 39
PEM1B/Ad	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Populus deltoides	Eastern cottonwood
Populus tremuloides	Quaking aspen
Prunus serotina	Black cherry
Rhamnus cathartica	European buckthorn
Phalaris arundinacea	Reed canary grass
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
WETLAND HYDROLOGY DETERMINATION	
Surface Water	A1
High Water Table	A2
Saturation	A3
Drainage Patterns	B10
Geomorphic Position	D2
FAC-Neutral Test	D5

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton loam, 100% (75)
NATIONAL WETLAND INVENTORY	R2UBFx
PUBLIC WATER INVENTORY	None

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RATIONALE FOR DETERMINATION	The resource consists of multiple wetland community types where the wetland exists in the fairway of the golf course and the resource receives hydrology via overland flow from the surrounding golf course and resource 15 via a culvert under a bituminous trail. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation
	and wetland hydrology forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated by quaking aspen, European buckthorn, toothachetree, red-seeded dandelion ( <i>Taraxacum officinale</i> ), spreading dogbane ( <i>Apocynum androsaemifolium</i> ), and smooth brome.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

CONSISTENCY WITH DESKTOP REVIEW NWI maps R2UBFx at the sampled location, our assessment of the wetland determined the wetland to be a PEM1B/Ad.

1 Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): 16A

resource: Vet Point(s): 16A

Up Point(s): 16B

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RESOURCE 17 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup>

Wetland RESOURCE TYPE
0.33-Acre TOTAL AREA WITHIN ECB



	A SECTION OF	STATE OF THE STATE	
Viewing North	Gradual to	Abrupt Transition to Wetland	Ī

O	
Seasonally Flooded	
Shallow/Marsh/Deep	EGGERS & REED
Marsh/Shrub-Carr	
Type 3/4/6	CIRCULAR 39
PABH/EM1C/SS1A	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Salix bebbiana	Gray willow
Salix interior	Sandbar willow
Salix amygdaloides	Peachleaf willow
Rhamnus cathartica	European buckthorn
Phalaris arundinacea	Reed canary grass
Vitis riparia	River-bank grape
	•
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11

WETLAND HYDROLOGY DETERMINATION	
Geomorphic Position	D2
FAC-Neutral Test	D5

D = 01/= 0			
DESKTO	PΚ	FVI	I-W

HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton Ioam, 100% (75)
NATIONAL WETLAND INVENTORY	PEM1C
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of multiple wetland community types where the wetland exists near the fairway of the golf course where portions of the wetland are actively mowed. The resource receives hydrology via overland flow from the surrounding golf course. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming a gradual to abrupt boundary in most areas. Upland vegetation communities are generally dominated by sandbar willow and Kentucky bluegrass.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI inventoried areas were found to be generally correct.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): 17A Up Point(s): 17B

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RESOURCE TYPE

TOTAL AREA WITHIN ECB

**RESOURCE 18** FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland

0.14-Acre Floodplain Forest | EGGERS & REED



Type 1	CIRCULAR 39
PFO1A	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Ulmus americana	American elm
Salix bebbiana	Gray willow
Fraxinus pennsylvanica	Green ash
Rhamnus cathartica	European buckthorn
Ribes cynosbati	Eastern prickly gooseberr
Solanum ptychanthum	Eastern black nightshade
Vitis riparia	River-bank grape
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
WETLAND HYDROLOGY DETERMINATION	
Microtopographic Relief	D4

Geomorphic Position

FAC-Neutral Test

D2

D5

Viewing East | Gradual Transition to Wetland

_DESKTOP REVIEW	<u> </u>
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam, 95% (123)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

DISCUSSION		
RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type and is part of a larger wetland complex to the southwest and the resource receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by green ash, European buckthorn, eastern poison ivy ( <i>Toxicodendron radicans</i> ), Robert's geranium (Geranium robertianum), king solomon's-seal ( <i>Polygonatum biflorum</i> ) and Virginia creeper ( <i>Parthenocissus quinquefolia</i> ).	
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.	

Wet Point(s): <sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated 18A resource: Up Point(s): 18B

CONSISTENCY WITH DESKTOP REVIEW NWI does not map any wetlands at the sampled location.

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**RESOURCE 19** FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE

0.47-Acre TOTAL AREA WITHIN ECB



Floodplain Forest	EGGERS & REED
Type 1	CIRCULAR 39
PFO1A	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Ulmus americana	American elm
Fraxinus pennsylvanica	Green ash
Rhamnus cathartica	European buckthorn
Boehmeria cylindrica	Smallspike false nettle
Vitis riparia	River-bank grape
Echinocystis lobata	Wild cucumber
•	

HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3

WEILAND HYDROLOGY DETERMINATION
Geomorphic Position
Microtopographic Relief
FAC-Neutral Test

D2 D4 D5

DESKTOP REVIE	=W			

DEGICTOT REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam, 95% (123)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type and is part of a larger wetland complex to the west and the resource receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated based on a lack of hydric soil and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by boxelder, green ash, European buckthorn, Robert's geranium, yellow avens (Geum aleppicum), eastern woodland sedge (Carex blanda), and Virginia creeper (Parthenocissus quinquefolia).
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI does not map any wetlands at the sampled location.

November 17, 2023

Wet Point(s): <sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated 19A resource: Up Point(s): 19B

### **RESOURCE 19**

### FIELD INVESTIGATION PHOTOS



Viewing Northeast | Near wetland A sample point



Viewing East | A sparsely vegetated concave surface near the north end of resource 19



**Viewing Northwest** | An upland berm in the background, located on the far north end of the resource dominated by non-hydrophytic vegetation



Viewing East | Several tree species tolerant of hydrophytic conditions were sampled in resource 19.

RESOURCE 20 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup>

Wetland | RESOURCE TYPE



11000.00	
0.26-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded Basin	EGGERS & REED
Type 1	CIRCULAR 39
PEM1Af	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Echinochloa crus-galli	Barnyard grass
Nasturtium officinale	Water cress
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
WETLAND HYDROLOGY DETERMINATION	
Algal Mat or Crust	B4
Sparsely Vegetated Concave	B8
Surface	
Stunted or Stressed Plants	D1
Geomorphic Position	D2
FAC-Neutral Test	D5
	-

Viewing South | Gradual to Moderate Transition to Wetland

### **DESKTOP REVIEW**

HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123)	
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### DISCUSSION

21000001011				
RATIONALE FOR DETERMINATION	The resource consists of a single farmed wetland community type and is part of a larger wetland complex to the east and the resource receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated based on a lack of hydrophytic vegetation and wetland hydrology indicators forming a gradual to moderate boundary in most areas. Reviewed historical aerials identify saturation/inundations is present throughout the years. Upland vegetation communities are generally dominated by woolly mullein ( <i>Verbascum thapsus</i> ) and field thistle ( <i>Cirsium discolor</i> ).			
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. The resource occurs in an actively farmed agricultural field with vegetation and soils in the resource being heavily manipulated.			
CONSISTENCY WITH DESKTOP REVIEW	NWI does not map any wetlands at the sampled location. A mapped hydric soil map unit is found adjacent to wetland to the south.			

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

Wet Point(s): 20A Up Point(s): 20B

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RESOURCE 21 FIELD DELINEATED 10/19/2023

Wetland	RESOURCE TYPE
0.22-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded Basin	EGGERS & REED
Type 1	CIRCULAR 39

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

1 3 90 1	0
PEM1Af	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Echinochloa crus-galli	Barnyard grass
Nasturtium officinale	Water cress
Phalaris arundinacea	Reed canary grass
	,
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
·	
WETLAND HYDROLOGY DETERMINATION	
Sparsely Vegetated Concave	B8
Surface	
Stunted or Stressed Plants	D1
Geomorphic Position	D2
FAC-Neutral Test	D5
17.0 1.00.00.	

Viewing North | Gradual Transition to Wetland

DE	CV	TO	D D	IEW
UE	- 3 N	$\mathbf{I}$	ГΚ	

HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123)	
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

The resource consists of a single wetland community type and receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated based on a lack of hydrophytic vegetation and wetland hydrology indicators forming a gradual to moderate boundary in most areas. Reviewed historical aerials identify saturation/inundations is present throughout the years. Upland vegetation communities are generally dominated by woolly mullein, field thistle, and red clover.

### ATYPICAL/PROBLEMATIC CONDITIONS

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. The resource occurs in an actively farmed agricultural field with vegetation and soils in the resource being heavily manipulated.

CONSISTENCY WITH DESKTOP REVIEW

NWI does not map any wetlands at the sampled location.

Wet Point(s): 21A Up Point(s): 21B

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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

RESOURCE 22 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE 0.13-Acre TOTAL AREA WITHIN ECB Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1A DOMINANT HYDROPHYTIC VEGETATION Eastern cottonwood Populus deltoides Salix amygdaloides Peachleaf willow Phalaris arundinacea Reed canary grass HYDRIC SOIL INDICATORS Depleted Below Dark Surface A11 Depleted Matrix F3 Redox Dark Surface F6 WETLAND HYDROLOGY DETERMINATION B10 Drainage Patterns Geomorphic Position D2 **FAC-Neutral Test** D5 Viewing North | Gradual Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY PEM1A PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community types where the wetland exists near the agricultural field and the resource receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated RATIONALE FOR DETERMINATION based on a lack of hydric soil, hydrophytic vegetation, and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by eastern cottonwood, yellow sweet clover (Melilotus officinalis), red clover, and bird's foot trefoil. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

Wet Point(s):

Up Point(s):

22A 22B

resource:

<sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated

NWI inventoried areas were found to be generally correct.

WETLAND INVESTIGATION
TKDA MCES SANITARY SEWER
FOREST LAKE, MN

November 17, 2023

CONSISTENCY WITH DESKTOP REVIEW

RESOURCE TYPE

**RESOURCE 23** FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland

0.55-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded Basin	EGGERS & REED
Type 1	CIRCULAR 39
PEM1Af	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Populus deltoides	Eastern cottonwood
Salix amygdaloides	Peachleaf willow
Phalaris arundinacea	Reed canary grass
Poa pratensis	Kentucky blue grass
·	, ,
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
Redox Dark Surface	F6
WETLAND HYDROLOGY DETERMINATION	
Geomorphic Position	D2
FAC-Neutral Test	D5

### Viewing North | Gradual Transition to Wetland

### **DESKTOP REVIEW**

HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam, 95% (123)
NATIONAL WETLAND INVENTORY	PEM1A
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RA	TIONAL	_E FOR	DETERMI	INATION

The resource consists of a single wetland community type and is part of a larger wetland complex to the west and the resource receives hydrology via overland flow from the surrounding landscape. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming a gradual boundary in most areas. Upland vegetation communities are generally dominated by Kentucky blue grass and red clover.

### ATYPICAL/PROBLEMATIC CONDITIONS

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

Wet Point(s):

Up Point(s):

23A

23B

CONSISTENCY WITH DESKTOP REVIEW

NWI inventoried areas were found to be smaller than depicted and all combined as one wetland.

November 17, 2023

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

RESOURCE 24 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland RESOURCE TYPE 0.01-Acre TOTAL AREA WITHIN ECB Seasonally Flooded Basin EGGERS & REED CIRCULAR 39 Type 1 COWARDIN PEM1Ax DOMINANT HYDROPHYTIC VEGETATION Populus deltoides Eastern cottonwood Salix interior Sandbar willow Phalaris arundinacea Reed canary grass HYDRIC SOIL INDICATORS Depleted Below Dark Surface A11 Redox Dark Surface WETLAND HYDROLOGY DETERMINATION Sparsely Vegetated Concave В8 Surface Water-Stained Leaves **B9** Geomorphic Position D2 D5 **FAC-Neutral Test** Viewing North | Abrupt Transition to Wetland **DESKTOP REVIEW** HYDRIC RATING - SOIL UNIT(S) Non-Hydric - Dundas fine sandy loam, 95% (123) NATIONAL WETLAND INVENTORY PEM1A PUBLIC WATER INVENTORY None **DISCUSSION** The resource consists of a single wetland community type where the wetland continues to the west and the resource receives hydrology via overland flow from the surrounding area. Overall, the resource was delineated based on a lack RATIONALE FOR DETERMINATION of hydric soil, hydrophytic vegetation and wetland hydrology forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated by smooth brome. Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, ATYPICAL/PROBLEMATIC CONDITIONS however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition. CONSISTENCY WITH DESKTOP REVIEW NWI inventoried areas were found to be generally correct.

November 17, 2023

24A

24B

<sup>&</sup>lt;sup>1</sup>Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): resource: Up Point(s):

**RESOURCE 25** FIELD DELINEATED 10/19/2023

Wetland	RESOURCE TYPE
0.58-Acre	TOTAL AREA WITHIN ECB
Shallow Marsh	EGGERS & REED

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

Type 3	CIRCULAR 39
PEM1Cx	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Typha angustifolia	Narrow-leaved cattail
Phalaris arundinacea	Reed canary grass
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11

WETLAND HYDROLOGY DETERMINATION Drainage Patterns

B10 Geomorphic Position D2 **FAC-Neutral Test** 

D5

Viewing East | Abrupt Transition to Wetland

DESKT		<b>REV</b>	IEW/
DESK	UE	r = r	

ATYPICAL/PROBLEMATIC CONDITIONS

HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Braham loamy fine sand, 1 to 6 percent slopes, 7% (169B)
NATIONAL WETLAND INVENTORY	PEM1C
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type where the wetland continues to the west and the resource receives hydrology via overland flow from the surrounding area and resource 26 via a culvert under Headwaters Boulevard North road. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and
	wetland hydrology forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated
	by smooth brome and Kentucky blue grass.

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

CONSISTENCY WITH DESKTOP REVIEW NWI inventoried areas were found to be generally correct.

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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated Wet Point(s): 25A resource: Up Point(s): 25B

RESOURCE 26 FIELD DELINEATED 10/19/2023

Wetland	RESOURCE TYPE
3.68-Acre	TOTAL AREA WITHIN ECB
Seasonally Flooded	EGGERS & REED
Basin/Shallow Marsh/Open Water	EGGERG & REED

FIELD INVESTIGATION CONCLUSION<sup>1</sup>

Type 1/3/5 CIRCULAR 39 PABH/EM1C/Ax COWARDIN

Phalaris arundinacea Reed canary grass
Solidago gigantea Smooth goldenrod
Typha angustifolia Narrow-leaved cattail

Depleted Below Dark Surface A11
Depleted Matrix F3
Redox Dark Surface F6

WETLAND HYDROLOGY DETERMINATION

Drainage Patterns

Geomorphic Position

D2

**FAC-Neutral Test** 

D2 D5

Viewing Northeast | Moderate Transition to Wetland

DEG	KTC	D	DE/	

HYDRIC RATING - SOIL UNIT(S)	Hydric - Webster loam, 1 to 6 percent slopes, 100% (113)
NATIONAL WETLAND INVENTORY	PEM1A
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of multiple wetland community types where the wetland continues to the west and east where the resource receives hydrology via overland flow from the surrounding residential development and resource 28 via a culvert/control structure system. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming a moderate boundary in most areas. Upland vegetation communities are generally dominated by smooth brome, smooth goldenrod, Canada goldenrod, reed canary and Kentucky blue grass.
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI maps PEM1A at the sampled location, our assessment of the wetland determined the wetland to be a PABH/EM1C/Ax.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): 26A Up Point(s): 26B

WETLAND INVESTIGATION
TKDA MCES SANITARY SEWER
FOREST LAKE, MN

November 17, 2023 P a g e 35

### **RESOURCE 26**

### FIELD INVESTIGATION PHOTOS



Viewing West | Overlooking type 5 area



Viewing South | Upland-wetland transition near residential complex after resource 27



Viewing South | Upland-wetland transition near residential complex at Fern Glen Court North



Viewing South | Type 3 area near resource 28

November 17, 2023

RESOURCE 27 FIELD DELINEATED 10/19/2023

### FIELD INVESTIGATION CONCLUSION<sup>1</sup> Wetland (Incidental) | RESOURCE TYPE



0.22-Acre	TOTAL AREA WITHIN ECB
Open Water	EGGERS & REED
Type 5	CIRCULAR 39
PUBHx	COWARDIN
DOMINANT HYDROPHYTIC VEGETATION	
Salix amygdaloides	Peachleaf willow
Typha angustifolia	Narrow-leaved cattail
HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Depleted Matrix	F3
Redox Dark Surface	F6
WETLAND HYDROLOGY DETERMINATION	
Saturation	A3
Geomorphic Position	D2
FAC-Neutral Test	D5

Viewing West | Moderate Transition to Wetland

### **DESKTOP REVIEW**

HYDRIC RATING – SOIL UNIT(S)	Hydric – Webster loam, 1 to 6 percent slopes, 100% (113)
NATIONAL WETLAND INVENTORY	PUBHx
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	١

The resource consists of a single wetland community type where the wetland continues to the east where the resource receives hydrology via overland flow from the surrounding area. The resource appears to be created sometime between 2006-2008 for the intended use as a stormwater retention pond for the residential building (see historic aerials below). Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation, and wetland hydrology forming a moderate boundary in most areas. Upland vegetation communities are generally dominated by reed canary and Canada thistle.

ATYPICAL/PROBLEMATIC CONDITIONS

Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.

CONSISTENCY WITH DESKTOP REVIEW

NWI inventoried areas were found to be generally correct.

Wet Point(s): 27A Up Point(s): 27B

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<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource:

### **RESOURCE 27**

### HISTORIC INVESTIGATION PHOTOS



Google Earth May 2006 | No Stormwater Pond constructed



**Google Earth May 2008** | Stormwater Pond constructed due to residential development

RESOURCE 28 FIELD DELINEATED 10/19/2023

	FIELD INVESTIGATION CONCLUSION <sup>1</sup>			
Wetland		RESOURCE TYPE		
	0.32-Acre	TOTAL AREA WITHIN ECB		
	Open Water	EGGERS & REED		
	Type 5	CIRCULAR 39		

1 9 0 0	0		
PUBHx	COWARDIN		
DOMINANT HYDROPHYTIC VEGETATION			
Typha angustifolia	Narrow-leaved cattail		
HYDRIC SOIL INDICATORS			
Depleted Below Dark Surface	A11		
Redox Dark Surface	F6		
WETLAND HYDROLOGY DETERMINATION			
Geomorphic Position	D2		
FAC-Neutral Test	D5		

28A

28B

Viewing North | Abrupt Transition to Wetland

DESKT		

HYDRIC RATING - SOIL UNIT(S)	Hydric - Webster loam, 1 to 6 percent slopes, 100% (113)
NATIONAL WETLAND INVENTORY	PUBHx
PUBLIC WATER INVENTORY	None

### **DISCUSSION**

RATIONALE FOR DETERMINATION	The resource consists of a single wetland community type where the wetland continues to the east where the resource receives hydrology via a culvert connected to resource 26 and overland flow from the surrounding area. Overall, the resource was delineated based on a lack of hydric soil, hydrophytic vegetation and wetland hydrology forming an abrupt boundary in most areas. Upland vegetation communities are generally dominated by smooth brome and white clover ( <i>Trifolium repens</i> ).
ATYPICAL/PROBLEMATIC CONDITIONS	Analysis of antecedent precipitation revealed that the area was above average at the time of the field investigation, however, surface hydrology was not observed in most areas. This is consistent with the time of year and preceding months' drought condition.
CONSISTENCY WITH DESKTOP REVIEW	NWI inventoried areas were found to be generally correct.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): Up Point(s):

WETLAND INVESTIGATION
TKDA MCES SANITARY SEWER
FOREST LAKE, MN

November 17, 2023

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### **INVESTIGATION AREA - A**

FIELD DELINEATED 10/19/2023



Viewing Northwest | Sampled area between golf course turf and sidewalk

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Hydric - Bluffton loam, 100% (75)
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None
DISCUSSION	
RATIONALE FOR DETERMINATION	The investigation area exists near the fairway of the golf course between the golf course turf and sidewalk. The investigation area has hydrophytic vegetation and hydric soils, however, it does not meet the criteria for wetland hydrology. The investigation area has a 2 percent slope and has a gradual slope across a paved path to resource 13.
CONSISTENCY WITH DESKTOP REVIEW	Reviewed desktop resources are consistent with field validation.

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): N/A Up Point(s): IA-A

WETLAND INVESTIGATION
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FOREST LAKE, MN
November 17, 2023

### **INVESTIGATION AREA - B**

FIELD DELINEATED 10/19/2023



Viewing East | Sampled area in turf golf course

DESKTOP REVIEW	
HYDRIC RATING - SOIL UNIT(S)	Non-Hydric - Dundas fine sandy loam (123)
NATIONAL WETLAND INVENTORY	PEM1A
PUBLIC WATER INVENTORY	None
DISCUSSION	
RATIONALE FOR DETERMINATION	The investigation area exists within the golf course. The investigation area does not meet criteria for hydrophytic vegetation, hydric soils (best professional judgement), and wetland hydrology; however, there was stunted or stressed vegetation at the time of field investigation. The investigation area has a 1-2 percent slope towards resource 13.
CONSISTENCY WITH DESKTOP REVIEW	NWI identifies a PEM1A; however, site investigation did not identify wetland criteria.
4.4	

<sup>&</sup>lt;sup>1</sup> Appendix B contains wetland determination data forms supporting this investigated resource: Wet Point(s): N/A Up Point(s): IA-B

WETLAND INVESTIGATION
TKDA MCES SANITARY SEWER
FOREST LAKE, MN
November 17, 2023

### **CONCLUSION**

A total of 28 wetlands, or portions thereof, were identified and delineated within the project area and in accordance with the 1987 United States Army Corps of Engineers Wetland Delineation Manual.

Project area aquatic resources may be regulated by several agencies at the local, state, and/or federal level. Activities which may potentially impact wetlands should be discussed in advance with the appropriate regulating agency regarding potential permit requirements. The Local Government Unit (LGU) responsible for implementing the Minnesota Wetland Conservation Act at this project location is the Rice Creek Watershed District (RCWD).

The RCWD and the City of Forest Lake may require vegetated buffers around all regulated wetland areas. Wetland buffers must meet the standards specified by the RCWD and the City for any project that is regulated under the Wetland Conservation Act.

This wetland investigation meets the standards and criteria described in the 1987 United States Army Corps of Engineers Wetland Delineation Manual and all applicable subsequent guidance for an on-site determination. The results reflect the conditions present at the time of the delineation.

I certify that I performed the field analysis and/or wrot	e the report for this wetland determination.
Sauther	November 17, 2023
Garrett Wee	Date
Environmental Scientist	
I certify that I performed the field analysis and/or wrot	e the report for this wetland determination.  November 17, 2023
Dylan Kruzel	Date
Environmental Scientist	
Certified MN Wetland Delineator #1406	
I certify that I performed the field analysis and/or revie	wed work completed by above staff.

November 17, 2023

Date

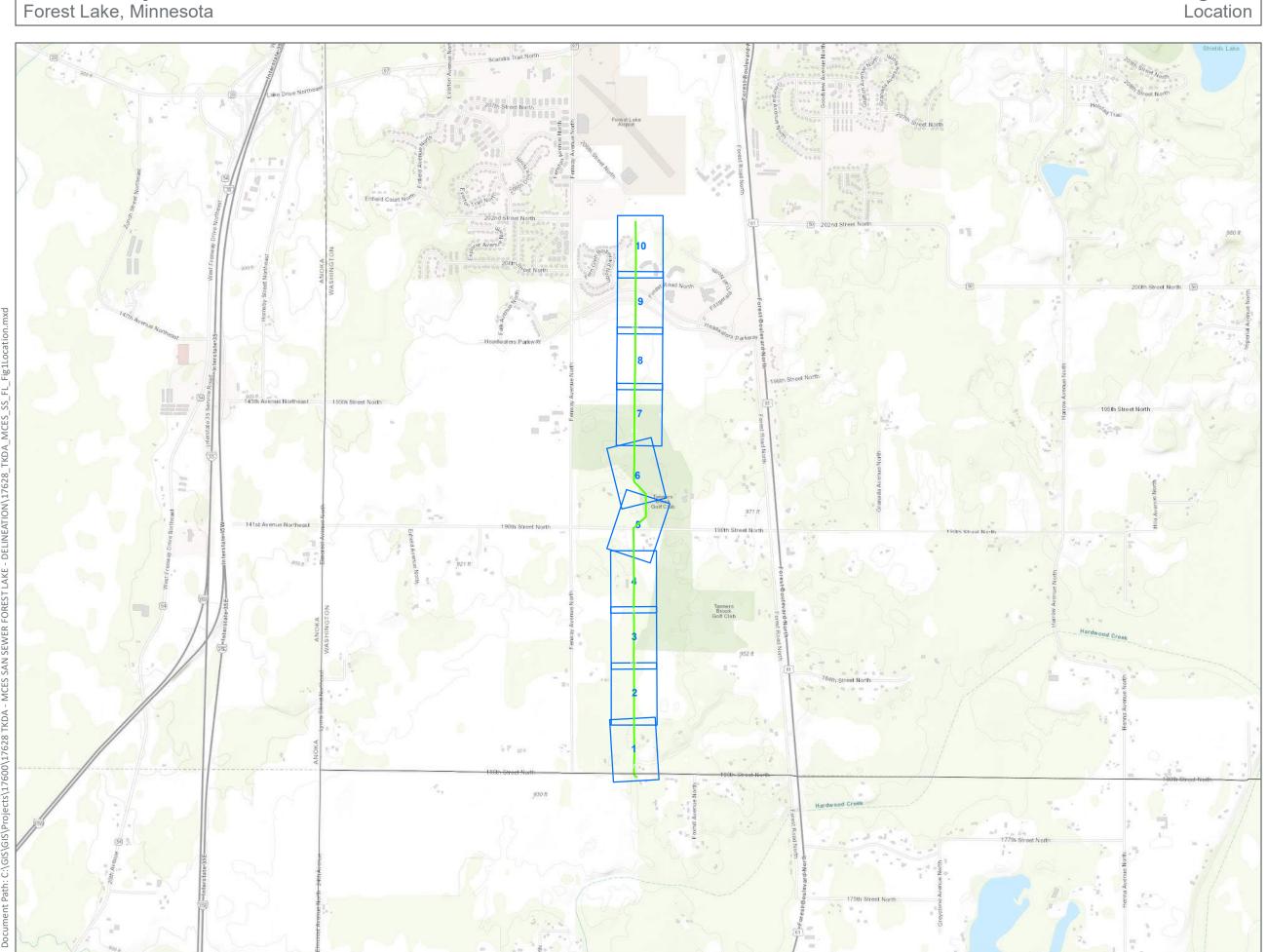
Benjamin J. Hodapp

Environmental Services Manager MN Certified Wetland Delineator #1016

### Appendix A

**FIGURES** 

Figure 1 Location





### Legend

MCES Sanitary Alignment

Strip Map Index

### **Project Notes**

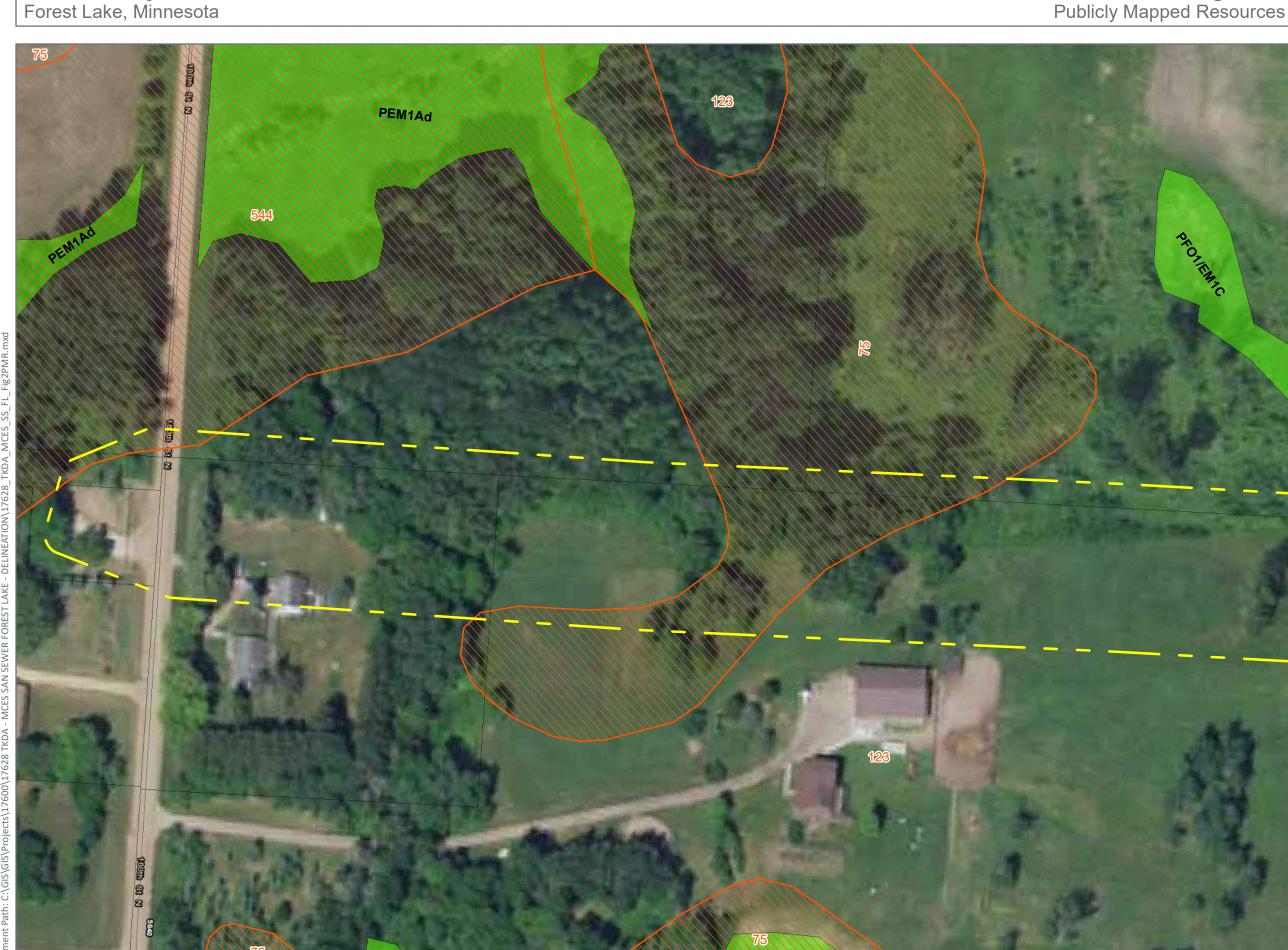
Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering





Figure 2-1
Publicly Mapped Resources



PEM1Ad



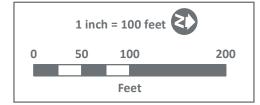
### <u>Legend</u>

- Environmental Clearance
- Boundary
- County Parcels
- National Wetland Inventory
- Non-Hydric Soil Unit
- Hydric Soil Unit
  - MN DNR Inventoried
- Public Watercourse
  - MN DNR Inventoried
- Public Waterbasin

### **Project Notes**

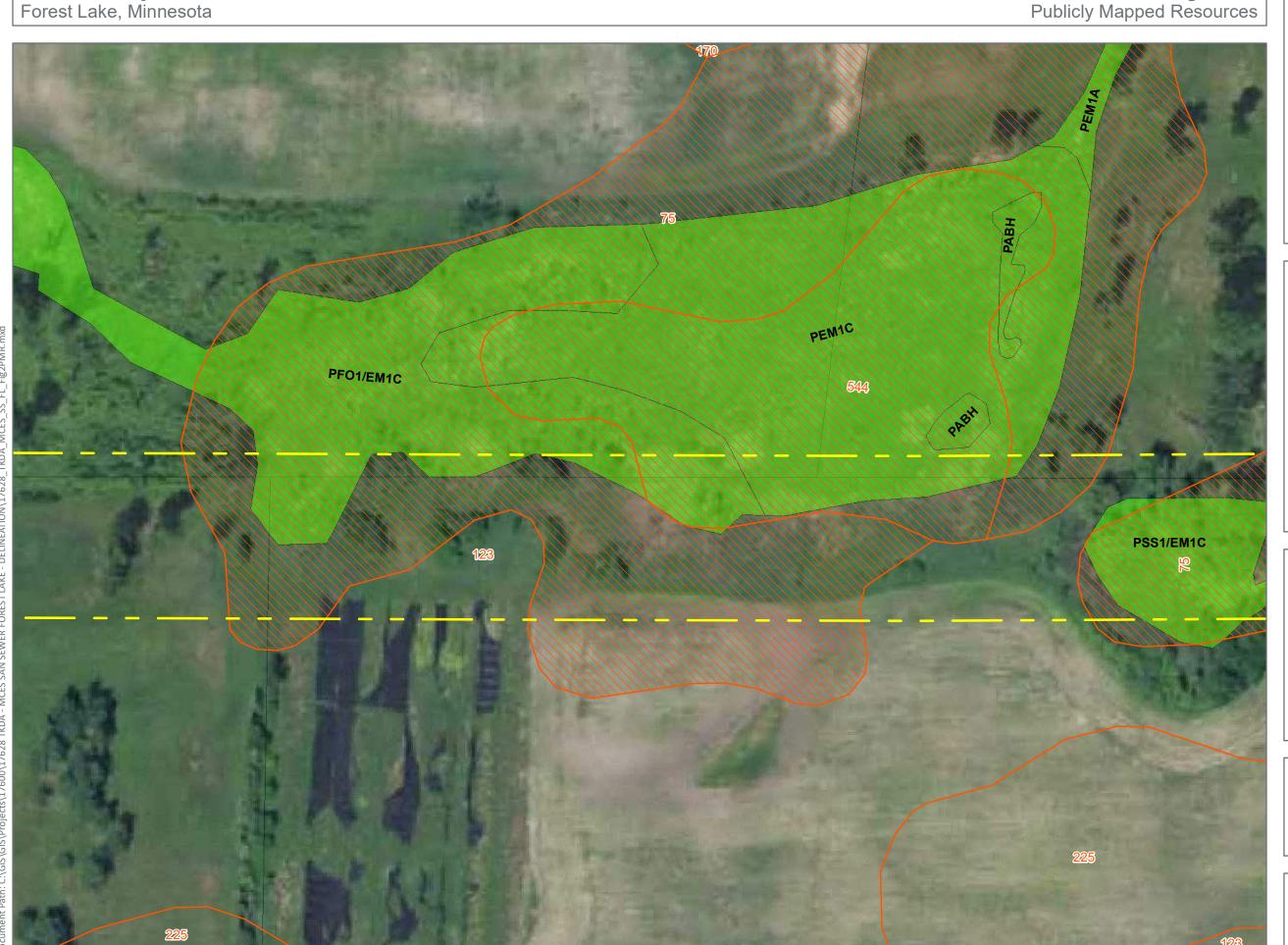
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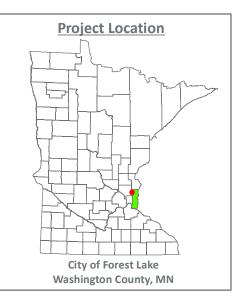
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



### ANDERSON

Figure 2-2
Publicly Mapped Resources





## Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried

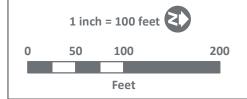
Legend

### **Project Notes**

Public Waterbasin

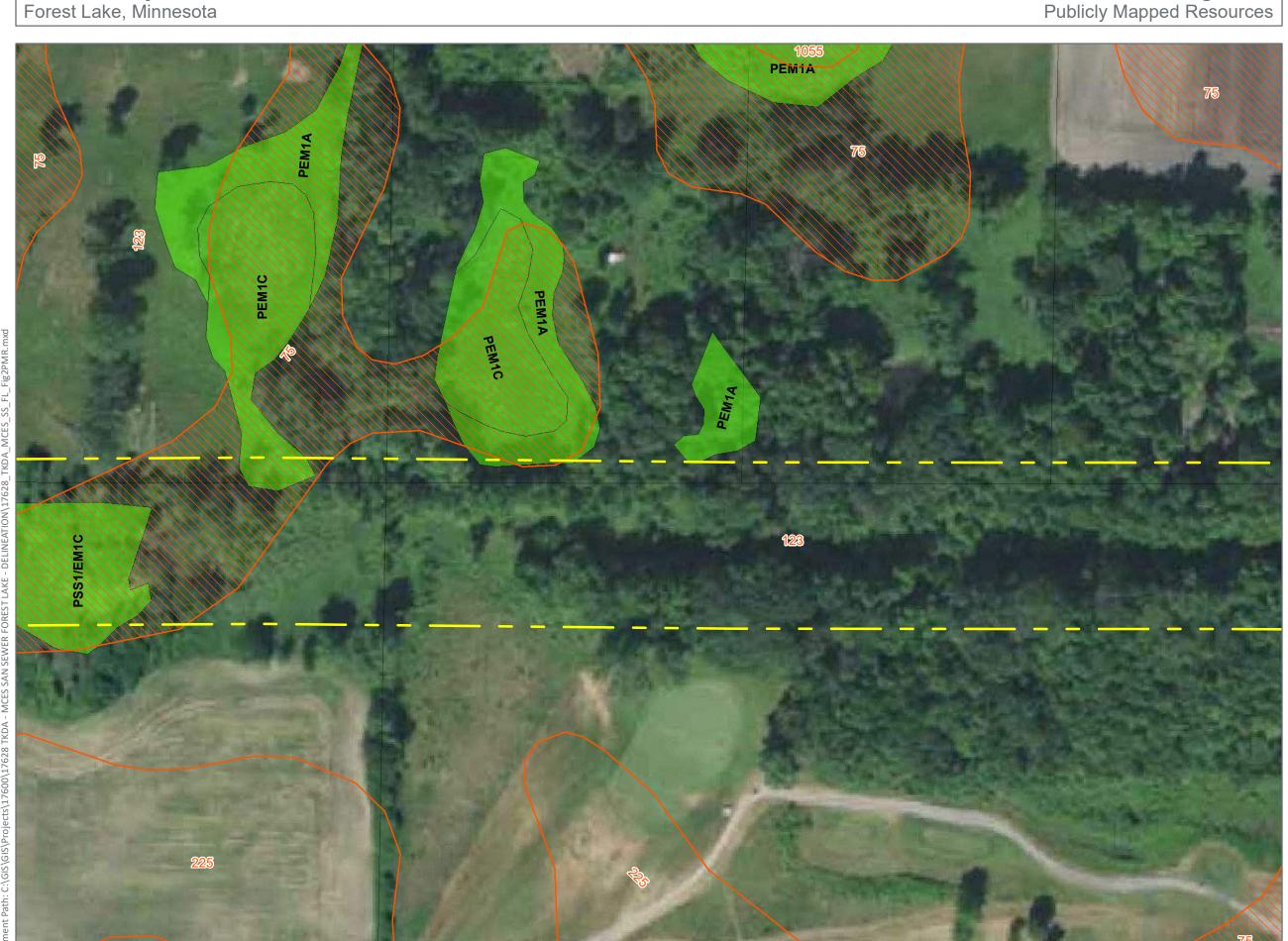
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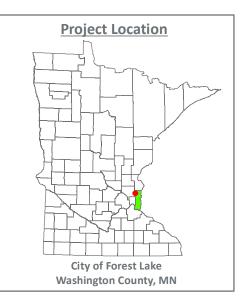
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



### ANDERSON

Figure 2-3
Publicly Mapped Resources



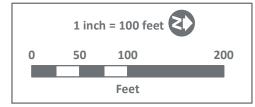


# Legend Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried Public Waterbasin

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 10.4.2023

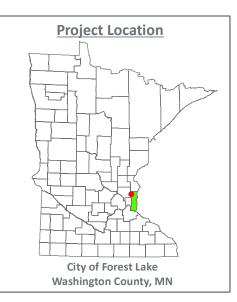
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



### ANDERSON

Figure 2-4
Publicly Mapped Resources





## Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse

Legend

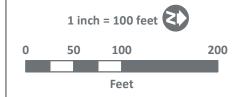
### **Project Notes**

MN DNR Inventoried

Public Waterbasin

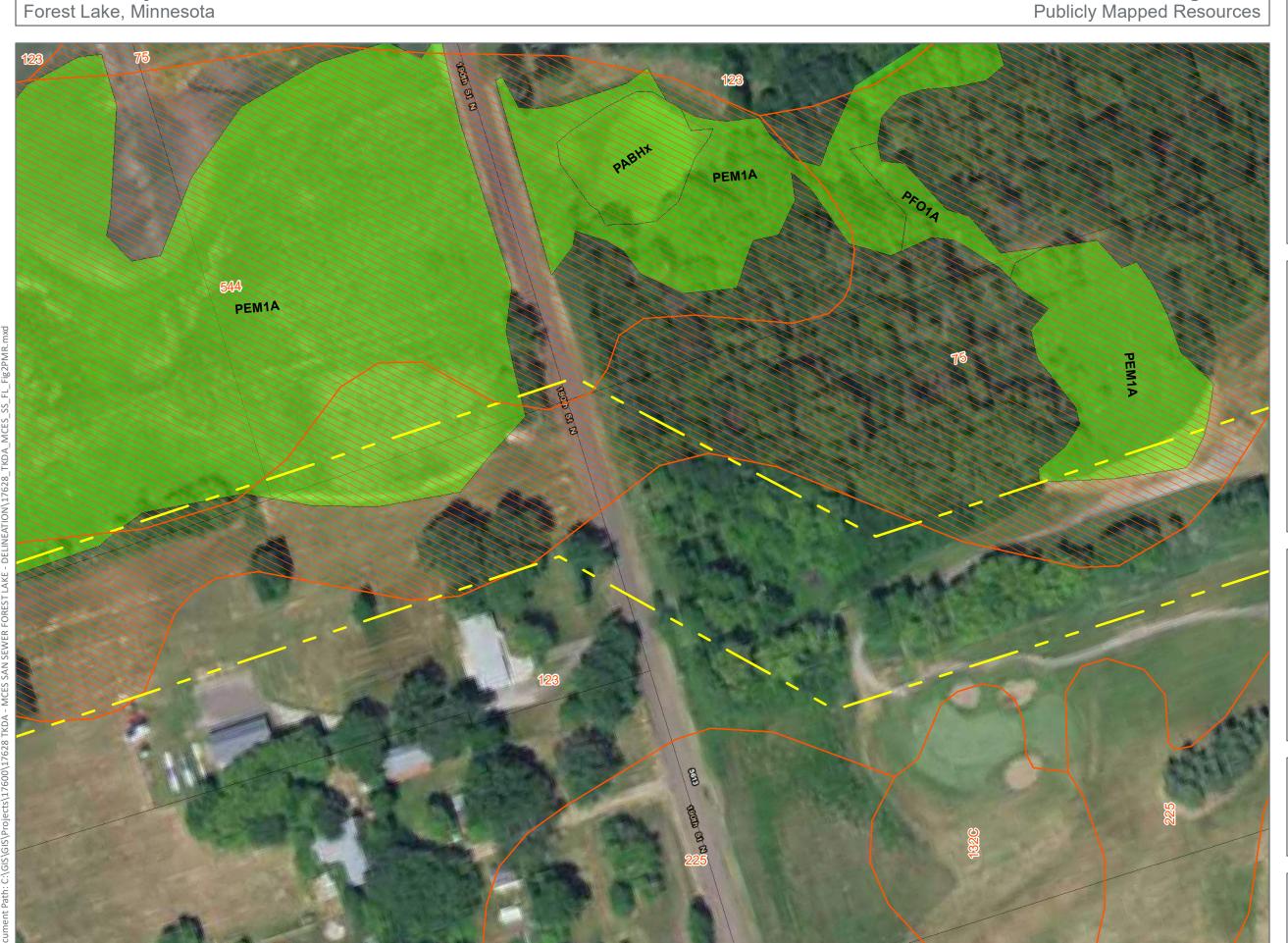
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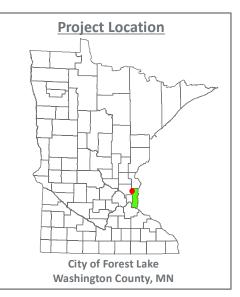
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



### ANDERSON

Figure 2-5 Publicly Mapped Resources



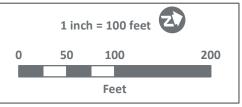


### Legend **Environmental Clearance** Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried Public Waterbasin

### **Project Notes**

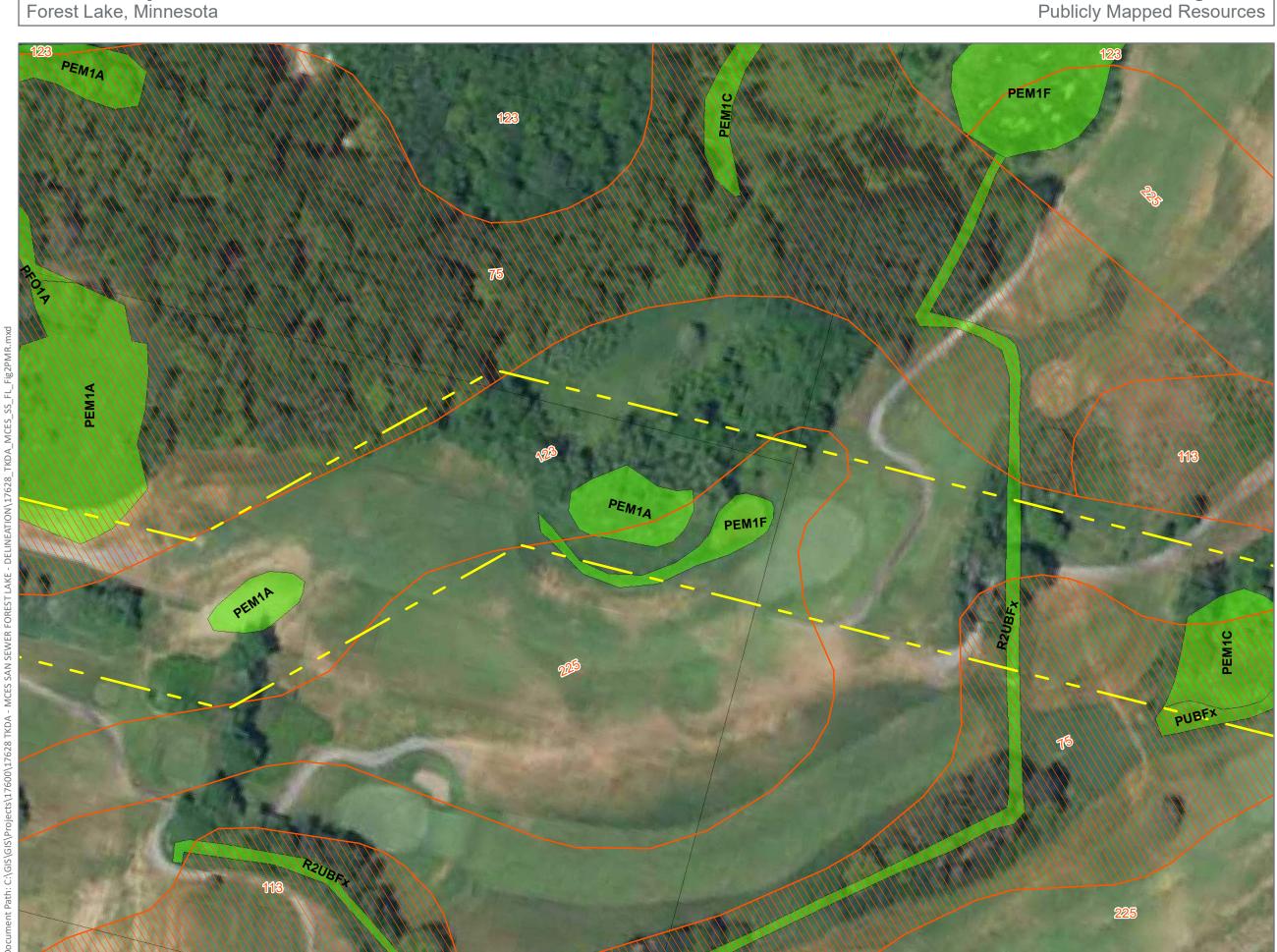
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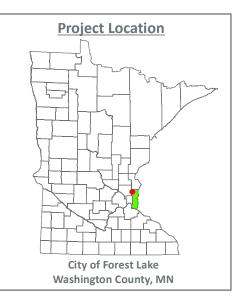
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 



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Figure 2-6
Publicly Mapped Resources





# Legend Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried Public Waterbasin

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering

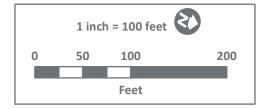
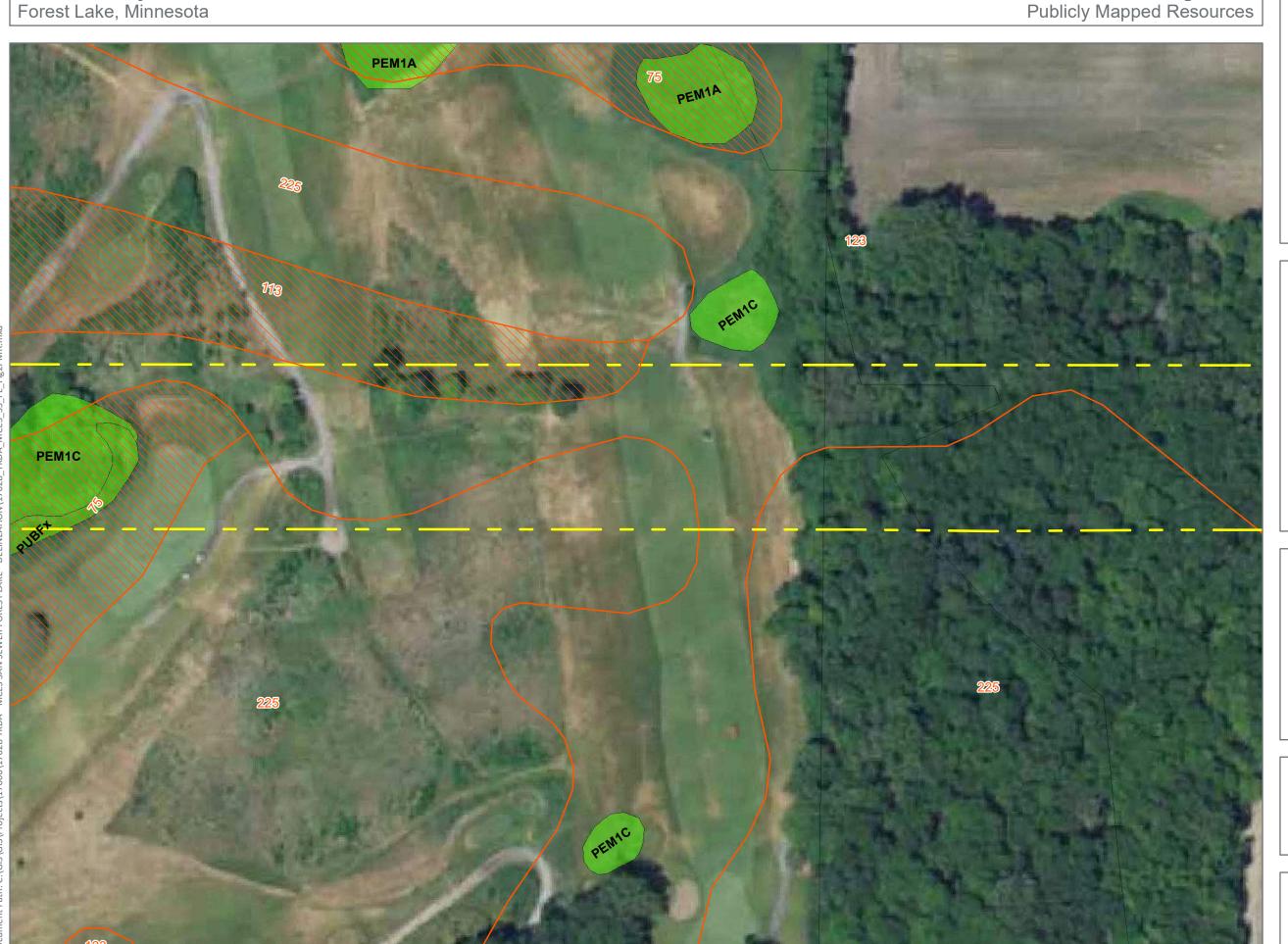
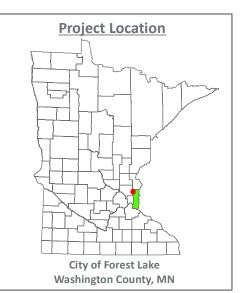




Figure 2-7
Publicly Mapped Resources





# Legend Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried Public Waterbasin

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering

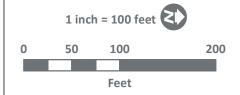
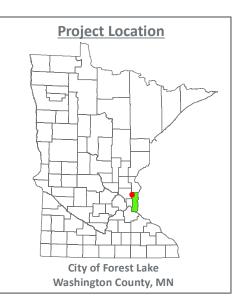




Figure 2-8
Publicly Mapped Resources





### Environmental Clearance Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried

Legend

### MN DNR Inventoried Public Waterbasin

Public Watercourse

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering

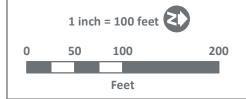
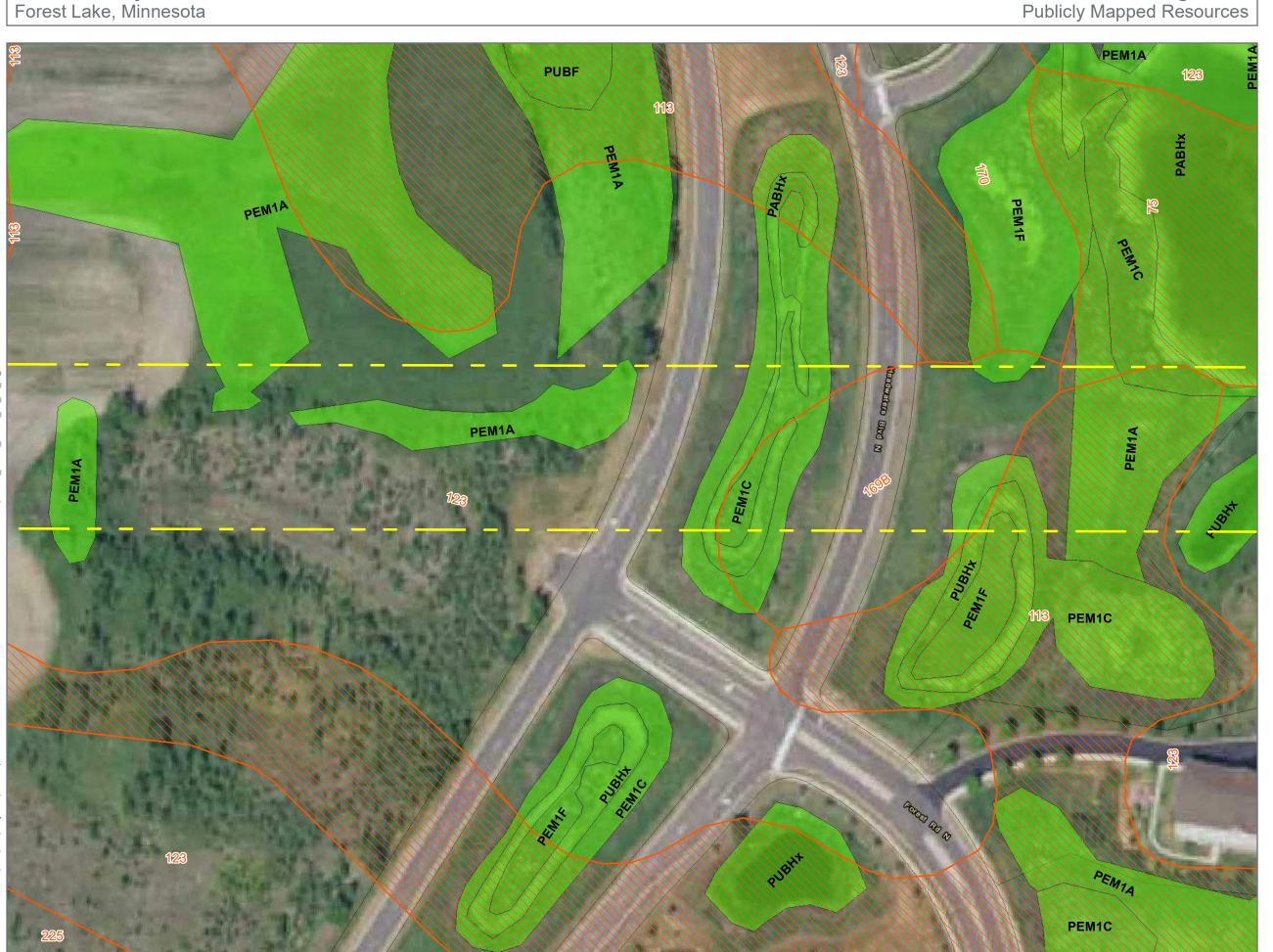
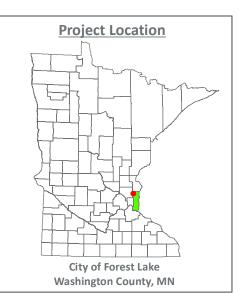




Figure 2-9 Publicly Mapped Resources





### Legend

**Environmental Clearance** Boundary

County Parcels

National Wetland Inventory

Non-Hydric Soil Unit

Hydric Soil Unit

MN DNR Inventoried

Public Watercourse

MN DNR Inventoried Public Waterbasin

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

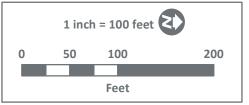




Figure 2-10 Publicly Mapped Resources



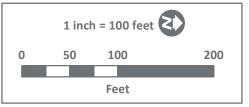


### Legend **Environmental Clearance** Boundary County Parcels National Wetland Inventory Non-Hydric Soil Unit Hydric Soil Unit MN DNR Inventoried Public Watercourse MN DNR Inventoried Public Waterbasin

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 Longitude: -92.99373 **Date:** 10.4.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

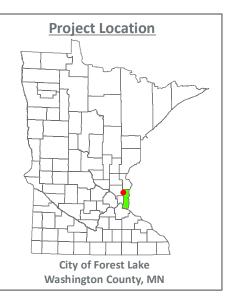


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**MCES Sanitary Sewer Maintenance** 

Figure 3-1 Delineation





### Legend

Environmental Clearance Boundary

County Parcels

Wetland Field Delineated 10/12-10/19/2023

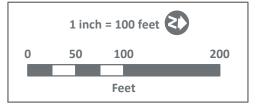
Control Structure

Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

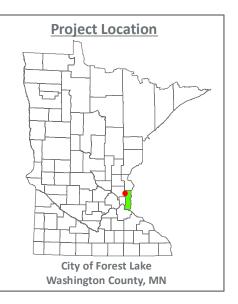
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 



**MCES Sanitary Sewer Maintenance** 







### Legend

Environmental Clearance

Boundary

County Parcels

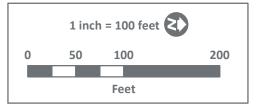
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering

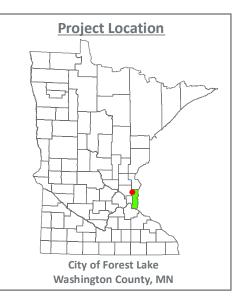


### ANDERSON

**MCES Sanitary Sewer Maintenance** 

Figure 3-3 Delineation





### Legend

Environmental Clearance

Boundary

County Parcels

Wetland Field Delineated 10/12-10/19/2023

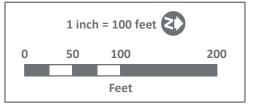
Control Structure

Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

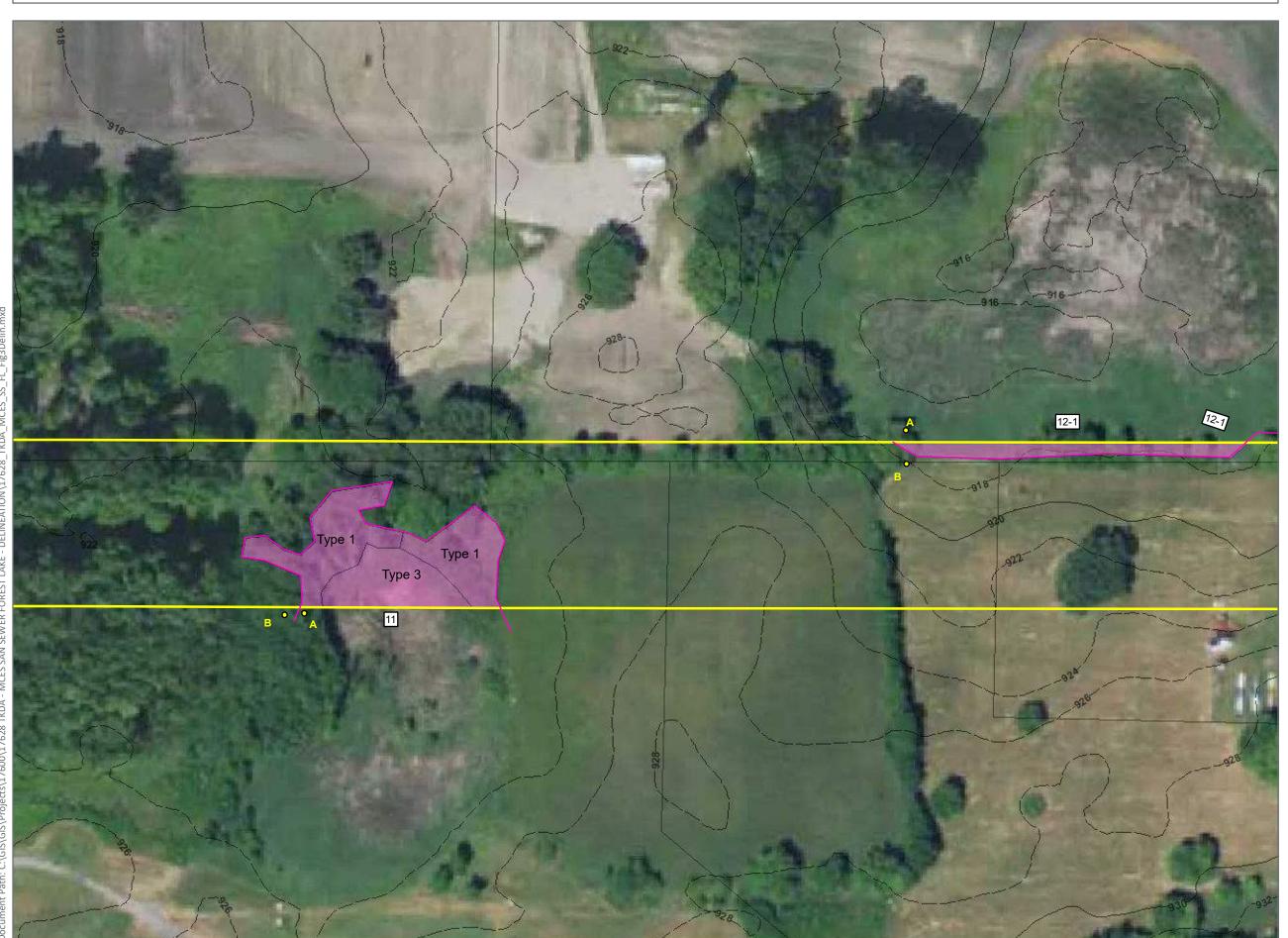
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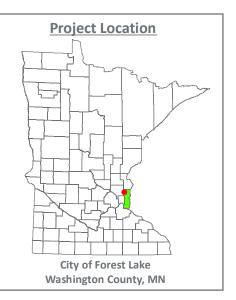


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**MCES Sanitary Sewer Maintenance** 







### Legend

Environmental Clearance
Boundary

boundary

County Parcels

Wetland Field Delineated 10/12-10/19/2023

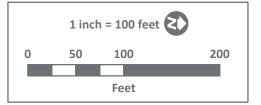
Control Structure

Culvert

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 11.6.2023

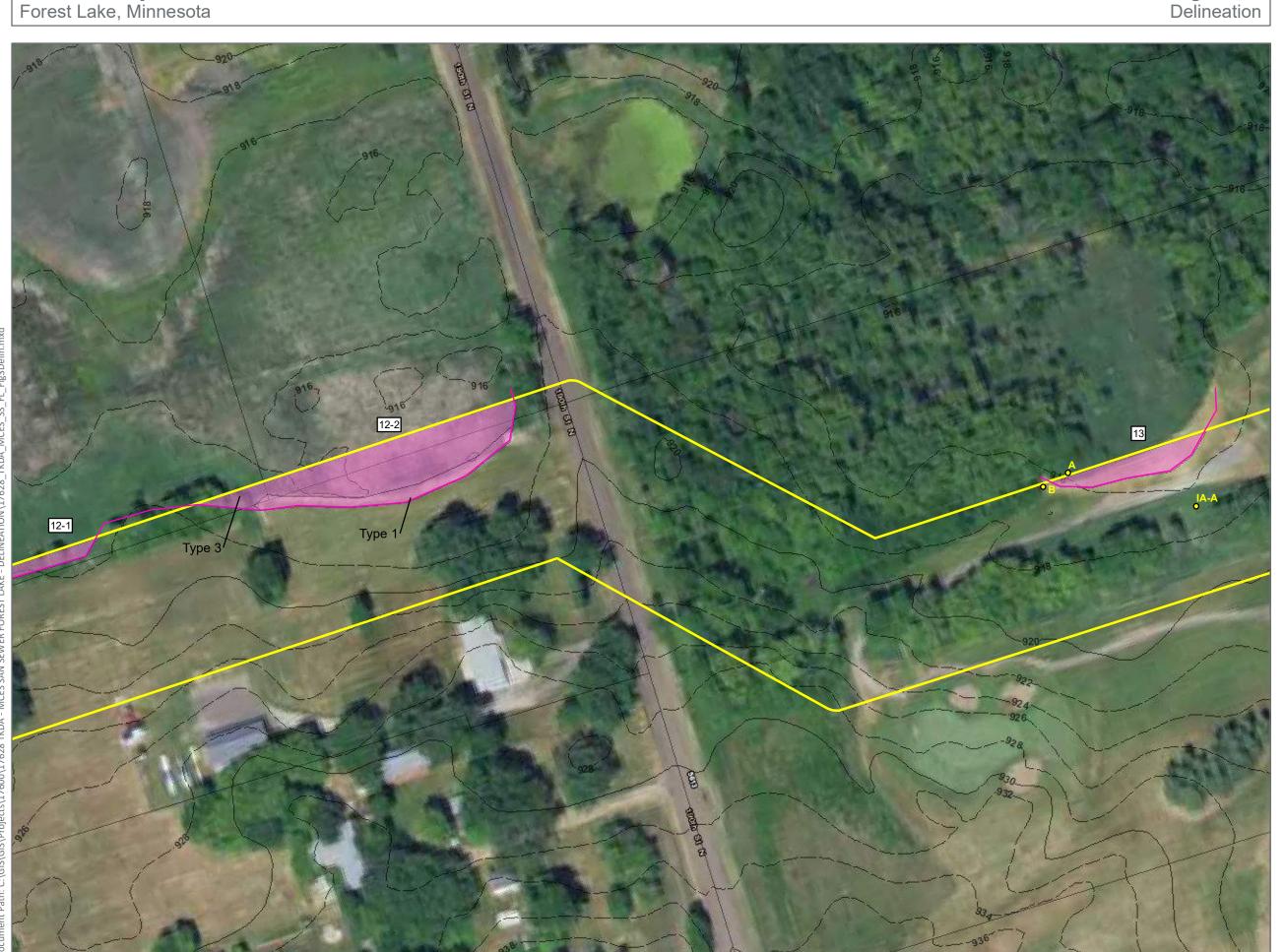
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering

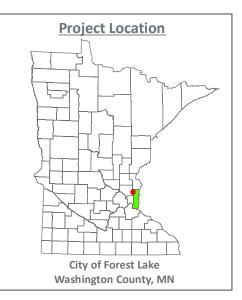


### ANDERSON

**MCES Sanitary Sewer Maintenance** 

Figure 3-5
Delineation





#### Legend

Environmental Clearance

Boundary

County Parcels

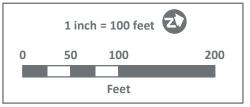
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



# ANDERSON

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Forest Lake, Minnesota

Figure 3-6 Delineation





#### Legend

Environmental Clearance

Boundary

County Parcels

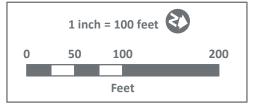
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

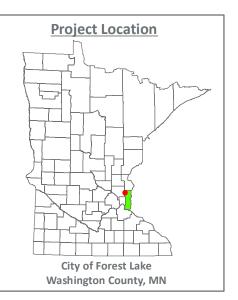


**P** 763.412.4000 **F** 763.412.4090 **ae-mn**.com

**MCES Sanitary Sewer Maintenance** 







#### Legend

Environmental Clearance Boundary

County Parcels

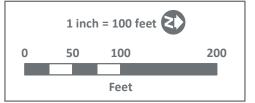
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

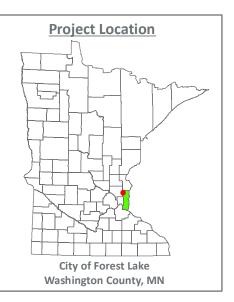


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**MCES Sanitary Sewer Maintenance** 

Figure 3-8 Delineation





#### Legend

Environmental Clearance

Boundary

County Parcels

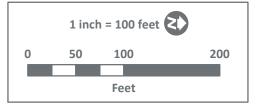
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

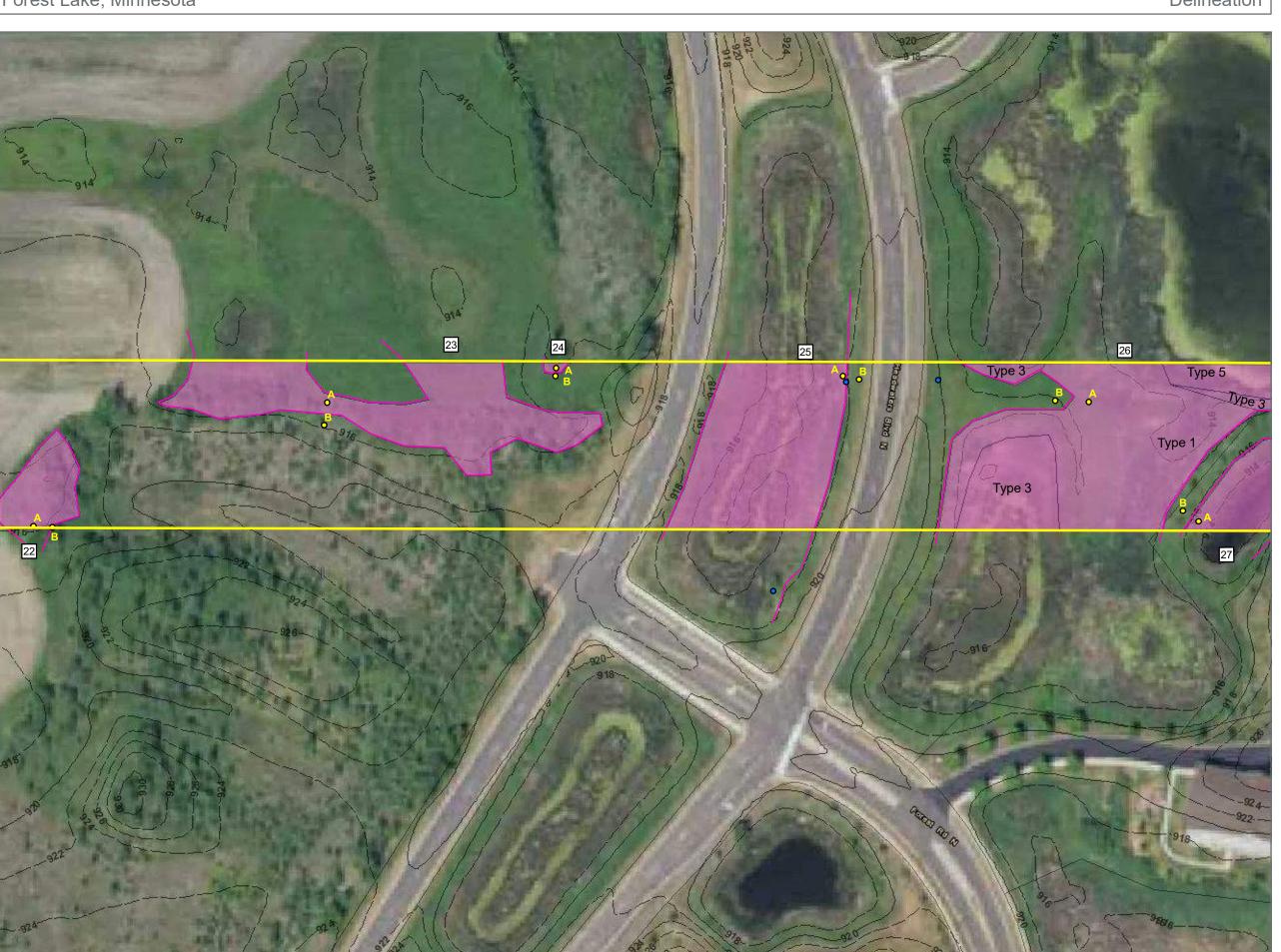
Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

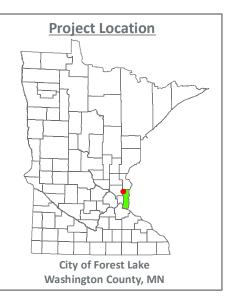


**P** 763.412.4000 **F** 763.412.4090 **ae-mn**.com

**MCES Sanitary Sewer Maintenance** 

Figure 3-9 Delineation





#### Legend

Environmental Clearance Boundary

County Parcels

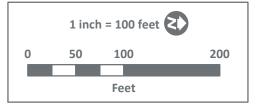
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 **Latitude:** 45.21079 **Longitude:** -92.99373 **Date:** 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., **Anderson Engineering** 

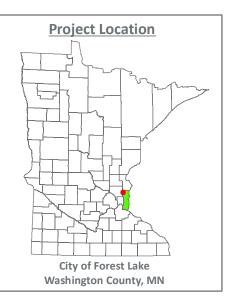


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**MCES Sanitary Sewer Maintenance** 

Figure 3-10
Delineation





#### Legend

Environmental Clearance
Boundary

boullualy

County Parcels

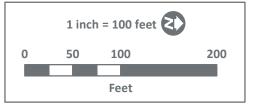
Wetland Field Delineated 10/12-10/19/2023

- Control Structure
- Culvert

### **Project Notes**

Project No: 17628 Latitude: 45.21079 Longitude: -92.99373 Date: 11.6.2023

Sources: MnDNR, USDA, ESRI, TIGER, Bing, Washington Co., Anderson Engineering



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# **Appendix B**

**ROUTINE ON-SITE DETERMINATION METHOD DATASHEETS** 

Project/Site:	MCES Sanitar	ry Sewer - Forest Lak	e City/Cou	untv: F	orest Lake/Wa	shinaton	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA		Sta	-	Sampling Point:	01A
Investigator(s):	Dvlan K	Kruzel, Garrett Wee		, Township, Ran			, T163, R36W	
Landform (hillslope, te			Local relief (cond	• • • • • • • • • • • • • • • • • • • •				e (%): 0
Subregion (LRR or ML			<del></del>	.21066041				` '
Soil Map Unit Name:	,		nro muck - Hydric Soil u		5	NWI classificati		None
•	ic conditions on th		time of year? Yes		X (If no,	explain in Remar		
			significantly disturbe			umstances" pres	•	X No
			naturally problemati			in any answers ir		
			owing sampling p		•	-	•	
Hydrophytic Vegeta		Yes X	No	Is the Samp	•			
Hydric Soil Present		Yes X	No	within a Wet		Yes X	No	
Wetland Hydrology		Yes X	No			: ID:		_
- Wettand Trydrology				ii yes, option	ar vvettaria ente			
		ures here or in a sepa Antecedent precipitation	arate report.) on is above average for	r the time of yea	r			
HYDROLOGY								
Wetland Hydrology	v Indicators:							
	•	equired; check all that	t annly)			Secondary Indic	ators (minimum of	two required)
Surface Water		2quirou, oriook un triat	Water-Stained Leaves	(B9)			il Cracks (B6)	wo roquirou)
High Water Tal	` '	_	Aquatic Fauna (B13)	(23)		X Drainage P	` ,	
Saturation (A3)			Marl Deposits (B15)				Lines (B16)	
Water Marks (E	•	_	Hydrogen Sulfide Odo	r (C1)			n Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhizospheres	s on Living Root	s (C3)	Crayfish Bu		
Drift Deposits (	(B3)		Presence of Reduced	Iron (C4)		Saturation	Visible on Aerial Im	agery (C9)
Algal Mat or Ci	rust (B4)		Recent Iron Reduction	in Tilled Soils (0	C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits (	B5)	<u> </u>	Thin Muck Surface (C7	7)		X Geomorphi	c Position (D2)	
Inundation Visi	ible on Aerial Imag	jery (B7)	Other (Explain in Rema	arks)		Shallow Aq	uitard (D3)	
Sparsely Vege	tated Concave Sur	rface (B8)				Microtopog	raphic Relief (D4)	
						X FAC-Neutra	al Test (D5)	
Field Observations	•							
Surface Water Pres		s No X	Depth (inches):					
Water Table Presen		s No X	. · · · <u> </u>					
Saturation Present?			<del></del>		Wetland Hydi	rology Present?	Yes X	No
(includes capillary fr		, NOX	Deput (mones).		Wedana riya	ology i resent.	100 <u>X</u>	
(o.aaoo oapa.)								
Describe Recorded	Data (stream gaug	ge, monitoring well, a	erial photos, previous in	nspections), if a	vailable:			
Remarks:								
ixemarks.								

GETATION - Use scientific names of plants.				Sampling Point: 01A
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 6 (A)
ree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
. Acer negundo / Boxelder, Box elder	25	Yes	FAC	Species Across All Strata: 6 (B)
•				
·				Percent of Dominant Species
		-		That Are OBL, FACW, or FAC:100.0 (A/E
<u> </u>			<u> </u>	Prevalence Index worksheet:
-	25	= Total Cov	er	Total % Cover of: Multiply by:
apling/Shrub Stratum (Plot size: 15-ft )		_	-	OBL species 0 x1 = 0 FACW species 100 x2 = 200
Sambucus nigra / Black elderberry	15	Yes	FACW	FACW species 100 x 2 = 200 FAC species 40 x 3 = 120
. Cornus alba / Red osier	10	Yes	FACW	FACU species 5 x 4 = 20
				UPL species 0 x 5 = 0
				Column Totals: 145 (A) 340 (B
				(1) 070 (1)
				Prevalence Index = B/A = 2.34
	25	= Total Cov	er	Hydrophytic Vegetation Indicators:
erb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
. Phalaris arundinacea / Reed canary grass	45	Yes	FACW	X 2 - Dominance Test is >50%
Circaea alpina / Small enchanter's nightshade	30	Yes	FACW	X 3 - Prevalence Index ≤3.0¹
Cirsium arvense / Canada thistle	5	No	FACU	4 - Morphological Adaptations¹ (Provide supporting
·				Problematic Hydrophytic Vegetation¹ (Explain )
		_		
i				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
·			_	be present, unless disturbed or problematic.
·				Definitions of Vegetation Strata
·				Definitions of Vegetation Strata
0				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
1			<del>-</del> ·	breast height (DBH), regardless of height.
2	80	= Total Cov		Sapling/shrub - Woody plants less than 3 in. DBH and
Voody Vine Stratum (Plot size: 30-ft )		_ = 10(a) COV	EI	greater than or equal to 3.28 ft (1 m) tall.
. Vitis riparia / River-bank grape	15	Yes	FAC	Herb - All herbaceous (non-woody) plants, regardless of
· · · · · · · · · · · · · · · · · · ·		103	TAO	size, and woody plants less than 3.28 ft tall.
·		- ·	<del>-</del>	Woody vines - All woody vines greater than 3.28 ft in
· -				height.
` <del>-</del>	15	= Total Cov	er	
		_	-	Hydrophytic
				Vegetation
				Present? Yes X No

SOIL Sampling Point: 01A

Depth	ription: (Describe to t Matrix			x Features				-		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-9	10YR 2/2	90	10YR 3/4	10	С	М	Lm Fine Sand	Distinct re	dox concentratio	ns
9-24	10YR 5/2	90	10YR 3/4	10	C	М	Lm Fine Sand	PRC/Grav	el intermixed	
	<u></u>									
	·									
	·									
	-									
	<u></u>						·	-		
T O. O.		- DM Dad					21		1 : :	4
Type: C=Coi	ncentration, D=Depletio	on, RIVI=Redu	ced Matrix, MS=Masi	ked Sand Gra	ains.		-Loca	ition: PL=P	ore Lining, M=Ma	atrix.
Hydric Soil I	ndicators:						Indicators	for Proble	ematic Hydric S	oils³:
Histosol	(A1)		Polyvalue Belov	v Surface (S8	3) <b>(LRR R,</b>	MLRA 149	<b>9B)</b> 2 cm	Muck (A10	) (LRR K, L, ML	RA 149B)
Histic Ep	oipedon (A2)		Thin Dark Surfa	ce (S9) (LR	R R, MLRA	149B)	Coas	t Prairie Re	dox (A16) (LRR	R K, L, R)
Black Hi	stic (A3)		Loamy Mucky N	/lineral (F1)	(LRR K, L)		5 cm	Mucky Pea	t or Peat (S3) (L	.RR K, L, R)
	en Sulfide (A4)		Loamy Gleyed I				Dark	Surface (S	7) (LRR K, L)	-
	d Layers (A5)		Depleted Matrix				Polyv	alue Below	Surface (S8) (L	.RR K, L)
Depleted	d Below Dark Surface (	A11)	Redox Dark Sur	rface (F6)			Thin	Dark Surfac	ce (S9) (LRR K,	L)
	ark Surface (A12)	·	Depleted Dark S						Masses (F12)	
Sandy M	Mucky Mineral (S1)		Redox Depress				— Piedr	nont Flood	olain Soils (F19)	(MLRA 149B)
	Gleyed Matrix (S4)		_ '	,					A6) <b>(MLRA 144</b>	
	Redox (S5)							Parent Mate		,
	l Matrix (S6)								rk Surface (TF12	2)
	rface (S7) (LRR R, MI	LRA 149B)						r (Explain in		,
	, , ,	·					_		,	
Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	s disturbed	or probler	matic.			
Restrictive L	ayer (if observed):									
Type:										
Depth (in	ches):						Hydric Soil P	resent?	Yes X	No
Remarks:							l			
Ciliains.										

Project/Site:	MCES Sanitary	Sewer - Forest L	_ake	City/County:	Forest Lake/V	Vashington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA	· · —		State: MN	Sampling Point:	01B
Investigator(s):	Dylan Kr	uzel, Garrett Wee	9	Section, Townshi	o, Range:	S28	T163, R36W	
Landform (hillslope, ter				lief (concave, con		none	Slope	(%): 4
Subregion (LRR or ML		LRR K	 Lat:	•	· ·			• •
Soil Map Unit Name:		123 - Dundas f	ine sandy loam, N	lon-hydric soil uni		NWI classification	on: N	lone
Are climatic / hydrologi						— o, explain in Remark	(s.)	
	, Soil,	• •	•		Are "Normal C	Circumstances" prese	ent? Yes X	( No
	, Soil ,					plain any answers in	Remarks.)	
SUMMARY OF FI		_				ects, important	features, etc.	
Hydrophytic Vegetat			No		Sampled Area	· ·	,	
Hydric Soil Present?		-	No	-	a Wetland?	Yes	No X	
Wetland Hydrology I		YesX	NoX	-		Site ID:		-
- Welland Hydrology I	i resent:			- " " " " " " " " " " " " " " " " " " "	optional Wetland C			<del></del> -
Remarks: (Explain a Wetlan	alternative procedur nd criteria is not met			e average for the t	me of year			
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r		guired: check all t	hat apply)			Secondary Indic	ators (minimum of to	vo required)
Surface Water		14 04, 0 0	Water-Stained	Leaves (B9)		·	l Cracks (B6)	
High Water Tab	` '	_	Aquatic Fauna	` ,			atterns (B10)	
Saturation (A3)	` '	_	Marl Deposits	` '		Moss Trim I		
Water Marks (E		_	Hydrogen Sulf			Dry-Seasor	Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhiz	ospheres on Livin	g Roots (C3)	Crayfish Bu		
Drift Deposits (	B3)	_		educed Iron (C4)		Saturation \	/isible on Aerial Ima	gery (C9)
Algal Mat or Cr	•	_	Recent Iron R	eduction in Tilled	Soils (C6)	Stunted or S	Stressed Plants (D1	)
Iron Deposits (I	B5)	_	Thin Muck Su	rface (C7)		Geomorphi	Position (D2)	
Inundation Visit	ble on Aerial Image	ery (B7)	Other (Explain	in Remarks)		Shallow Aq	uitard (D3)	
Sparsely Veget	tated Concave Surf	ace (B8)	<del></del>			Microtopog	aphic Relief (D4)	
						FAC-Neutra	l Test (D5)	
Field Observations	•							
Surface Water Prese		No X	Depth (inche	e).				
Water Table Present			Depth (inche		-			
Saturation Present?					Wetland Hy	/drology Present?	Yes	No X
(includes capillary fr		NOX	Deptil (illone		_   Welland H	diology Fresent:	163	NOX
(includes capillary iii	ilige)							
Describe Recorded	Data (stream gauge	e, monitoring well	l, aerial photos, pi	evious inspection	s), if available:			
Demonto								
Remarks:								
•								

Prevalence Index worksheet:   Total % Cover of:   Multiply by:	VEGETATION - Use scientific names of plants.				Sampling Point: 01B
Total Number of Dominant Species   Species Across All Stratus   Species Across Across All Stratus   Species Across Across All Stratus   Species Across Acro	Tree Stratum (Plot size: 30-ft )				Number of Dominant Species That Are OBL, FACW, or FAC:3 (A)
Percent of Dominant Species   That Are OBL, FACW, or FAC:   60.0   (A/B	1.				
Prevalence Index worksheet:   Total % Cover of:   Multiply by:   Total % Cover of:   Total % Cover of:   Multiply by:   Total % Cover of:   Total % Cover of:   Multiply by:   Total % Cover of:   Multiply by:   Total % Cover of:   Total % Cover of:   Total % Cover of:   Multiply by:   Total % Cover of:   Tot	4.				· ·
Sapling/Shrub Stratum   (Plot size:	6				
4.	1				FACW species         25         x 2 =         50           FAC species         15         x 3 =         45
The Stratum   (Plot size:	4.	-			
Herb Stratum (Plot size:5-ft)   1. Bromus inermis / Smooth brome, Smooth brome, Hungarian   15	·		-		Prevalence Index = B/A =3.23
2. Phalaris arundinacea / Reed canary grass  3. Arctium minus / Common burdock  4. Sambucus nigra / Black elderberry  5. Acer negundo / Boxelder, Box elder  6. Urtica dioica / Stinging nettle  7.			= Total Cov	rer	
3. Arctium minus / Common burdock 4. Sambucus nigra / Black elderberry 5. Acer negundo / Boxelder, Box elder 6. Urtica dioica / Stinging nettle 7. 8. 9. 10. 11. 12. 12. 15. 16. 16. 16. 16. 16. 16. 16. 16. 16. 16	1. Bromus inermis / Smooth brome, Smooth brome, Hungarian	15	Yes	UPL	
4. Sambucus nigra / Black elderberry 5. Acer negundo / Boxelder, Box elder 6. Urtica dioica / Stinging nettle 7.		15	Yes		
5. Acer negundo / Boxelder, Box elder 6. Urtica dioica / Stinging nettle 7.		10	Yes	FACU	
6. Urtica dioica / Stinging nettle	•	-			Problematic Hydrophytic Vegetation¹ (Explain )
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height.  Uocody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? YesX No	·	-			
9.   Definitions of vegetation Strata   10.   Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.   Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.   Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.   Woody vines - All woody vines greater than 3.28 ft in height.      0	7.				· · · · · · · · · · · · · · · · · · ·
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	9.	-			Definitions of Vegetation Strata
Woody Vine Stratum (Plot size: 30-ft )  1.	11.		_		
size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  The state of the state o	Woody Vine Stratum (Plot size: 30-ft )	65	= Total Cov	rer	greater than or equal to 3.28 ft (1 m) tall.
4 height			_		size, and woody plants less than 3.28 ft tall.
Hydrophytic Vegetation Present?  Yes X No		-	-		
Present?         Yes         X         No		0	= Total Cov	er	
Remarks: (Explain alternative procedures here or in a separate report.)					_
Nomano. (Explain alcinative procedures note of in a coparate report.)	Remarks: (Explain alternative procedures here or in a separate	report.)			1

SOIL Sampling Point: 01B

	iption: (Describe to th	e depth nee			or confirm	the abse	nce of indicator	rs.)
Depth	Matrix	0/		k Features	T 1	1 2	<b>-</b> .	Б
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-20	10YR 2/1	100					Loam	
20-26	10YR 6/2	95	10YR 6/8	5	<u> </u>	M	Fine Sndy Lm	PRC
							·	<u></u>
	-							
								. <u> </u>
					<u> </u>			
				-				
¹Type: C=Con	centration, D=Depletion	n, RM=Reduc	ed Matrix, MS=Masl	ked Sand Gr	ains.		²Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil Ir	ndicators:						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	v Surface (S	8) <b>(I RR R</b>	MI RA 149		Muck (A10) (LRR K, L, MLRA 149B)
	ipedon (A2)	-	Thin Dark Surfa	-			· —	st Prairie Redox (A16) (LRR K, L, R)
		-				( 1430)		
Black His	n Sulfide (A4)	-	Loamy Mucky N Loamy Gleyed I		(LIXIX IX, L)			Mucky Peat or Peat (S3) (LRR K, L, R) Surface (S7) (LRR K, L)
		-						
	Layers (A5)	-	Depleted Matrix					value Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	A11) _	Redox Dark Sui					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	-	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)	-	Redox Depress	ions (F8)				mont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)							c Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, ML	RA 149B)					Othe	r (Explain in Remarks)
3Indicators of	hydrophytic vegetation	and wetland	nydrology must be n	resent unles	ss disturbed	or proble	matic	
			.,				1	
	ayer (if observed):							
Type:								
Depth (inc	ches):						Hydric Soil P	Present? Yes X No
Remarks:								
Remarks.								

Project/Site:	MCES Sanitar	y Sewer - Forest Lal	ke City	/County:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA			ate: MN	Sampling Point:	02A
Investigator(s):	Dylan K	ruzel, Garrett Wee	Sec	tion, Township, Ra	ange:	S28	, T163, R36W	
Landform (hillslope, ter			Local relief (	concave, convex,	none):	concave	Slope	e (%): 0
Subregion (LRR or ML			Lat:				148 Datur	m: WGS 84
Soil Map Unit Name:			e sandy loam, Non-h	nydric soil unit		NWI classificati	on: I	None
Are climatic / hydrologi	ic conditions on the	e site typical for this	time of year? Yes	No	X (If no,	_ explain in Remar	ks.)	
Are Vegetation	, Soil	, or Hydrology	significantly dist	urbed?	Are "Normal Circ	cumstances" pres	ent? Yes	X No
Are Vegetation					(If needed, expla	ain any answers ir	Remarks.)	
SUMMARY OF FI	NDINGS - Atta	ach site map sh	nowing samplin	ng point locati	ons, transec	ts, important	features, etc.	
Hydrophytic Vegetat		Yes X	No	Is the Sam		•	,	
Hydric Soil Present?		Yes X	No	within a W	•	Yes X	No	
Wetland Hydrology I		Yes X	No			e ID:		_
				,,				
Remarks: (Explain a Wetlan			arate report.) iion is above average	e for the time of ye	ear			
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r	<u> </u>	auired: check all th:	at annly)			Secondary Indic	ators (minimum of	two required)
Surface Water		quirca, criccit all tile	Water-Stained Lea	ives (R9)			il Cracks (B6)	wo required)
High Water Tab	` ,		Aquatic Fauna (B1	` '			atterns (B10)	
Saturation (A3)			Marl Deposits (B15	•			Lines (B16)	
Water Marks (E			Hydrogen Sulfide (	•			n Water Table (C2)	
Sediment Depo	•		Oxidized Rhizosph	` '	ots (C3)	Crayfish Bu		
Drift Deposits (			Presence of Reduc	-	010 (00)		Visible on Aerial Im	agery (C9)
Algal Mat or Cr	•		Recent Iron Reduc	` ,	(C6)	<del></del>	Stressed Plants (D	
Iron Deposits (F			Thin Muck Surface		()	X Geomorphi	•	-,
	ble on Aerial Image	ery (B7)	Other (Explain in F	` '		Shallow Ag		
	tated Concave Sur	· · · · —		,			raphic Relief (D4)	
						X FAC-Neutra	al Test (D5)	
Field Observations		N- V	D th- (! h ).					
Surface Water Prese		No X	_ ' ' '	_				
Water Table Present		No X			NA/-41		V	N- V
Saturation Present?		NoX	_ Depth (inches):		vvetiand Hyd	rology Present?	Yes	No X
(includes capillary fr	inge)							
Describe Recorded	Data (stream gaug	ge, monitoring well,	aerial photos, previo	us inspections), if	available:			
Remarks:								

				Sampling Point: 02A
				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 7 (A)
	Absolute	Dominant	Indicator	That Aid Obe, I Aott, of IAo.
e Stratum (Plot size:)	% Cover	Species?	Status	T. C. N. C.
Fraxinus pennsylvanica / Green ash	30	Yes	FACW	Total Number of Dominant
Jimus americana / American elm	10	Yes	FACW	Species Across All Strata: 7 (B)
JIMUS AMERICANA / American cim		163	FACTO	
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 100.0 (A)
				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
	40	_ = Total Cov	/er	OBL species 0 $x = 0$
oling/Shrub Stratum (Plot size: 15-ft )	_	_		FACW species 50 x 2 = 100
Rhamnus cathartica / European buckthorn	10	Yes	FAC	
Maninus camanica / European buckinom			170	FAC species 20 x 3 = 60
				FACU species 0 x 4 = 0
				UPL species 0 x 5 = 0
				· — — — — — — — — — — — — — — — — — — —
				Column Totals: (A) (A)
				Prevalence Index = B/A = 2.29
	10	= Total Cov	/er	Hydrophytic Vegetation Indicators:
o Stratum (Plot size: 5-ft )			O.	1 - Rapid Test for Hydrophytic Vegetation
<del></del> ` <del></del>	_		-40	
Acer negundo / Boxelder, Box elder	5	Yes	<u>FAC</u>	X 2 - Dominance Test is >50%
Jlmus americana / American elm	5	Yes	FACW	X 3 - Prevalence Index ≤3.01
Fraxinus pennsylvanica / Green ash	5	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting
•				Problematic Hydrophytic Vegetation¹ (Explain)
				Problematic mydrophytic vegetation (Explain)
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
				De present, unless distarbed of problematic.
				Betwitiens of Venetation Strate
				Definitions of Vegetation Strata
				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
				breast height (DBH), regardless of height.
	15	_ = Total Cov	/er	Sapling/shrub - Woody plants less than 3 in. DBH and
ody Vine Stratum (Plot size: 30-ft )	_	_		greater than or equal to 3.28 ft (1 m) tall.
/itis riparia / River-bank grape	5	Yes	FAC	Herb - All herbaceous (non-woody) plants, regardless of
rius riparia i Kivei-balik grape			FAC	size, and woody plants less than 3.28 ft tall.
				Woody vines - All woody vines greater than 3.28 ft in
	<u> </u>			height.
	5	= Total Cov		
		_ = 10(a) Cov	er	Hydrophytic
				Vegetation
				Present? Yes X No

SOIL Sampling Point: 02A

Depth	Matrix	-	eeded to document to Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-10	10YR 2/1	100	- <del></del>	_			Clay Loam	
10-18	10YR 2/1	95	7.5YR 3/4	5	С	М	Clay	PRC
18-24	10YR 5/2	90	7.5YR 3/4	10	С	М	Clay	DRC
	-							
		<del></del>		_				
	· -							
	-	<del></del>		_				
	-	-	-					
				_				
				_				
ype: C=Co	ncentration, D=Depletion	on, RM=Red	uced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
dric Soil I	ndicators:						Indicators	s for Problematic Hydric Soils3:
Histosol			Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 149		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa					t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
_	en Sulfide (A4)		Loamy Gleyed		(=:::, <b>=</b> )			Surface (S7) (LRR K, L)
	d Layers (A5)		X Depleted Matrix					ralue Below Surface (S8) (LRR K, L)
_	d Below Dark Surface (	Δ11)	X Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)	A11)	Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
_	Mucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
			Redox Depress	ions (Fo)				
	Gleyed Matrix (S4)							C Spodic (TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Parent Material (F21)
	Matrix (S6)	. D. 4.40D)						Shallow Dark Surface (TF12)
Dark Su	rface (S7) (LRR R, M	LKA 149B)					Other	(Explain in Remarks)
ndicators of	hydrophytic vegetation	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem	natic.	
		n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem	natic.	
	hydrophytic vegetation	n and wetlan	d hydrology must be p	oresent, unles	ss disturbed	or problen	natic.	
estrictive L	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem	Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Restrictive L	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problen		resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Forest I	_ake Cit	ty/County:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:	,		TKDA	· · —		ate: MN	Sampling Point:	02B
Investigator(s):	Dylan Kr	uzel. Garrett We	e Se	ection, Township, R			T163, R36W	-
Landform (hillslope, ter				(concave, convex		none	· · · · · · · · · · · · · · · · · · ·	(%): 2
Subregion (LRR or MLF		LRR K	Lat:	-		-92.993857		` ′
Soil Map Unit Name:					Long	NWI classification		one
Are climatic / hydrologic					V /lf no	explain in Remark		one
		• •	•			•	•	Na
			significantly dis			cumstances" prese		No
		_	naturally probl			ain any answers in	·	
SUMMARY OF FII	NDINGS - Atta	ch site map	showing sampli	ing point locat	ions, transec	ts, important	teatures, etc.	
Hydrophytic Vegetati	ion Present?	Yes X	No	Is the Sar	npled Area			
Hydric Soil Present?	•	Yes X	No	within a V	Vetland?	Yes	No X	
Wetland Hydrology F	Present?	Yes	No X	If yes, opt	onal Wetland Site			•
Remarks: (Explain al Wetland			eparate report.) bove average for the	time of year				
HYDROLOGY								
	Indicators							
Wetland Hydrology			414			0	-t (!-!	
Primary Indicators (n		juired; check all	11 7/	(DO)			ators (minimum of tv	vo requirea)
Surface Water (	` '	_	Water-Stained Le	` '			I Cracks (B6)	
High Water Tabl	` ,	-	Aquatic Fauna (B	,			atterns (B10)	
Saturation (A3)		-	Marl Deposits (B	•		Moss Trim I	` ,	
Water Marks (B	•	_	Hydrogen Sulfide	` '	. (00)		Water Table (C2)	
Sediment Depo		-	<del>_</del>	oheres on Living R	oots (C3)	Crayfish Bu		(00)
Drift Deposits (E	•	_	Presence of Red	` ,	(00)		/isible on Aerial Ima	. ,
Algal Mat or Cru		_		uction in Tilled Soil	s (C6)		Stressed Plants (D1)	)
ron Denocite /L			Thin Muck Surface	ce (C7)		(-aomornhi	c Position (D2)	
Iron Deposits (E	•		<del>_</del>					
Inundation Visib	ole on Aerial Image	-	Other (Explain in			Shallow Aq	uitard (D3)	
Inundation Visib	•	-	<del>_</del>			Shallow Aq Microtopogi	uitard (D3) raphic Relief (D4)	
Inundation Visib	ole on Aerial Image	-	<del>_</del>			Shallow Aq	uitard (D3) raphic Relief (D4)	
Inundation Visib	ole on Aerial Image ated Concave Surf	-	<del>_</del>			Shallow Aq Microtopogi	uitard (D3) raphic Relief (D4)	
Inundation Visib Sparsely Vegeta Field Observations:	ole on Aerial Image ated Concave Surfa	ace (B8)	Other (Explain in	Remarks)		Shallow Aq Microtopogi	uitard (D3) raphic Relief (D4)	
Inundation Visib Sparsely Vegeta Field Observations: Surface Water Prese	ole on Aerial Image ated Concave Surfa : : ent? Yes	No>	Other (Explain in	Remarks)		Shallow Aq Microtopogi	uitard (D3) raphic Relief (D4)	
Inundation Visib Sparsely Vegeta Field Observations: Surface Water Prese Water Table Present	ole on Aerial Image ated Concave Surfa- : ent? Yes : Yes	No	Other (Explain in  Depth (inches): Depth (inches):	Remarks)	Wetland Hyd	Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No. X
Field Observations: Surface Water Present' Saturation Present?	ole on Aerial Image ated Concave Surfa : ent? Yes : Yes Yes	No>	Other (Explain in  Depth (inches): Depth (inches):	Remarks)	Wetland Hyd	Shallow Aq Microtopogi	uitard (D3) raphic Relief (D4)	No X
Inundation Visib Sparsely Vegeta Field Observations: Surface Water Prese Water Table Present	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes	No	Other (Explain in  Depth (inches): Depth (inches):	Remarks)	Wetland Hyd	Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No <u>X</u>
Field Observations: Surface Water Present' Saturation Present?	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservation Present? Saturation Present? (includes capillary friesder)	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservation Present? Saturation Present? (includes capillary friesder)	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservation Present? Saturation Present? (includes capillary friesder)	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No <u>X</u>
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	NoX
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X
Field Observations: Surface Water Preservaturation Present? (includes capillary fride) Describe Recorded I	cole on Aerial Image ated Concave Surface : ent? Yes :? Yes Yes inge)	No >	Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopogi FAC-Neutra	uitard (D3) raphic Relief (D4) Il Test (D5)	No X

				Sampling Point: 02B
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC:
ree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	
Fraxinus pennsylvanica / Green ash	20	Yes	FACW	Total Number of Dominant
Populus deltoides / Eastern cottonwood	20	Yes	FAC	Species Across All Strata: 8 (B)
Quercus macrocarpa / Bur oak	5	No	FACU	Percent of Dominant Species
				That Are OBL, FACW, or FAC: 75.0 (A/E
				That Ale Obl., I AOW, OF I AO. 15.0 (A/L
				Prevalence Index worksheet:
		T-4-1 O		Total % Cover of: Multiply by:
appling/Shrub Stratum (Plot cizo: 15 ft )	45	_ = Total Cov	er	OBL species 0 x 1 = 0
apling/Shrub Stratum (Plot size:15-ft)  Rhamnus cathartica / European buckthorn	75	Yes	FAC	FACW species 20 x 2 = 40
				FAC species 120 x 3 = 360
				FACU species 15 x 4 = 60 UPL species 0 x 5 = 0
				Column Totals:155 (A)460 (B
				Prevalence Index = B/A = 2.97
	75	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
erb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
Rhamnus cathartica / European buckthorn		Yes	FAC	X 2 - Dominance Test is >50%
Geranium robertianum / Robert's geranium	5	Yes	FACU	X 3 - Prevalence Index ≤3.0¹
Toxicodendron radicans / Eastern poison ivy	<u>5</u> 5	Yes Yes	FACU	4 - Morphological Adaptations¹ (Provide supporting
Polygonatum biflorum / King solomon's-seal				Problematic Hydrophytic Vegetation¹ (Explain )
				¹Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
				Definitions of Vegetation Strata
)				
·				<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
2		_		Sapling/shrub - Woody plants less than 3 in. DBH and
	20	_ = Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.
/oody Vine Stratum (Plot size:30-ft)  Vitis riparia / River-bank grape	15	Yes	FAC	Herb - All herbaceous (non-woody) plants, regardless of
		_		size, and woody plants less than 3.28 ft tall.
		_		<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
	15	_ = Total Cov	ver	Hydrophytic Vegetation Present? Yes X No
emarks: (Explain alternative procedures here or in a separat	te report.)			Present? Yes X No

SOIL Sampling Point: 02B

Depth	Matrix		Redox	k Features						
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-14	10YR 2/1	100					Clay			
14-24	10YR 5/2	98	10YR 3/6	2	С	М	Clay	PRC		
						,	-			
				_						
				_						
					· ·					
					· ·					
				-						
Type: C=Con	centration, D=Depletion,	RM=Reduce	ed Matrix, MS=Masl	ked Sand Gr	ains.		²Loca	tion: PL=P	ore Lining, M=M	latrix.
ydric Soil Ir	ndicators:						Indicators	for Proble	ematic Hydric S	Soils³:
Histosol	(A1)		Polyvalue Belov	v Surface (S	8) <b>(LRR R,</b>	MLRA 1491	3) 2 cm	Muck (A10	) (LRR K, L, M	LRA 149B)
Histic Ep	ipedon (A2)	_	Thin Dark Surfa	ce (S9) (LR	RR R, MLRA	149B)	Coas	t Prairie Re	dox (A16) (LR	R K, L, R)
Black His		_	Loamy Mucky N			-			it or Peat (S3) (	
	n Sulfide (A4)	_	Loamy Gleyed I				Dark	Surface (S	7) <b>(LRR K, L)</b>	•
	Layers (A5)	_	Depleted Matrix						Surface (S8) (	LRR K, L)
	Below Dark Surface (A1	1)	Redox Dark Sui	face (F6)					ce (S9) (LRR K	
	rk Surface (A12)	_							Masses (F12)	
	ucky Mineral (S1)	_	Redox Depress					-	olain Soils (F19)	
	leyed Matrix (S4)	_	_						A6) (MLRA 14	
	edox (S5)							Parent Mate		,
	Matrix (S6)								rk Surface (TF1	2)
	face (S7) (LRR R, MLRA	A 149B)							Remarks)	,
_										
ndicators of	hydrophytic vegetation an	id wetland h	ydrology must be p	resent, unles	ss disturbed	or problem	atic.			
Restrictive La	ayer (if observed):									
			<del></del>				Undria Cail D		Vaa V	No
Туре:	phon):						Hydric Soil P	resent?	Yes X	No
	ches):									
Type: Depth (inc	ches):		<u> </u>							
Type: Depth (inc	ches):									
Type: Depth (inc	ches):		<u> </u>							
Type: Depth (inc	ches):		<del></del>							
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									
Type: Depth (inc	ches):		<del></del>							
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									
Туре:	ches):									
Type: Depth (ind	ches):									
Type: Depth (inc	ches):									
Type: Depth (inc	ches):									

Project/Site:	MCES Sanitary	Sewer - Forest L	ake	City/Cour	nty: F	orest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA			Sta	ate: MN	Sampling Point:	03A
Investigator(s):	Dylan Kr	uzel, Garrett Wee	;	Section,	Township, Rar	nge:	S28	, T163, R36W	
Landform (hillslope, ter					ave, convex, n	-	concave	Slope	(%): 0
Subregion (LRR or MLI		LRR K	Lat:	-	21107426		-92.993836		
Soil Map Unit Name:		123 - Dundas fi	ine sandy loam,			_	NWI classificati		None
Are climatic / hydrologic						X (If no,	– explain in Remarl	(s.)	
	, Soil,	• •	•			re "Normal Cire	cumstances" pres	ent? Yes	K No
	, Soil ,						ain any answers in		
SUMMARY OF FI						ns, transec	ts, important	features, etc.	
Hydrophytic Vegetati		Yes X	No		Is the Samp	•	, <u>, , , , , , , , , , , , , , , , , , </u>	,	
Hydric Soil Present?		Yes X			within a We		Yes X	No	
Wetland Hydrology F		Yes X	No	-		nal Wetland Site			_
vveilana riyarology r		100 <u>X</u>		_	ii yes, optioi	iai vvetiaria ott			
Remarks: (Explain al Wetland	Iternative procedur d criteria is met. Ar			erage for t	the time of yea	ır.			
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (n		quired; check all th	hat apply)				Secondary Indic	ators (minimum of t	wo required)
Surface Water (			Water-Staine	d Leaves (	B9)			il Cracks (B6)	
High Water Tab	le (A2)		Aquatic Faun	a (B13)			X Drainage P	atterns (B10)	
Saturation (A3)		<u> </u>	Marl Deposits	s (B15)			Moss Trim	Lines (B16)	
Water Marks (B	1)	<u> </u>	Hydrogen Su	lfide Odor	(C1)		Dry-Seasor	Water Table (C2)	
Sediment Depo	sits (B2)	_	Oxidized Rhiz	zospheres	on Living Roo	ts (C3)	Crayfish Bu	rrows (C8)	
Drift Deposits (E	33)	_	Presence of F	Reduced In	on (C4)		Saturation `	Visible on Aerial Ima	agery (C9)
Algal Mat or Cru	ust (B4)	_	Recent Iron F	Reduction in	n Tilled Soils (	C6)	Stunted or	Stressed Plants (D1	1)
Iron Deposits (E	•	_	_ Thin Muck Su	urface (C7)	)		X Geomorphi	c Position (D2)	
Inundation Visib	ole on Aerial Image	ry (B7)	Other (Explai	n in Remar	rks)		Shallow Aq	uitard (D3)	
X Sparsely Vegeta	ated Concave Surfa	ace (B8)						raphic Relief (D4)	
							X FAC-Neutra	al Test (D5)	
Field Observations	:								
Surface Water Prese		No X	Depth (inch	es):					
Water Table Present			Depth (inch						
Saturation Present?	Yes	No X		· —		Wetland Hvd	rology Present?	Yes X	No
(includes capillary fri						,			
( , , , ,									
Describe Recorded I	Data (stream gauge	e, monitoring well	, aerial photos, p	revious ins	spections), if a	vailable:			
Remarks:									
Nomans.									

VEGETATION - Use scientific names of plants.				Sampling Point:03A
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 2 (A)
Tree Stratum (Plot size:30-ft)	% Cover	Species?	Status	Total Number of Dominant
Populus deltoides / Eastern cottonwood	40	Yes	FAC	Species Across All Strata: 2 (B)
2. Fraxinus pennsylvanica / Green ash	10	Yes	FACW	(-)
3.				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 100.0 (A/B)
5				` . ,
6.				Prevalence Index worksheet:
7		- Total Cau		Total % Cover of: Multiply by:
Capling/Chruh Stratum (Dlot aiza: 15 ft )	50	_ = Total Cov	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )  1.				FACW species 10 x 2 = 20
				FAC species 40 x 3 = 120
•				FACU species 0 x 4 = 0
4				UPL species 0 x 5 = 0
4 5.				Column Totals: (A) (B)
6				
				Prevalence Index = B/A = 2.8
7.		= Total Cov	or	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		_ 10101 001	Ci	1 - Rapid Test for Hydrophytic Vegetation
4				X 2 - Dominance Test is >50%
				X 3 - Prevalence Index ≤3.0¹
				4 - Morphological Adaptations¹ (Provide supporting
4				Problematic Hydrophytic Vegetation¹ (Explain)
5.				resistants rijuroprijus vogotation (Explain)
<u> </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
•				be present, unless distarbed of problematic.
0				Definitions of Vegetation Strata
10				
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12.				breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	0	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2			_ (	Woody vines - All woody vines greater than 3.28 ft in
3.				height.
4.		= Total Cov		
		_ = 10(a) Cov	EI	Hydrophytic
				Vegetation
				Present? Yes X No
Remarks: (Explain alternative procedures here or in a separa	ate report.)			

SOIL Sampling Point: 03A

	iption: (Describe to th	e depth ne			or confirm	the abse	nce of indicator	s.)
Depth (inches)	Matrix	0/		Features	Turn of	1 002	Touture	Domonico
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-12	10YR 2/2	70	10YR 3/6	30	<u> </u>	M	Fine Sndy Lm	
12-15	10YR 5/1	80	10YR 3/6	20	C	M	Fine Sndy Lm	PRC
				<del></del>				
			-					
			-					
¹Type: C=Con	centration, D=Depletion	n, RM=Redu	ıced Matrix, MS=Masl	ked Sand Gr	ains.		²Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil Ir	ndicators:						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> .	MLRA 149		Muck (A10) (LRR K, L, MLRA 149B)
	ipedon (A2)		Thin Dark Surfa	-			· —	t Prairie Redox (A16) (LRR K, L, R)
Black His	. , ,		Loamy Mucky M			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed N		,, <b>-</b> /		_	Surface (S7) (LRR K, L)
	Layers (A5)		Depleted Matrix				_	value Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	111)	X Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	,	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)		Redox Depressi					mont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)		Rodox Boprosol	0110 (1 0)				c Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)						_	Shallow Dark Surface (TF12)
	face (S7) (LRR R, ML	RA 149R)						r (Explain in Remarks)
_	,	,					_	7
<sup>3</sup> Indicators of	hydrophytic vegetation	and wetland	I hydrology must be p	resent, unles	ss disturbed	or probler	matic.	
Restrictive La	ayer (if observed):							
Type:	Rocks and gr	avel						
Depth (inc	ches):1	5					Hydric Soil P	resent? Yes X No
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest La	ake City/C	County: F	Forest Lake/Was	hington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA	-	Sta		Sampling Point:	03B
Investigator(s):	Dvlan Kri	uzel, Garrett Wee	Section	on, Township, Rar			, T163, R36W	
Landform (hillslope, ter				oncave, convex, n		none	, , , , , , , , , , , , , , , , , , , ,	(%): 4
Subregion (LRR or MLI		LRR K		45.21108593	Long:	-92.993767		
Soil Map Unit Name:			ine sandy loam, non-hy			NWI classification	-	one
Are climatic / hydrologic					X (If no e	explain in Remark	-	00
		• •	significantly distur			umstances" prese	•	No
			naturally problem			in any answers in		
SUMMARY OF FII					· ·	•	•	
					•	.s, illiportant	reatures, etc.	
Hydrophytic Vegetati		Yes X		Is the Samp				
Hydric Soil Present?		Yes		within a We			NoX	-
Wetland Hydrology F	resent?	Yes	NoX	If yes, option	nal Wetland Site	ID:		
Remarks: (Explain al Anteced	Iternative procedure dent is above avera							
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (n		united: check all th	nat annly)			Secondary Indic	ators (minimum of tw	vo required)
Surface Water (		ulleu, check all ti	Water-Stained Leave	oc (PO)			I Cracks (B6)	vo required)
High Water Table	,	_	Aquatic Fauna (B13)	` '			atterns (B10)	
Saturation (A3)	` '	_	Marl Deposits (B15)			Moss Trim I		
Water Marks (B		_	Hydrogen Sulfide Od				Water Table (C2)	
Sediment Depos	•	_	Oxidized Rhizosphe	` '	te (C3)	Crayfish Bu		
Drift Deposits (E			Presence of Reduce	· ·	is (C3)		/isible on Aerial Ima	gony (CO)
	· ·	_	<del>_</del>	` ,	C6)			• , ,
Algal Mat or Cru		_	Recent Iron Reduction	,	C0)		Stressed Plants (D1	)
Iron Deposits (E	•		_ Thin Muck Surface (	•			c Position (D2)	
<del></del>	ole on Aerial Image	- · · · · -	Other (Explain in Re	marks)		Shallow Aq		
Sparsely vegeta	ated Concave Surfa	ace (Do)				FAC-Neutra	raphic Relief (D4)	
						I AC-Neutra	ii lest (D3)	
Field Observations:	:							
Surface Water Prese	ent? Yes	No X	Depth (inches):					
	? Yes	No X	Depth (inches):					
Water Table Present	r res	No X	Depth (inches):		Wetland Hydr	ology Present?	Yes	No X
Water Table Present' Saturation Present?	Yes	110 /						
	Yes	NOX						
Saturation Present? (includes capillary fri	Yes nge)							
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previou:	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previou:	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previou:	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previous	s inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		, aerial photos, previou:	s inspections), if a	vailable:			

				Dominance Test worksheet:
				Number of Dominant Species
				·
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 4 (A
o Stratum (Plot size: 30 ft )	% Cover		Status	
e Stratum (Plot size: 30-ft )		Species?		Total Number of Dominant
Populus tremuloides / Quaking aspen	20	Yes	FAC	Species Across All Strata: 5 (B
Fraxinus pennsylvanica / Green ash	15	Yes	FACW	Species Across All Strata: 5 (B
Populus deltoides / Eastern cottonwood	10	Yes	FAC	
oparae denorace / Edetern contention				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 80.0 (A
				Prevalence Index worksheet:
			<del></del>	Total % Cover of: Multiply by:
	45	_ = Total Cov	er	OBL species 0 x 1 = 0
ling/Shrub Stratum (Plot size: 15-ft )				FACW species 15 x 2 = 30
Rhamnus cathartica / European buckthorn	25	Yes	FAC	
				FAC species 60 x 3 = 180
Zanthoxylum americanum / Toothachetree		Yes	FACU	FACU species 15 x 4 = 60
Celtis occidentalis / Common hackberry	5	No	FAC	UPL species 0 x 5 = 0
		_	_	
				Column Totals: 90 (A) 270
				Prevalence Index = B/A =3.0
		= Total Cov	er	Hydrophytic Vegetation Indicators:
b Stratum (Plot size: 5-ft )		_		1 - Rapid Test for Hydrophytic Vegetation
<u> </u>				
				X 2 - Dominance Test is >50%
				X 3 - Prevalence Index ≤3.01
				4 - Morphological Adaptations¹ (Provide supporting
				Problematic Hydrophytic Vegetation¹ (Explain )
				1Indicators of hydric soil and watland hydrology must
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
	_			Definitions of Vegetation Strata
			- '	Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
	_		<del> </del>	breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants less than 3 in. DBH and
	0	_ = Total Cov	er	
ody Vine Stratum (Plot size:30-ft)		_		greater than or equal to 3.28 ft (1 m) tall.
(1 lot 0120)				Herb - All herbaceous (non-woody) plants, regardless of
				size, and woody plants less than 3.28 ft tall.
				, , , , , , , , , , , , , , , , , , ,
				Woody vines - All woody vines greater than 3.28 ft in
			-	height.
		- Total Care		
	0	_ = Total Cov	er	Hydrophytic
				Vegetation
				Present? Yes X No

SOIL Sampling Point: 03B Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Matrix Redox Features % Loc<sup>2</sup> (inches) Color (moist) Color (moist) Type<sup>1</sup> Texture Remarks 10YR 2/2 100 Clay Loam 0-6 <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) \_\_\_ Depleted Dark Surface (F7) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Tree roots Type: Yes \_\_\_ Depth (inches): **Hydric Soil Present?** No X Remarks: Located in mapped non-hydric soils unit. Assumed non hydric profile in upland area.

Project/Site:	MCES Sanitary	Sewer - Forest L	.ake	City/Cou	ınty:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:	-		TKDA	•		Sta	ate: MN	Sampling Point:	04A
Investigator(s):	Dylan Kr	uzel, Garrett Wee	9	Section,	Township, Rai	nge:	S28	T163, R36W	
Landform (hillslope, ter				-	cave, convex, r	-	concave	Slope	(%): 1
Subregion (LRR or MLI		LRR K	 Lat:	•	21146814	-	-92.993448		
Soil Map Unit Name:		123 - Dundas f	ine sandy loam,	non-hydric	c soil unit		NWI classification	on: N	lone
Are climatic / hydrologic						X (If no,	– explain in Remark	(s.)	
	, Soil,	• •	•			Are "Normal Cire	cumstances" prese	ent? Yes >	( No
	, Soil						ain any answers in		
SUMMARY OF FI		_				ons, transec	ts, important	features, etc.	
Hydrophytic Vegetati		Yes X			Is the Samp		, ,	,	
Hydric Soil Present?		Yes X			within a We		Yes X	No	
Wetland Hydrology F		Yes X		_		nal Wetland Site			=
- Trouble Try and Tology T					, 00, 00				
Remarks: (Explain al Wetland	Iternative procedui d criteria is met. Ai			e time of y	ear				
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (n		guired; check all t	hat apply)				Secondary Indica	ators (minimum of t	wo required)
Surface Water (	(A1)	· · · · · · · · · · · · · · · · · · ·	K Water-Staine	ed Leaves	(B9)			l Cracks (B6)	· · · · · ·
High Water Tab	le (A2)	_	Aquatic Faur	na (B13)			Drainage P	atterns (B10)	
Saturation (A3)		_	Marl Deposit	s (B15)			Moss Trim I	_ines (B16)	
Water Marks (B	1)	_	Hydrogen Su	ulfide Odor	(C1)		Dry-Seasor	Water Table (C2)	
Sediment Depo	sits (B2)	_	Oxidized Rhi	izospheres	on Living Roc	ots (C3)	Crayfish Bu	rrows (C8)	
Drift Deposits (E	33)	_	Presence of	Reduced I	ron (C4)		Saturation \	/isible on Aerial Ima	agery (C9)
Algal Mat or Cru	ust (B4)	_	Recent Iron	Reduction	in Tilled Soils	(C6)	Stunted or \$	Stressed Plants (D1	)
Iron Deposits (E	•	_	Thin Muck S	urface (C7	<b>'</b> )		X Geomorphic	Position (D2)	
Inundation Visib	ole on Aerial Image	ery (B7)	Other (Expla	in in Rema	arks)		Shallow Aq	uitard (D3)	
X Sparsely Vegeta	ated Concave Surf	ace (B8)						raphic Relief (D4)	
							X FAC-Neutra	Il Test (D5)	
Field Observations	:								
Surface Water Prese		No X	Depth (inch	nes):					
Water Table Present			Depth (inch						
Saturation Present?	Yes			· -		Wetland Hvd	rology Present?	Yes X	No
(includes capillary fri						,			
( , , , ,	3-,								
Describe Recorded [	Data (stream gaug	e, monitoring well	I, aerial photos,	previous in	nspections), if a	available:			
Remarks:									
Nomans.									

Dominant   Section   Sec	Tree Stratum         (Plot size: 30-ft )         % Cover           1. Fraxinus pennsylvanica / Green ash         30           2.         3.           3.         4.           5.         6.           7.         30           Sapling/Shrub Stratum         (Plot size: 15-ft )           1. Cornus racemosa / Gray dogwood         10           2.         3.           4.         30	Species? Yes  Total Cover	Status FACW	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: 100.0 (A/B)  Prevalence Index worksheet: Total % Cover of: Multiply by:
Total Number of Dominant   Species   Status   Species   Status   Species   Across All Strata:   Species   Across All Strata:   Species	Tree Stratum         (Plot size: 30-ft )         % Cover 30           1. Fraxinus pennsylvanica / Green ash 2.         30           3.	Species? Yes  Total Cover	Status FACW	Species Across All Strata: 3 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)  Prevalence Index worksheet: Total % Cover of: Multiply by:
Fraxinus pennsylvanica   Green ash   30   Yes   FACW   Species Across All Strats   3   (B)	1. Fraxinus pennsylvanica / Green ash 30 2. 3. 4. 5. 6. 7.  Sapling/Shrub Stratum (Plot size: 15-ft ) 1. Cornus racemosa / Gray dogwood 10 2. 3.	Yes  Total Cover		Species Across All Strata: 3 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)  Prevalence Index worksheet: Total % Cover of: Multiply by:
Percent of Dominant Species   That Are OBL, FACW, or FAC:	4	= Total Cover		That Are OBL, FACW, or FAC: 100.0 (A/B)  Prevalence Index worksheet: Total % Cover of: Multiply by:
5.   This Area Code; 1 of North Stratum   Prevalence Index worksheet:   Total & Cover of:   Multiply by:   Total & Cover of:   Total & Cover of:   Multiply by:   Total & Cover of:   Multiply by:   Total & Cover of:   Total & Cover of:   Multiply by:   Total & Cover of:   Tota	5	= Total Cover		Prevalence Index worksheet:
Total Cover   Total % Cover of:   Multiply by:	7	= Total Cover	r	Total % Cover of: Multiply by:
Sapling/Shrub Stratum   (Plot size:	Sapling/Shrub Stratum (Plot size:15-ft)  1. Cornus racemosa / Gray dogwood10  23	-	٢	
10 Yes FAC 2.	1. Cornus racemosa / Gray dogwood 10 2	Yes		
2.	2	Yes		FACW species 30 x 2 = 60
3.	3.		FAC	FAC species 30 x 3 = 90
4.	4			FACU species 0 x 4 = 0
5. 6. 6. 7.	4			
6	E			Column Totals: 60 (A) 150 (B)
Herb Stratum (Plot size: 5-ft )  1.	6			Prevalence Index = B/A =
1.	7	= Total Cover		Hydrophytic Vegetation Indicators:
2.		_		
3.				
4	^			<del></del>
5	1			
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Vitis riparia / River-bank grape  20 Yes FAC  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	5			Indicators of budgie call and watered budgeless, much
8	7			1
10. 11. 12. 13.	8			Definitions of Vegetation Strata
11				John Monday Control of the Control o
Woody Vine Stratum (Plot size: 30-ft )  1. Vitis riparia / River-bank grape  20  Yes  FAC  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	11			
woody Vine Stratum     (Plot size:     30-π       1. Vitis riparia / River-bank grape     20     Yes     FAC       2.     Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		= Total Cover		
2. size, and woody plants less than 3.28 ft tall.		Yes	FAC	
1. Woody vines. All woody vines greater than 2.20 ft in	2.			size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in
3 height.	3	<u> </u>		
20 = Total Cover Hydrophytic		= Total Cover	r	Hydrophytic
Vegetation				Vegetation
				Present? Yes X No
	Remarks: (Explain alternative procedures here or in a separate report.)			
	Remarks: (Explain alternative procedures here or in a separate report.)			
4 height.  20 = Total Cover Hydrophytic Vegetation	4	= Total Cover		height.  Hydrophytic
Hydrophytic		= Total Cover	r	
Hydrophytic Vegetation		_		Vegetation
				Present?         Yes         X         No

SOIL Sampling Point: \_\_\_\_\_04A

	iption: (Describe to th	e depth ne			or confirm	the absen	ce of indicator	rs.)
Depth	Matrix	0/		Features	T 1	12	Ta 4	Dd
(inches)	Color (moist)	<u>%</u>	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-8	10YR 2/2	65	10YR 3/4	35	<u> </u>	M	Loam	DRC
8-24	10YR 5/2	80	10YR 6/1	20	C	M	Clay Loam	PRC
¹Type: C=Con	centration, D=Depletior	n, RM=Redu	ced Matrix, MS=Mask	ked Sand Gr	ains.		²Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil In	dicators:						Indicators	s for Problematic Hydric Soils³:
Histosol (			Polyvalue Belov	, Surface (St	8) (I PP P	MI PA 1491		Muck (A10) (LRR K, L, MLRA 149B)
	pedon (A2)		Thin Dark Surfa					st Prairie Redox (A16) (LRR K, L, R)
						1430)		. , ,
Black His			Loamy Mucky M		(LRK N, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	Sulfide (A4)		Loamy Gleyed N					Surface (S7) (LRR K, L)
	Layers (A5)	44)	Depleted Matrix					value Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	(11)	X Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)		Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)		Redox Depressi	ons (F8)				mont Floodplain Soils (F19) (MLRA 149B)
	eyed Matrix (S4)							c Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Re								Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Sun	face (S7) (LRR R, ML	RA 149B)					Othe	r (Explain in Remarks)
3Indicators of I	nydrophytic vegetation	and wetland	hydrology must be p	resent. unles	ss disturbed	or problem	atic.	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
	ayer (if observed):							
Type:	I \.						Unidada Ondo	
Depth (inc	:hes):						Hydric Soil F	Present? Yes X No
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest La	ike City/Co	ounty:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:	-		TKDA		Sta	ate: MN	Sampling Point:	04B
Investigator(s):	Dylan Kri	uzel, Garrett Wee	Section	n, Township, Ra			3, T163, R36W	
Landform (hillslope, te	rrace, etc):	Hillslope	Local relief (cor	ncave, convex, i	none):	none	Slope	e (%): 4
Subregion (LRR or ML				5.21141447	Long:			n: WGS 84
Soil Map Unit Name:			ne sandy loam, non-hyd	ric soil unit		NWI classificat	tion:	None
Are climatic / hydrolog	ic conditions on the	site typical for this	s time of year? Yes	No	X (If no,	explain in Rema	rks.)	
Are Vegetation					Are "Normal Circ	cumstances" pres	sent? Yes	X No
			naturally problema	itic?	(If needed, expla	ain any answers i	n Remarks.)	
			howing sampling		ons. transec	ts. importan	features, etc.	
Hydrophytic Vegeta		Yes X	No	Is the Sam	· · · · · · · · · · · · · · · · · · ·		,	
Hydric Soil Present		Yes X		within a We	•	Vas	NoX	
Wetland Hydrology		Yes	No X			e ID:		_
Remarks: (Explain a	alternative procedure edent is above avera	es here or in a sep	parate report.) year					
HYDROLOGY								
Wetland Hydrology	v Indicators:							
Primary Indicators (	•	uired: check all th	at apply)			Secondary Indi	cators (minimum of t	two required)
Surface Water	-		Water-Stained Leave	s (B9)	-		oil Cracks (B6)	
High Water Tal	` '		- Aquatic Fauna (B13)	` '		Drainage F	Patterns (B10)	
Saturation (A3)	)		Marl Deposits (B15)			Moss Trim	Lines (B16)	
Water Marks (E	31)		Hydrogen Sulfide Ode	or (C1)		Dry-Seaso	n Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhizosphere	es on Living Roo	ots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (	(B3)	_	Presence of Reduced	d Iron (C4)		Saturation	Visible on Aerial Im-	agery (C9)
Algal Mat or Cı	rust (B4)		Recent Iron Reductio	n in Tilled Soils	(C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits (	B5)	_	Thin Muck Surface (C	27)		Geomorph	ic Position (D2)	
Inundation Visi	ble on Aerial Image	ry (B7)	Other (Explain in Ren	narks)		Shallow A	quitard (D3)	
Sparsely Vege	tated Concave Surfa	ace (B8)				Microtopo	graphic Relief (D4)	
						X FAC-Neuti	ral Test (D5)	
Field Observations	3:							
Surface Water Pres	ent? Yes	NoX	Depth (inches):					
Water Table Presen	t? Yes	NoX	Depth (inches):					
Saturation Present?	Yes	NoX	Depth (inches):		Wetland Hyd	rology Present?	Yes	No X
(includes capillary fr	ringe)							
Describe Recorded	Data (stream gauge	e. monitoring well.	aerial photos, previous	inspections), if	available:			
	30	, <b>.</b>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,				
Remarks:								

Name	VEGETATION - Use scientific names of plants.				Sampling Point: 04B	
		Absolute	Dominant	Indicator	Number of Dominant Species	A)
Percent of Dominant Species   That Are OBL, FACW, or FAC:   100.0   (AB)	Acer saccharinum / Silver maple					В)
Prevalence Index worksheet:   Total Kover of   Multiply by:   Sapling/Shrub Stratum (Plot size:15-ft)   100	3. 4.				·	A/B)
100	6		_			
Rhamnus cathartica / European buckthom   20   Yes   FAC   FAC			_ = Total Cov	er		
2.					FACW species 115 x 2 = 230	_
3.		20	Yes	FAC		_
4					FACU species 0 x 4 = 0	_
S. Columni folds: 145 (A) 320 (B)  6. Prevalence Index = B/A = 2.21  Hydrophytic Vegetation Indicators:  1. Solidago gigantea / Smooth goldenrod 15 Yes FACW 2. Carex praticola / Meadow sedge, Northern meadow sedge 10 Yes FAC 3. Hydrophytic Vegetation Indicators:  1. Rapid Test for Hydrophytic Vegetation X 2. Dominance Test is >50% X 3. Prevalence Index ≤3.0° 4. Morphological Adaptations* (Provide supporting Problematic Hydrophytic Vegetation* (Explain )  5.	· · · · · · · · · · · · · · · · · · ·				UPL species 0 x 5 = 0	_
Prevalence Index = B/A =21_    Prevalence Index = B/A =21_   Preval					Column Totals:145	(B)
Herb Stratum (Plot size:	6.				Prevalence Index = B/A = 2.21	-
1. Solidago gigantea / Smooth goldenrod 2. Carex praticola / Meadow sedge, Northern meadow sedge 3.		20	= Total Cov	er	Hydrophytic Vegetation Indicators:	
2. Carex praticola / Meadow sedge, Northern meadow sedge  10 Yes FAC  3. 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )  5. 6. 7.					1 <del>-</del>	
3.					<del></del>	
4				- — —	<del></del>	
5.	3. 4.	-				3
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? YesX No	F					
8	7					
10	^				Definitions of Vegetation Strata	
12	11		_		Tree - Woody plants 3 in. (7.6 cm) or more in diameter	at
Woody Vine Stratum (Plot size:			= Total Cov	er		I
size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.    O   = Total Cover   Hydrophytic Vegetation   Present?   Yes   X   No   No			_ 10101 001	O.		of
4					size, and woody plants less than 3.28 ft tall.	
Hydrophytic Vegetation Present?  Yes X No				<u> </u>		
Present?         Yes         X         No		0	= Total Cov	er	Hydrophytic	
L L						
	Remarks: (Explain alternative procedures here or in a separate	e report.)				

SOIL Sampling Point: 04B

Depth	Matrix		eeded to document tl Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture	Remarks
0-4	10YR 2/1	100					Loam	
4-12	10YR 2/1	98	7.5YR 3/4	2	С	М	Clay Loam	PRC
12-24	10YR 4/1	90	7.5YR 3/4	10	C	М	Clay Loam	PRC
	<u> </u>		<u></u>	_				
								-
				_				
				_				
				_				
Гуре: С=Со	ncentration, D=Depletion	on, RM=Red	luced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	ation: PL=Pore Lining, M=Matrix.
ydric Soil I	ndicators						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	w Surface (S	9) <b>(I DD D</b>	MI DA 140		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	•				t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N			,,,		Mucky Peat or Peat (\$3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed		(, <u>_</u> )			Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix					value Below Surface (S8) (LRR K, L)
	d Below Dark Surface (	(A11)	X Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)	,	Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
Sandy N	Mucky Mineral (S1)		Redox Depress				Piedr	mont Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleyed Matrix (S4)						Mesic	c Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red I	Parent Material (F21)
Stripped	l Matrix (S6)						Very	Shallow Dark Surface (TF12)
Dark Su	rface (S7) (LRR R, M	LRA 149B)					Other	r (Explain in Remarks)
Indicators of	hydrophytic vegetation	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or proble	natic.	
		n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler	matic.	
Restrictive L	hydrophytic vegetation	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or proble	matic.	
	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or proble	natic. Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	d hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	d hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	d hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive I Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlar	id hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	ke City/C	County:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:		<u> </u>	TKDA			ate: MN	Sampling Point:	05A
Investigator(s):	Dylan K	ruzel, Garrett Wee	Section	on, Township, Rar	nge:	S28	, T163, R36W	
Landform (hillslope, te			Local relief (co	oncave, convex, n	none):	concave	Slope	e (%): 0
Subregion (LRR or ML			Lat:	45.21247468	Long:	-92.993917	69 Datur	m: WGS 84
Soil Map Unit Name:	· .		fton loam, Hydric soil i	unit		NWI classificati	on: I	None
Are climatic / hydrolog	ic conditions on the	e site typical for this	time of year? Yes	No	X (If no,	_ explain in Remar	(S.)	
Are Vegetation	, Soil	, or Hydrology	significantly distur	rbed?	Are "Normal Circ	cumstances" pres	ent? Yes	X No
			naturally problema		If needed, expla	ain any answers ir	Remarks.)	
SUMMARY OF FI	NDINGS - Atta	ach site map sh	 nowing sampling	point location	ons, transec	ts, important	features, etc.	
Hydrophytic Vegeta		Yes X	_ No	Is the Samp		· •	,	
Hydric Soil Present		Yes X	No	within a We		Yes X	No	
Wetland Hydrology		Yes X	No —	If yes, option	nal Wetland Site	· · · · · · · · · · · · · · · · · · ·		_
			<del>-</del>					
		res here or in a sepa ntecedent is above a	arate report.) average for the time o	of year				
HYDROLOGY								
Wetland Hydrology	v Indicators:							
	•	equired; check all tha	at annly)			Secondary Indic	ators (minimum of	two required)
Surface Water		quired, cricek all tria	Water-Stained Leave	es (B9)			il Cracks (B6)	wo required)
High Water Tab	` '	_	Aquatic Fauna (B13)	,			atterns (B10)	
Saturation (A3)		_	Marl Deposits (B15)	•			Lines (B16)	
Water Marks (E	,	_	Hydrogen Sulfide Oc				Water Table (C2)	
Sediment Depo	•		Oxidized Rhizospher	` '	ots (C3)	Crayfish Bu		
Drift Deposits (			Presence of Reduce	-	(,		Visible on Aerial Im	agery (C9)
Algal Mat or Cr			Recent Iron Reduction	. ,	(C6)	<del></del>	Stressed Plants (D	
Iron Deposits (		_	Thin Muck Surface (		,	X Geomorphi	•	•
	ible on Aerial Image	ery (B7)	Other (Explain in Re	marks)		Shallow Ag		
Sparsely Veget	tated Concave Sur	face (B8)				Microtopog	raphic Relief (D4)	
						X FAC-Neutra	al Test (D5)	
Field Observations								
Field Observations		No V	Donth (inches):					
Surface Water Pres Water Table Presen		No X No X	_ ' ` ' _					
Saturation Present?			_ ' ` ' _		Watland Hyd	rology Present?	Voc. V	No
(includes capillary fr		NO X	_ Depth (inches):		wettand Hyd	rology Present?	Yes X	NO
(includes capillary ii	ilige)							
Describe Recorded	Data (stream gauç	je, monitoring well, a	aerial photos, previous	s inspections), if a	available:			
-								
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point:05A
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 1 (A)
1		_		Total Number of Dominant Species Across All Strata: (B)
3				Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
6				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15-ft )	0	_ = Total Cov	er	OBL species         0         x 1 =         0           FACW species         60         x 2 =         120
1				FAC species 0 x 3 = 0  FACU species 0 x 4 = 0
3. 4. 5.				UPL species $0 \times 5 = 0$ Column Totals: $60 \times (A) \times 120$ (B)
6. 7.				Prevalence Index = B/A = 2.0
Herb Stratum (Plot size: 5-ft )	0	= Total Cov	er	Hydrophytic Vegetation Indicators:  X 1 - Rapid Test for Hydrophytic Vegetation
Phalaris arundinacea / Reed canary grass     Circaea alpina / Small enchanter's nightshade     .  4.	50 10	Yes No	FACW FACW	<ul> <li>X 2 - Dominance Test is &gt;50%</li> <li>X 3 - Prevalence Index ≤3.0¹</li> <li>4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )</li> </ul>
5				¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
9. 10.	_			Definitions of Vegetation Strata
11		_		Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size:30-ft)	60	_ = Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of
1				size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
4	0	= Total Cov	er	Hydrophytic
				Vegetation           Present?         YesX No
Remarks: (Explain alternative procedures here or in a separat	e report.)			

SOIL Sampling Point: 05A

Depth	ription: (Describe to the Matrix			x Features				-		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-8	10YR 2/1	98	10YR 3/4	2	C	М	Clay Loam	DRC		
8-14	10YR 4/2	90	10YR 3/4	10	С	М	Clay Loam	DRC		
				- <del></del>						
Type: C=Coi	ncentration, D=Depletion	n, RM=Redu	uced Matrix, MS=Masl	ked Sand Gr	ains.		²Loc	ation: PL=F	ore Lining, M=I	Matrix.
Hydric Soil I	ndicators:						Indicator	s for Probl	ematic Hydric	Soils3.
Histosol			Polyvalue Belov	v Surface (S	8) <b>(I RR R</b>	MI RA 149			)) (LRR K, L, N	
	pipedon (A2)		Thin Dark Surfa						edox (A16) (LF	•
	stic (A3)		Loamy Mucky M						at or Peat (S3)	
			Loamy Gleyed I		(LKK K, L)			•	` '	
	en Sulfide (A4)							-	(CO)	
	d Layers (A5)	\	X Depleted Matrix						v Surface (S8)	
	d Below Dark Surface (A	<del>1</del> 11)	X Redox Dark Sur						ce (S9) (LRR	
	ark Surface (A12)		Depleted Dark S					•	, ,	(LRR K, L, R)
	lucky Mineral (S1)		Redox Depress	ions (F8)						9) (MLRA 149B)
	Gleyed Matrix (S4)									44A, 145, 149B)
	Redox (S5)							Parent Mat		
Stripped	Matrix (S6)						Very	Shallow Da	ark Surface (TF	12)
Dark Su	rface (S7) (LRR R, ML	.RA 149B)					Othe	r (Explain i	n Remarks)	
3Indicators of	hydrophytic vocatation	and wattan	l budralagu muat ba n	rocent unles	a diaturbad	or problem	actio			
indicators of	hydrophytic vegetation	and welland	i flydrology fflust be p	resent, unies	ss disturbed	or problem	ialic.			
Restrictive L	.ayer (if observed):									
Type:	Rock									
Depth (in	ches):	14					Hydric Soil F	Present?	Yes X	No
Dl										
Remarks:										

Project/Site:	MCES Sanitary	/ Sewer - Forest Lak	e Cit	ty/County:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023		
Applicant/Owner:			TKDA			ate: MN	Sampling Point:	05B		
Investigator(s):	Dylan Kr	ruzel, Garrett Wee	Se	ction, Township, R	ange:					
Landform (hillslope, te			Local relief	(concave, convex,	none):	none	Slope	e (%): 2		
Subregion (LRR or ML			Lat:	45.21246869	Long:	-92.993742	.69 Datur	n: WGS 84		
Soil Map Unit Name:	· -		ton Loam, Hydric s	soil unit		NWI classificati	on:	None		
Are climatic / hydrolog	ic conditions on the	site typical for this	time of year? Ye	s No	X (If no,	_ explain in Remarl	ks.)			
Are Vegetation	, Soil	, or Hydrology	significantly dis	sturbed?	Are "Normal Circ	cumstances" pres	ent? Yes	X No		
		, or Hydrology			(If needed, expla	ain any answers ir	Remarks.)			
SUMMARY OF FI	NDINGS - Atta	ich site map sh	owing sampli	ng point locat	ions, transec	ts, important	features, etc.			
Hydrophytic Vegetat		Yes X	No		npled Area	•	•			
Hydric Soil Present?		Yes X	No	within a W	•	Yes	NoX			
Wetland Hydrology		Yes	No X		onal Wetland Site			_		
				, , , , , , ,						
		res here or in a separage for the time of y								
HYDROLOGY										
Wetland Hydrology	v Indicators:									
	•	quired; check all that	t annly)			Secondary Indic	ators (minimum of	two required)		
Surface Water		quirou, oriook un tria	Water-Stained Le	eaves (B9)			il Cracks (B6)	wo roquirou)		
High Water Table (A2) Aquatic Fauna (B13)					Drainage Patterns (B10)					
Saturation (A3)			Marl Deposits (B1	•	Moss Trim Lines (B16)					
Water Marks (E	•		Hydrogen Sulfide	•		Dry-Season Water Table (C2)				
Sediment Depo	,			heres on Living Ro	oots (C3)	Crayfish Bu				
Drift Deposits (			Presence of Redu	•	(,		Visible on Aerial Im	agery (C9)		
Algal Mat or Cr				uction in Tilled Soils	s (C6)		Stressed Plants (D			
Iron Deposits (		_	Thin Muck Surfac		` ,		c Position (D2)	,		
	ble on Aerial Image	ery (B7)	Other (Explain in	Remarks)		Shallow Aq				
Sparsely Veget	tated Concave Surf	face (B8)				Microtopog	raphic Relief (D4)			
						X FAC-Neutra	al Test (D5)			
Field Observations										
Field Observations		No. V	Donth (inches)							
Surface Water Prese		NoX	- ' ' /							
Water Table Present Saturation Present?			- ' '		Wetlend Hyd	rology Brocont?	Voo	No. V		
		NOX	Depth (inches):		vvetianu nyu	rology Present?	Yes	No X		
(includes capillary fr	inge)									
Describe Recorded	Data (stream gaug	e, monitoring well, a	erial photos, previ	ous inspections), if	available:					
	, ,	-								
Remarks:										

EGETATION - Use scientific names of plants.				Sampling Point:05B
				Dominance Test worksheet:
				Number of Dominant Species
			, .	That Are OBL, FACW, or FAC: 5 (A)
	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
Fraxinus pennsylvanica / Green ash	40	Yes	FACW	
Salix amygdaloides / Peachleaf willow	10	Yes	FACW	Species Across All Strata: 7 (B)
3.				
4.				Percent of Dominant Species
_				That Are OBL, FACW, or FAC: 71.4 (A/B)
7				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	50	_ = Total Cov	ər	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 60 x 2 = 120
Rhamnus cathartica / European buckthorn	10	Yes	FAC	FAC species 20 x 3 = 60
2. Zanthoxylum americanum / Toothachetree	10	Yes	FACU	FACU species 35 x 4 = 140
3. Ulmus americana / American elm	10	Yes	FACW	
				UPL species $0 \times 5 = 0$
_				Column Totals:115 (A)320 (B)
5				
6				Prevalence Index = B/A = 2.78
7				
<del></del>	30	= Total Cove	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		-		1 - Rapid Test for Hydrophytic Vegetation
1. Rubus idaeus / Common red raspberry	25	Yes	FAC	X 2 - Dominance Test is >50%
^				<del></del> -
2				X 3 - Prevalence Index ≤3.0¹
3				4 - Morphological Adaptations¹ (Provide supporting
4				Problematic Hydrophytic Vegetation¹ (Explain )
5.				
6.				¹Indicators of hydric soil and wetland hydrology must
7			-	be present, unless disturbed or problematic.
•			- —	
			- —	Definitions of Vegetation Strata
9.		_		Definitions of rogotation during
10				The second secon
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12.				breast height (DBH), regardless of height.
	25	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )		_ '''	J1	greater than or equal to 3.28 ft (1 m) tall.
	10	Vac	<b>540</b>	Herb - All herbaceous (non-woody) plants, regardless of
Vitis riparia / River-bank grape	10	Yes	FAC	size, and woody plants less than 3.28 ft tall.
2				
3				Woody vines - All woody vines greater than 3.28 ft in
4.			· <u> </u>	height.
···	10	= Total Cov	er	
		- '	J1	Hydrophytic
				Vegetation
				Present?         Yes         X         No
				Present? Yes X No

SOIL Sampling Point: 05B

Depth	ription: (Describe to t Matrix			x Features				•		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-4	10YR 2/1	100					Crse Sndy Lm			
4-24	10YR 5/2	60	7.5R 3/4	10	С	M	Lm Crse Sand	PRC		
	10YR 2/1	30					Loam	Mixed mat	rix	
Type: C=Co	ncentration, D=Depletion	on, RM=Redu	iced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	ition: PL=Po	ore Lining, M=Ma	atrix.
Hydric Soil I	ndicators:						Indicators	for Proble	matic Hydric S	oils³:
Histosol			Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> .	MLRA 149			(LRR K, L, ML	
	pipedon (A2)		Thin Dark Surfa						dox (A16) <b>(LRF</b>	•
	istic (A3)		Loamy Mucky N						t or Peat (S3) <b>(L</b>	
	en Sulfide (A4)		Loamy Gleyed		(			•	') (LRR K, L)	
	d Layers (A5)		X Depleted Matrix					•	Surface (S8) (L	-RR K. L)
	d Below Dark Surface (	(A11)	Redox Dark Su						e (S9) (LRR K,	· •
	ark Surface (A12)	( )	Depleted Dark						Masses (F12)	
	Mucky Mineral (S1)		Redox Depress					•	lain Soils (F19)	
	Gleyed Matrix (S4)			- ( - )					A6) (MLRA 144	
	Redox (S5)							Parent Mate		, -, - ,
	d Matrix (S6)								rk Surface (TF12	2)
	rface (S7) (LRR R, M	LRA 149B)						(Explain in		-,
	,	,					_	<b>.</b>	,	
<sup>3</sup> Indicators of	f hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	ss disturbed	or proble	natic.			
Restrictive I	_ayer (if observed):									
Type:										
Depth (ir	nches):						Hydric Soil P	resent?	Yes X	No
Remarks:										

Project/Site:	MCES Sanita	ry Sewer - Forest Lake	e City/C	County:	Forest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:		•	TKDA			ate: MN	Sampling Point:	06A
Investigator(s):	Dylan ł	Kruzel, Garrett Wee	Section	on, Township, Ra	nge:	S2	8, T163, R36W	
Landform (hillslope, te	errace, etc):	Toe Slope	Local relief (co	oncave, convex, r	none):	concave	Slope	e (%): 0
Subregion (LRR or ML				45.21337648	Long:		398 Datui	m: WGS 84
Soil Map Unit Name:			on Loam, Hydric soil	unit		NWI classifica	tion:	None
Are climatic / hydrolog	ic conditions on th	ne site typical for this ti	me of year? Yes	No	X (If no,	explain in Rema	rks.)	
Are Vegetation	, Soil	, or Hydrology	significantly distur	rbed?	Are "Normal Cire	cumstances" pres	sent? Yes	X No
Are Vegetation					(If needed, expla	ain any answers i	n Remarks.)	
SUMMARY OF F	INDINGS - Att	ach site map she	owing sampling	point location	ons, transec	ts, important	features, etc.	
Hydrophytic Vegeta		Yes X	No	Is the Sam	·	· •	•	
Hydric Soil Present		Yes X	No	within a We		Yes >	. No	
Wetland Hydrology		Yes X	No			e ID:		_
welland riyarology	i icaciit:	103 <u>X</u>		ii yes, optio	nai wetiana oit			
		ures here or in a sepa Antecedent is above a		of year				
HYDROLOGY								
Wetland Hydrology	y Indicators:							
		equired; check all that	apply)			Secondary Indi	cators (minimum of	two required)
Surface Water	(A1)	•	Water-Stained Leave	es (B9)			oil Cracks (B6)	
High Water Tal	ole (A2)	<del></del>	Aquatic Fauna (B13)	)		Drainage F	Patterns (B10)	
Saturation (A3)	)	<u>—</u>	Marl Deposits (B15)			Moss Trim	Lines (B16)	
Water Marks (E	31)	<u>—</u>	Hydrogen Sulfide Od	dor (C1)		Dry-Seaso	n Water Table (C2)	
Sediment Depo	osits (B2)	<u>—</u>	Oxidized Rhizospher	res on Living Roo	ots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (	(B3)	<u>—</u>	Presence of Reduce	ed Iron (C4)		Saturation	Visible on Aerial Im	nagery (C9)
Algal Mat or Ci	rust (B4)	<del></del>	Recent Iron Reduction	on in Tilled Soils	(C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits (	B5)	<u>—</u>	Thin Muck Surface (	C7)		X Geomorph	ic Position (D2)	
Inundation Visi	ble on Aerial Imag	gery (B7)	Other (Explain in Re	marks)		Shallow A	quitard (D3)	
Sparsely Vege	tated Concave Su	rface (B8)				Microtopo	graphic Relief (D4)	
						X FAC-Neuti	al Test (D5)	
Field Observations			5 " "					
Surface Water Pres		s No _X	Depth (inches):					
Water Table Presen		s NoX	Depth (inches):					
Saturation Present?		s No _X	Depth (inches):		Wetland Hyd	rology Present?	Yes X	No
(includes capillary fr	ringe)							
Describe Recorded	Data (stream dau	ge, monitoring well, a	erial nhotos, previous	s inspections) if a	available:			
Describe recorded	Data (Stream gaa	ge, morntoning wen, at	onai priotos, previoas	o mopeodono), m	avallable.			
Remarks:								
1								

Definitions of Vegetation   Prevalence Index worksheet:   Total % Cover of:   Multiply by:	VEGETATION - Use scientific names of plants.				Sampling Point:06A
Total Number of Dominant   Species   Status   Total Number of Dominant   Species Across All Strata:   5 (B)		Absolute	Daminant	ladiantas	Number of Dominant Species
A	1.	% Cover	Species?		
Prevalence Index worksheet:   Total % Cover	3. 4.				
Sapling/Shrub Stratum	6				
Sapling/Shrub Stratum   Plot size:			= Total Cov	er	
2. Populus tremuloides / Quaking aspen 10 Yes FACW 3. Fachus pennsylvanica / Green ash 10 Yes FACW 5. No FACW 10. FACW 1					
10   Yes   FACW   FAC					FAC species 35 x 3 = 105
4. Cornus alba / Red osier 5 No FAC 5. Cornus racemosa / Gray dogwood 5 No FAC 6. 7.					· — — — — — — — — — — — — — — — — — — —
5. Comus racemosa / Gray dogwood 6. 7.					
Prevalence Index = B/A =2.38  Hydrophytic Vegetation Indicators:  1					Column Totals: (A) (B)
Fig. 2.5   Fig. 3.5   Form	6				Prevalence Index = B/A = 2.38
Herb Stratum (Plot size:	7	50	= Total Cov	er	
1. Solidago gigantea / Smooth goldenrod 2. Phalaris arundinacea / Reed canary grass 3. Typha angustifolia / Narrow leaf cattali, Narrow-leaved cattai 5. No OBL 4. Cirsium arvense / Canada thistle 5. No FACU 5. 6.	Herb Stratum (Plot size: 5-ft )		_ 10101 001	OI .	
2. Phalaris arundinacea / Reed canary grass 3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai 5 No OBL 4. Cirsium arvense / Canada thistle 5 No FACU  6.		30	Yes	FACW	1 — · · · · · · · · · · · · · · · · · ·
4. Cirsium arvense / Canada thistle		15	Yes	FACW	
5	3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai	5	No	OBL	4 - Morphological Adaptations¹ (Provide supporting
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.   Definitions of Vegetation Strata		5	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	^				Undicators of hydric soil and wetland hydrology must
8. 9. 10. 11. 12.  Solution Stratum (Plot size: 30-ft) 1. 2. 3. 4.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No	· · · · · · · · · · · · · · · · · · ·				
10. 11. 12.  Solution Stratum (Plot size: 30-ft )  1.  3. 4.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No	8.		<u> </u>		Definitions of Vegetation Strata
breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	10				Troe Woody plants 2 in (7.6 cm) or more in diameter at
Woody Vine Stratum (Plot size: 30-ft )  1.					
1.	Wash Visa Chahara (Distains 20 ft	55	= Total Cov	rer	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	1				
					Woody vines - All woody vines greater than 3.28 ft in
Hydrophytic Vegetation Present?  Yes X No	4		= Total Cov		noight.
			_ 10101 001	o.	Vegetation
Remarks: (Explain alternative procedures here or in a separate report.)	Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 06A

Depth	ription: (Describe to t Matrix			x Features				,		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-4	10YR 2/1	100					Loam			
4-12	10YR 2/1	95	7.5R 3/4	5	С	М	Loam	PRC		
12-24	10YR 6/1	90	10YR 3/6	10	С	М	Lm Crse Sand	PRC		
	<u> </u>			_						
		_								
	<u> </u>									
	· ·									
								-		
Type: C=Co	ncentration, D=Depletion	on, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Po	ore Lining, M=Mat	rix.
Hydric Soil I	ndicators:						Indicators	for Proble	ematic Hydric So	ils³:
Histosol			Polyvalue Belov	v Surface (St	3) <b>(LRR R</b> .	MLRA 14			(LRR K, L, MLR	
	pipedon (A2)		Thin Dark Surfa						dox (A16) (LRR	-
	istic (A3)		Loamy Mucky N						t or Peat (S3) <b>(LF</b>	
	en Sulfide (A4)		Loamy Gleyed		, ,				7) (LRR K, L)	, , ,
	d Layers (A5)		Depleted Matrix					•	Surface (S8) (LF	RR K, L)
	d Below Dark Surface (	(A11)	X Redox Dark Su	rface (F6)					e (S9) (LRR K, I	· •
	ark Surface (A12)		Depleted Dark	Surface (F7)					Masses (F12) (I	
Sandy N	Mucky Mineral (S1)		Redox Depress				Piedn	nont Floodp	olain Soils (F19) (I	MLRA 149B)
Sandy C	Gleyed Matrix (S4)						Mesic	Spodic (TA	A6) (MLRA 144A	, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Mate	erial (F21)	
Stripped	d Matrix (S6)						Very	Shallow Dai	rk Surface (TF12)	
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in	Remarks)	
3Indicators of	hydrophytic vegetation	n and wetland	hydrology must be p	resent. unles	s disturbed	or proble	matic.			
	_ayer (if observed):		, 0, 1							
Type:	Luyer (ii observeu).									
Depth (in	nches):						Hydric Soil P	resent?	Yes X	No
	· -									
Remarks:										

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	ke (	City/County:	Forest Lake/V	Vashington	Sampling Date:	10/12/2023
Applicant/Owner:		<u> </u>	TKDA			State: MN	Sampling Point:	06B
Investigator(s):	Dylan K	ruzel, Garrett Wee	(	Section, Townshi	o, Range:	S28	3, T163, R36W	
Landform (hillslope, te					vex, none):		Slope	: (%): 2
Subregion (LRR or ML							Datur	n: WGS 84
Soil Map Unit Name:			ton Loam, Hydric			NWI classificat	ion:	None
Are climatic / hydrolog	ic conditions on the	e site typical for this	time of year? \	Yes	No X (If n	<u>—</u> o, explain in Remar	ks.)	
Are Vegetation	, Soil	, or Hydrology	significantly	disturbed?	Are "Normal C	circumstances" pres	ent? Yes	X No
Are Vegetation					(If needed, exp	plain any answers ir	n Remarks.)	
SUMMARY OF FI	NDINGS - Atta	ach site map sh	owing samp	oling point lo	cations, transe	ects, important	features, etc.	
Hydrophytic Vegetat		Yes X	No		Sampled Area	•	,	
Hydric Soil Present?		Yes X			a Wetland?	Yes	NoX	
Wetland Hydrology I		Yes	No X	•	optional Wetland S			_
				. , , , ,				
		res here or in a sepa et. Antecedent is abo		he time of year				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
		equired; check all tha	t annly)			Secondary Indic	cators (minimum of t	two required)
Surface Water		quired, officer all tha	Water-Stained	Leaves (B9)		·	il Cracks (B6)	wo required)
High Water Tab	` ,	_	Aquatic Fauna	,			Patterns (B10)	
Saturation (A3)		_	Marl Deposits (				Lines (B16)	
Water Marks (E			Hydrogen Sulfic	,			n Water Table (C2)	
Sediment Depo	•		, ,	spheres on Livin	a Roots (C3)		urrows (C8)	
Drift Deposits (		_		educed Iron (C4)	g 110010 (00)		Visible on Aerial Im	agery (C9)
Algal Mat or Cr	•			duction in Tilled	Soils (C6)		Stressed Plants (D	
Iron Deposits (I		_	Thin Muck Surf		()		ic Position (D2)	• ,
	ble on Aerial Image	ery (B7)	Other (Explain	` '		<del></del>	juitard (D3)	
	tated Concave Sur			,			raphic Relief (D4)	
, ,		, ,				X FAC-Neutra		
F: 1101 //								
Field Observations		N- V	Double (in the co					
Surface Water Prese		No X	_	•	<b>-</b>			
Water Table Present		No X	_ ' '	s):	_		V	NI- V
Saturation Present?		s NoX	Depth (inches	5):	vvetiand Hy	/drology Present?	Yes	No X
(includes capillary fr	inge)							
Describe Recorded	Data (stream gaug	ge, monitoring well, a	aerial photos, pre	evious inspection	s), if available:			
	, ,	, ,	•	•				
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point:06B
<u> </u>				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 4 (A)
T 0	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1		_		Species Across All Strata: 5 (B)
2			- <del> </del>	
3.				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 80.0 (A/B)
5				
6	-			Prevalence Index worksheet:
7	0	= Total Cov		Total % Cover of: Multiply by:
Sanling/Shruh Stratum (Plot size: 15 ft )		_ = 10tal C0V	EI	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )  1. Rhamnus cathartica / European buckthorn	20	Yes	EAC	FACW species 60 x 2 = 120
Populus tremuloides / Quaking aspen	10	Yes	FAC FAC	FAC species 30 x 3 = 90
Ribes cynosbati / Eastern prickly gooseberry	5	No	FACU	FACU species <u>52</u> x 4 = <u>208</u>
		_		UPL species x 5 = 0
				Column Totals:142 (A)418 (B)
6. 7.		-		Prevalence Index = B/A = 2.94
	35	= Total Cov	 er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )			<b>.</b>	1 - Rapid Test for Hydrophytic Vegetation
1. Solidago gigantea / Smooth goldenrod	40	Yes	FACW	X 2 - Dominance Test is >50%
Solidago altissima / Canada goldenrod	20	Yes	FACU	X 3 - Prevalence Index ≤3.0¹
3. Phalaris arundinacea / Reed canary grass	20	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting
4. Cirsium arvense / Canada thistle	10	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5. Taraxacum officinale / Red seeded dandelion, Common dand	delion5	No	FACU	
6. Poa pratensis / Kentucky blue grass	5	No	FACU	¹Indicators of hydric soil and wetland hydrology must
7. Zanthoxylum americanum / Toothachetree	5	No	FACU	be present, unless disturbed or problematic.
8. Aquilegia canadensis / Red columbine	2	No	FACU	
9		_		Definitions of Vegetation Strata
10				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11	-			breast height (DBH), regardless of height.
12	407	T-4-1 O		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )	107	_ = Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )  1.				<b>Herb</b> - All herbaceous (non-woody) plants, regardless of
2.		-		size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in
4.		-:	-	height.
	0	= Total Cov	er	Undrankudia
		_		Hydrophytic
				Vegetation Present? Yes X No
				Present?         YesX No
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 06B

Depth	Matrix		Redo	x Features			nce of indicators	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-6	10YR 2/1	100					Loam	
6-13	10YR 2/1	95	7.5R 3/4	5	C	М	Crse Sndy Lm	PRC
13-24	10YR 6/1	90	10YR 3/6	10	С	М	Lm Crse Sand	PRC
				_				
				_				
			-					
				_				
ype: C=Co	ncentration, D=Depletion	on, RIVI=Red	uced Matrix, MS=Mas	ked Sand Gr	ains.		-Loca	tion: PL=Pore Lining, M=Matrix.
ydric Soil I	Indicators:						Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histosol			Polyvalue Belov	w Surface (S	B) (LRR R,	MLRA 14		Muck (A10) (LRR K, L, MLRA 149B)
Histic E	pipedon (A2)		Thin Dark Surfa				_	Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed		. , ,			Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix					alue Below Surface (S8) (LRR K, L)
 Deplete	d Below Dark Surface (	(A11)	X Redox Dark Su	rface (F6)				Dark Surface (S9) (LRR K, L)
X Thick Da	ark Surface (A12)		Depleted Dark	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L, R)
Sandy N	Mucky Mineral (S1)		Redox Depress	ions (F8)			Piedm	nont Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Material (F21)
Stripped	d Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
undiantore of				resent, unies	is disturbed	or proble	manic	
indicators of	f hydrophytic vegetatior	and wetian	a flydrology fflust be p				1	
	f hydrophytic vegetatior  Layer (if observed):	1 and wetian	a flydrology ffidst be p					
		i and wetian	u ffydiology ffidst be p					
Restrictive L	Layer (if observed):	n and wetian	u Hydrology must be p				Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes <u>X</u> No
Restrictive I Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wetian	u mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wettan	a mydrology must be p					resent? Yes X No
Restrictive I Type: Depth (in	Layer (if observed):	n and wettan	a mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L	Layer (if observed):	n and wettan	u inyurology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	a mydrology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	n and wettan	u mydrology must be p					resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Forest L	_ake	City/Coun	ty: F	orest Lake/Wa	ashington	Sampling Date:	10/12/2023
			TKDA			St	ate: MN	Sampling Point:	07A
Investigator(s):	Dylan Kru	uzel, Garrett We	<u></u> е	Section, T	ownship, Rar	nge:	S28	3, T163, R36W	
Landform (hillslope, te	errace, etc):	Toe Slope	Local re	elief (conca	ve, convex, n	one):	concave	Slop	e (%): 1
Subregion (LRR or ML	_RA):	LRR K	Lat:	45.2	1762565	Long:	-92.993430	084 Datu	m: WGS 84
Soil Map Unit Name:		75 - BI	luffton loam, Hydr	ic Soil unit			NWI classificat	ion: PF0	O1/EM1C
Are climatic / hydrolog	ic conditions on the	site typical for th	nis time of year?	Yes	No _	X (If no,	, explain in Remar	ks.)	
Are Vegetation	, Soil,	or Hydrology	significantly	y disturbed	? A	re "Normal Cir	cumstances" pres	ent? Yes	X No
Are Vegetation	, Soil,	or Hydrology	naturally pr	roblematic?	? (I	If needed, expl	ain any answers i	n Remarks.)	
SUMMARY OF F	INDINGS - Atta	ch site map	showing sam	pling po	int locatio	ns, transec	cts, important	features, etc.	
Hydrophytic Vegeta	tion Present?	Yes X	No _		Is the Samp	led Area			
Hydric Soil Present		Yes X		_	within a We		Yes X	No	
Wetland Hydrology		Yes X		_		nal Wetland Sit			<del>_</del>
					<b>,</b> , - <b>,</b>				_
Remarks: (Explain a Wetlar	alternative procedure nd criteria is met. An			time of yea	ar				
HYDROLOGY									
Wetland Hydrology	v Indicators:								
Primary Indicators (		uired: check all f	that annly)				Secondary India	cators (minimum of	two required)
Surface Water		unou, oncon un t	Water-Stained	d Leaves (F	39)			oil Cracks (B6)	two required)
High Water Tal	` ,	=	Aguatic Fauna	`				Patterns (B10)	
X Saturation (A3		_	Marl Deposits	,				Lines (B16)	
Water Marks (F		_	Hydrogen Sul	. ,	C1)			n Water Table (C2)	
Sediment Depo	,	_	Oxidized Rhiz		-	ts (C3)		urrows (C8)	
Drift Deposits (		_	Presence of F	-	-	10 (32)		Visible on Aerial In	nagery (C9)
Algal Mat or Ci			Recent Iron R		. ,	C6)	_	Stressed Plants (D	
Iron Deposits (			Thin Muck Su		,	,	X Geomorph	•	
I —	ible on Aerial Image	rv (B7)	Other (Explain					uitard (D3)	
_	tated Concave Surfa	-	_ ` `		,			raphic Relief (D4)	
, ,		. ,					X FAC-Neutr		
Field Observations									
Surface Water Pres	•	NoX	' `	· —					
Water Table Presen		XNo	Depth (inche	′ <del></del>	24			V V	
Saturation Present?	•	X No	Depth (inche	es):	12	Wetland Hyd	Irology Present?	Yes X	_ No
(includes capillary fi	ringe)								
Describe Recorded	Data (stream gauge	e. monitorina wel	I. aerial photos. p	revious ins	pections), if a	vailable:			
	( 99.	.,	т, шетте рттеге, р		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point:07A
				Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 3 (A)
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC:3 (A)
<u>Tree Stratum</u> (Plot size:30-ft)  1 2	% Cover	Species?	Status	Total Number of Dominant Species Across All Strata: 3 (B)
3.				Demont of Deminent Consiss
4.         5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
6				Prevalence Index worksheet:
7		= Total Cov	or	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15-ft )		_ = 10(a) 00v	е	OBL species 5 x 1 = 5
1. Salix interior / Sandbar willow	25	Yes	FACW	FACW species 110 x 2 = 220 FAC species 0 x 3 = 0
2. Fraxinus pennsylvanica / Green ash	10	Yes	FACW	FACU species 0 x 4 = 0
3.				UPL species 0 x 5 = 0
4				Column Totals: 115 (A) 225 (B)
56.				
6. 7.				Prevalence Index = B/A = 1.96
	35	= Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size:)				X 1 - Rapid Test for Hydrophytic Vegetation
Solidago gigantea / Smooth goldenrod	60	Yes	FACW	X 2 - Dominance Test is >50%
Phalaris arundinacea / Reed canary grass	15	No No	FACW	X 3 - Prevalence Index ≤3.01
Carex lacustris / Lakebank sedge	5	No	OBL	4 - Morphological Adaptations¹ (Provide supporting     Problematic Hydrophytic Vegetation¹ (Explain )
4				Troblematic Hydrophytic vegetation (Explain)
6.				¹Indicators of hydric soil and wetland hydrology must
7.				be present, unless disturbed or problematic.
8				Definitions of Versatation Strate
9.			<del>-</del>	Definitions of Vegetation Strata
10 11.			<del> </del>	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11 12.				breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	80	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1				<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in height.
4		= Total Cov		
			<b>.</b>	Hydrophytic
				Vegetation Present? Yes X No
				Present?         YesX No
Remarks: (Explain alternative procedures here or in a separa	ite report.)			

SOIL Sampling Point: 07A

Depth	ription: (Describe to t Matrix			x Features	Je.m.		, , , , , , , , , , , , , , , , , , , ,	- 7		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-6	10YR 2/1	100					Loam			
6-14	10YR 4/2	95	7.5R 3/4	5	C	М	Sndy Clay Lm	DRC		
14-24	10YR 4/2	95	7.5R 3/4	5	C	М	Sandy Clay	DRC		
	· · ·						· · <u></u>			
							. <del></del>			
	-						·			
	· -									
							· <del></del>			
¹Type: C=Co	 ncentration, D=Depletion	n RM=Redu		ked Sand Gr	-aine		2l oca	ation: PI =Pore	e Lining, M=Matrix.	
	•	JII, INVI-INCUU	——————————————————————————————————————	- Cu Garia Gi	anis.			111011.1 L=1 010	z Liming, Wi-Maurix.	
Hydric Soil I	ndicators:						Indicators	s for Problem	natic Hydric Soils <sup>a</sup>	:
Histosol	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 14	<b>9B)</b> 2 cm	Muck (A10) (	LRR K, L, MLRA	149B)
Histic E	pipedon (A2)		Thin Dark Surfa	ace (S9) (LF	RR R, MLRA	149B)	Coas	t Prairie Redo	ox (A16) (LRR K,	L, <b>R</b> )
Black Hi	istic (A3)		Loamy Mucky N	Mineral (F1)	(LRR K, L)		5 cm	Mucky Peat of	or Peat (S3) (LRR	K, L, R)
Hydroge	en Sulfide (A4)		Loamy Gleyed	Matrix (F2)			Dark	Surface (S7)	(LRR K, L)	
	d Layers (A5)		X Depleted Matrix						urface (S8) (LRR	K, L)
	d Below Dark Surface (	(A11)	Redox Dark Su						(S9) (LRR K, L)	
	ark Surface (A12)		Depleted Dark					•	lasses (F12) (LRI	
	Mucky Mineral (S1)		Redox Depress	sions (F8)					in Soils (F19) (ML	
	Gleyed Matrix (S4)								) (MLRA 144A, 1	45, 149B)
	Redox (S5)							Parent Materia		
	Matrix (S6)	L DA 440D\							Surface (TF12)	
Dark Su	rface (S7) (LRR R, M	LRA 149B)					Otne	r (Explain in R	(emarks)	
3Indicators of	hydrophytic vegetation	n and wetland	hydrology must be p	resent, unle	ss disturbed	or proble	matic.			
Dandaladia a I	(:f -  )									
	_ayer (if observed):									
Type:	obos):						Hydria Sail B	rocont?	Voc V N	•
Depth (in							Hydric Soil P	resentr	Yes X N	<u> </u>
Remarks:										

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	ce Cit	ty/County:	Forest Lake/Wa	ashington	Sampling Date:	10/12/2023	
Applicant/Owner:		<u> </u>	TKDA	,		ate: MN	Sampling Point:	07B	
Investigator(s):	Dylan K	ruzel, Garrett Wee	Se	Range: S28, T163, R36W					
Landform (hillslope, te			Local relief	(concave, convex	, none):	none	Slope	e (%): 3	
Subregion (LRR or ML			Lat:	45.2176364	Long:	-92.993314	82 Datur	n: WGS 84	
Soil Map Unit Name:	· .		ton Loam, Hydric s	soil unit		NWI classificati	ion:	None	
Are climatic / hydrolog	ic conditions on the	e site typical for this	time of year? Ye	s No	o X (If no,	_ , explain in Remar	ks.)		
Are Vegetation	, Soil	, or Hydrology	significantly dis	sturbed?	Are "Normal Cir	cumstances" pres	ent? Yes	X No	
		, or Hydrology			(If needed, expla	ain any answers ir	n Remarks.)		
SUMMARY OF FI	NDINGS - Atta	ach site map sh	 lowing sampli	ing point locat	tions, transec	cts, important	features, etc.		
Hydrophytic Vegeta	tion Present?	Yes X	No	Is the Sar	npled Area	<u>-</u>			
Hydric Soil Present		Yes	No X	within a V	-	Yes	No X		
Wetland Hydrology		Yes	No X		ional Wetland Site			_	
				, 500, 501					
		res here or in a sepa et. Antecedent is abo		e time of year					
HYDROLOGY									
Wetland Hydrology	v Indicators:								
	•	equired; check all tha	at apply)			Secondary Indic	ators (minimum of t	two required)	
Surface Water		quirea, oricon air trie	Water-Stained Le	Paves (R9)			il Cracks (B6)	wo required)	
High Water Tab	` '	_	Aquatic Fauna (B	` '			atterns (B10)		
Saturation (A3)		_	Marl Deposits (B	•			Lines (B16)		
Water Marks (E	,	_	Hydrogen Sulfide	,			n Water Table (C2)		
Sediment Depo	•	<del></del>		heres on Living R	oots (C3)		urrows (C8)		
Drift Deposits (		_	Presence of Red	-	0010 (00)		Visible on Aerial Im	agery (C9)	
Algal Mat or Cr		_		uction in Tilled Soil	s (C6)	<del></del>	Stressed Plants (D		
Iron Deposits (		_	Thin Muck Surface		3 (00)	<del></del>	c Position (D2)	')	
	ible on Aerial Image	ery (R7)	Other (Explain in	` '		Shallow Aq			
_	tated Concave Sur		Otrici (Explain in	remarks)		<del></del>	raphic Relief (D4)		
oparoory rogo	tatou comouvo cum	1000 (20)				X FAC-Neutra			
					T	<del></del>			
Field Observations									
Surface Water Pres		S NoX	- ' ` ′						
Water Table Presen		8 NoX	- ' ` ′						
Saturation Present?		s NoX_	_ Depth (inches):		Wetland Hyd	Irology Present?	Yes	No X	
(includes capillary fr	inge)								
Describe Recorded	Data (stream gauc	ge, monitoring well, a	aerial nhotos, previ	ious inspections) i	f available <sup>.</sup>				
Describe recorded	Data (Stream gaug	je, morntoring wen, e	ichai photos, previ	ious irispections), i	i avallabic.				
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point:07B
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 2 (A)  Total Number of Dominant
1				Species Across All Strata: (B)
5	_	_		Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)
6				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size:15-ft)  1 2		<u> </u>		OBL species         0         x 1 =         0           FACW species         45         x 2 =         90           FAC species         0         x 3 =         0           FACU species         25         x 4 =         100
3				UPL species         5         x 5 =         25           Column Totals:         75         (A)         215         (B)
6. 7.				Prevalence Index = B/A =
Herb Stratum (Plot size: 5-ft )	0	= Total Cov	er	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Phalaris arundinacea / Reed canary grass     Solidago altissima / Canada goldenrod	20 20	Yes Yes	FACU	X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤3.0¹
Solidago gigantea / Smooth goldenrod	20	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting
4. Thalictrum dasycarpum / Purple meadow-rue	5	No	FACW	Problematic Hydrophytic Vegetation¹ (Explain )
5. Asclepias syriaca / Common milkweed	5	No	UPL	
Poa pratensis / Kentucky blue grass  7.			FACU	¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	_	<u> </u>		Definitions of Vegetation Strata
11. 12.		_		<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	75	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1. 2.				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3. 4.	_			<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
	0	_ = Total Cov	er	Hydrophytic
				Vegetation           Present?         YesX No
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 07B

Depth	Matrix		Redo	x Features							
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture		Remark	s	
0-8	10YR 2/1	100					Fine Sndy Lm				
8-24	10YR 4/3	98	10YR 3/6	2	С	М	Sndy Clay Lm	PRC			
	-			_							
		· ——	•								
		·		_							
							·				
		· ——		_	· ——						
		· <del></del>	•		· <del></del>		-				
							-	-			
		· ——			<del></del>		·				
	-	· <del></del>			· ——						
Typo: C=Cor	centration, D=Depletion	n DM-Dod	uood Matrix MS-Mac	kod Sand Ci	roine		21 000	tion: DI =D	ore Lining, M	-Matrix	
ype. C=Coi		JII, KIVI-KEUL	lceu Matrix, MS-Mas	Keu Sanu Gi	allis.		Loca	uon. FL=F	ore Limity, ivi	-ivialiix.	
ydric Soil Ir	ndicators:						Indicators	for Proble	ematic Hydri	c Soils³:	
Histosol	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 149	<b>9B)</b> 2 cm	Muck (A10	) (LRR K, L,	<b>MLRA 149</b>	B)
Histic Ep	ipedon (A2)		Thin Dark Surfa	ice (S9) (LF	RR R, MLRA	(149B)	Coast	Prairie Re	dox (A16) (I	RR K, L, F	₹)
Black His	stic (A3)		Loamy Mucky N	/lineral (F1)	(LRR K, L)		5 cm	Mucky Pea	at or Peat (S3	) (LRR K, I	L, <b>R</b> )
 Hydroge	n Sulfide (A4)		Loamy Gleyed	Matrix (F2)			Dark	Surface (S	7) <b>(LRR K, I</b>	_)	
Stratified	Layers (A5)		Depleted Matrix	(F3)					Surface (S8		L)
Depleted	Below Dark Surface (	A11)	Redox Dark Su	rface (F6)					ce (S9) (LRF		-
	rk Surface (A12)	•	Depleted Dark						Masses (F12	· •	, L, R)
	ucky Mineral (S1)		Redox Depress					•	olain Soils (F	, .	
	leyed Matrix (S4)			()			·		A6) <b>(MLRA</b>		
	edox (S5)							Parent Mate		, ,	,
	Matrix (S6)								ırk Surface (T	F12)	
	face (S7) (LRR R, MI	DA 1/0B)							n Remarks)	1 12)	
Daik Sui	iace (37) (LIXIX IX, IVII	LIXA 143D)					Other	(LXPIAIII II	i itelliaiks)		
Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unle	ss disturbed	or proble	natic.				
	(!£ -  ).										
	ayer (if observed):										
Type:	-L \.						Usadais Osil B		V	NI-	V
Depth (inc	cnes):						Hydric Soil P	resent?	Yes	No _	X
Remarks:											

Project/Site:	MCES Sanitary	Sewer - Forest La	ike	City/County:	r: F	orest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA			Sta	ate: MN	Sampling Point:	08A
Investigator(s):	Dylan Kri			Section, Tov	wnship, Ran	ge:	S2	8, T163, R36W	
Landform (hillslope, ter	rrace, etc):	Toe Slope	Local re	lief (concave	e, convex, no	one):	concave	Slope	: (%): 0
Subregion (LRR or ML			Lat:		339774	Long:	-92.99400	0655 Datum	n: WGS 84
Soil Map Unit Name:	·	75 - Bluf	fton Loam, Hydri	ic Soil unit			NWI classifica	ition: Pl	EM1A
Are climatic / hydrologi	ic conditions on the	site typical for this	s time of year?	Yes	No	X (If no,	explain in Rema	ırks.)	
Are Vegetation	, Soil,	or Hydrology	significantly	disturbed?	A	re "Normal Cire	cumstances" pre	sent? Yes	X No
Are Vegetation	, Soil,	or Hydrology	naturally pro	oblematic?	(11	needed, expla	ain any answers	in Remarks.)	
<b>SUMMARY OF FI</b>	NDINGS - Atta	ch site map s	howing sam	pling poir	nt locatio	ns, transec	ts, importan	t features, etc.	
Hydrophytic Vegetat	ion Present?	Yes X	No	Is	s the Samp	ed Area			
Hydric Soil Present?	•	Yes X	No		within a Wet	land?	Yes	X No	
Wetland Hydrology F	Present?	Yes X	No		f yes, option	al Wetland Site	e ID:		
Remarks: (Explain a Wetlan	llternative procedur d criteria is met. An			time of year					
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (r	minimum of one req	uired; check all th	at apply)				Secondary Ind	icators (minimum of t	wo required)
Surface Water	(A1)		Water-Stained	Leaves (B9)	9)		Surface S	oil Cracks (B6)	
High Water Tab	ole (A2)		Aquatic Fauna	(B13)			Drainage	Patterns (B10)	
X Saturation (A3)			Marl Deposits	(B15)			Moss Trin	n Lines (B16)	
Water Marks (B	31)		_ Hydrogen Sulf	ide Odor (C1	1)		Dry-Seaso	on Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhize	ospheres on	Living Root	s (C3)	Crayfish E	Burrows (C8)	
Drift Deposits (I	B3)		Presence of R	educed Iron	(C4)		Saturation	Note on Aerial Important	agery (C9)
Algal Mat or Cr	ust (B4)		Recent Iron Re	eduction in T	Tilled Soils (0	C6)	Stunted o	r Stressed Plants (D'	1)
Iron Deposits (E	•		Thin Muck Sur					nic Position (D2)	
<del></del>	ble on Aerial Image	· · · · —	Other (Explain	in Remarks	s)			quitard (D3)	
Sparsely Veget	ated Concave Surfa	ace (B8)						graphic Relief (D4)	
							X FAC-Neut	ral Test (D5)	
Field Observations	::								
Surface Water Prese	ent? Yes	No X	Depth (inche	s):					
Water Table Present	? Yes	No X	Depth (inche	-					
Saturation Present?	Yes	X No	Depth (inche	s): 25	25	Wetland Hyd	rology Present?	? Yes X	No
(includes capillary fri	inge)								<u></u> -
Describe Recorded	Data (stream gauge	e, monitoring well,	aerial photos, pr	evious inspe	ections), if a	/ailable:			
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point:08A
				Dominance Test worksheet:
				Number of Dominant Species
	Ale - aluda	D	1 U	That Are OBL, FACW, or FAC: 5 (A)
7 00 4 (5) 4 (5)	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1. Populus tremuloides / Quaking aspen	30	Yes	FAC	Species Across All Strata: 5 (B)
2. Fraxinus pennsylvanica / Green ash	5	No	FACW	
3				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 100.0 (A/B)
5				
6.			- ——	Prevalence Index worksheet:
7			- ——	Total % Cover of: Multiply by:
	35	_ = Total Cove	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 120 x 2 = 240
Cornus racemosa / Gray dogwood	30	Yes	FAC	FAC species 80 x 3 = 240
2. Cornus alba / Red osier	15	Yes	FACW	FACU species 0 x 4 = 0
3. Rhamnus cathartica / European buckthorn	10	No	FAC	UPL species 0 x 5 = 0
4				Column Totals: 200 (A) 480 (B)
5				
6.				Prevalence Index = B/A = 2.4
7.				
	55	= Total Cove	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		-		1 - Rapid Test for Hydrophytic Vegetation
1. Phalaris arundinacea / Reed canary grass	100	Yes	FACW	X 2 - Dominance Test is >50%
2.		_		X 3 - Prevalence Index ≤3.0¹
3.		_		4 - Morphological Adaptations¹ (Provide supporting
4.				Problematic Hydrophytic Vegetation¹ (Explain)
-				110001110011110111111111111111111111111
6			- —	¹Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
0				De present, unless disturbed of problematio.
				Definitions of Vegetation Strata
10			- ——	
			. ———	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11			- ——	breast height (DBH), regardless of height.
12		T-tal Cau	- ——	Sapling/shrub - Woody plants less than 3 in. DBH and
	100	_ = Total Cove	er	greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )	40	V	<b>540</b>	Herb - All herbaceous (non-woody) plants, regardless of
1. Vitis riparia / River-bank grape	10	Yes	FAC	size, and woody plants less than 3.28 ft tall.
2				
3				<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
4.				
	10	_ = Total Cove	er	Hydrophytic
				Vegetation
				Present?         YesX No
				Flescit: 100 A 110
Remarks: (Explain alternative procedures here or in a separa	ate report.)	_	_	
, and the second	,			

SOIL Sampling Point: 08A

Depth	Matrix			x Features			nce of indicators	•
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-12	10YR 2/1	100					Fine Sndy Lm	
12-20	10YR 4/2	70	10YR 3/6	5	С	М	Fine Sndy Lm	PRC
	10YR 2/1	25					Sndy Clay Lm	Mixed matrix
20-26	10YR 5/2	90	10YR 3/6	10	С	М	Sndy Clay Lm	PRC
			-	_				
			-					
			-					
'Type: C=Cor	ncentration, D=Depletion	on, RM=Redu	uced Matrix, MS=Mas	ked Sand G	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicatore:						Indicators	for Problematic Hydric Soils³:
			Debarelya Dela	Cumfaaa (C	0\	MI DA 44		-
Histosol	` '		Polyvalue Belo					Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa			( 149B)		Prairie Redox (A16) (LRR K, L, R)
Black Hi			Loamy Mucky I		(LKK K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	Layers (A5)	(444)	Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	Below Dark Surface (	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
	lucky Mineral (S1)		Redox Depress	sions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Su	face (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
3Indicators of	hydrophytic vegetation	and wetland	d hydrology must be r	resent unle	ss disturbed	or proble	matic	
³Indicators of	hydrophytic vegetatior	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble	matic.	
	hydrophytic vegetation ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble	matic.	
		n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		
Restrictive L	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble	matic.  Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle:	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	oresent, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetland	d hydrology must be p	present, unle	es disturbed	or proble		resent? Yes X No

Project/Site:	MCES Sanitary	y Sewer - Forest Lal	ke	City/County	y: F	orest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA	, .	,·	Sta		Sampling Point:	08B
Investigator(s):	Dylan Kı	ruzel, Garrett Wee		Section, To	wnship, Ran	ge:	S28	3, T163, R36W	
Landform (hillslope, te					e, convex, no			Slope	e (%): 3
Subregion (LRR or ML			Lat:	45.21	840914	Long:	-92.993883	B74 Datu	ım: WGS 84
Soil Map Unit Name:			ton Loam, Hydr	ic Soil unit			NWI classificat	ion:	None
Are climatic / hydrolog	ic conditions on the	site typical for this	time of year?	Yes	No	X (If no,	- explain in Remar	ks.)	
Are Vegetation	, Soil	, or Hydrology	significantly	/ disturbed?	' Ar	e "Normal Circ	cumstances" pres	ent? Yes	X No
		, or Hydrology				needed, expla	ain any answers ir	n Remarks.)	
SUMMARY OF FI	NDINGS - Atta	ich site map sl	nowing sam	pling poi	int location	ns, transec	ts, important	features, etc.	
Hydrophytic Vegeta	tion Present?	Yes X	No		Is the Sampl	ed Area			
Hydric Soil Present		Yes	No X		within a Wet		Yes	No X	
Wetland Hydrology		Yes	No X	_		al Wetland Site			
					, 500, 00				
Remarks: (Explain a Antece		res here or in a sep rage for the time of							
HYDROLOGY									
Wetland Hydrology	/ Indicators:								
Primary Indicators (	•	guired: check all tha	at apply)				Secondary India	ators (minimum of	two required)
Surface Water		quii ou, orroore uii ure	Water-Stained	Leaves (B9	9)			il Cracks (B6)	tiro roquirou)
High Water Tab	` '		Aquatic Fauna	,	• ,			Patterns (B10)	
Saturation (A3)			Marl Deposits	,				Lines (B16)	
Water Marks (E	•		Hydrogen Sulf	` '	21)			n Water Table (C2)	1
Sediment Depo	,		Oxidized Rhiz	-	•	s (C3)		urrows (C8)	
Drift Deposits (			Presence of R		-	- ()		Visible on Aerial In	nagery (C9)
Algal Mat or Cr	•		Recent Iron R		` ,	26)		Stressed Plants (D	
Iron Deposits (			Thin Muck Su			,		ic Position (D2)	,
	ble on Aerial Image	ery (B7)	Other (Explain	. ,	s)			uitard (D3)	
	tated Concave Surf				,			raphic Relief (D4)	
							FAC-Neutr	al Test (D5)	
Field Observations									
Field Observations		No. V	Donth (inche	· • / ·					
Surface Water Pres		NoX NoX	_ ' `						
Water Table Presen Saturation Present?			_ ` `	· —		Wetlend Hyd	rology Brocont?	Voc	No. V
(includes capillary fr		NOX	_ Depth (inche	-5).		welland nyul	rology Present?	Yes	_ No <u>X</u>
(includes capillary ii	ilige)								
Describe Recorded	Data (stream gaug	je, monitoring well,	aerial photos, pi	revious insp	ections), if av	ailable:			
-									
Remarks:									

7	= Total Cove  Yes  Yes  Yes  Yes	FAC FAC	Dominance Test worksheet:           Number of Dominant Species         6         (A)           Total Number of Dominant Species Across All Strata:         7         (B)           Percent of Dominant Species         That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:         Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0         0           FACW species         50         x 2 = 100         100           FAC species         105         x 3 = 315         15           FACU species         20         x 4 = 80         UPL species         0         x 5 = 0           Column Totals:         175         (A)         495         (B)
Tree Stratum         (Plot size: 30-ft )         % Cover (50 cm)           1. Fraxinus pennsylvanica / Green ash         50           2. Quercus macrocarpa / Bur oak         20           3.	Species? Yes Yes  Total Cove Yes Yes Yes Yes	FACU FAC FAC	That Are OBL, FACW, or FAC:         6         (A)           Total Number of Dominant Species Across All Strata:         7         (B)           Percent of Dominant Species That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:         Multiply by:         Multiply by:           OBL species         0         x 1 = 0         0           FACW species         50         x 2 = 100         100           FAC species         105         x 3 = 315         15           FACU species         20         x 4 = 80         100           UPL species         0         x 5 = 0         0           Column Totals:         175         (A)         495         (B)
Tree Stratum         (Plot size: 30-ft )         % Cover           1. Fraxinus pennsylvanica / Green ash         50           2. Quercus macrocarpa / Bur oak         20           3.	Species? Yes Yes  Total Cove Yes Yes Yes Yes	FACU FAC FAC	That Are OBL, FACW, or FAC:         6         (A)           Total Number of Dominant Species Across All Strata:         7         (B)           Percent of Dominant Species That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:         Multiply by:         Multiply by:           OBL species         0         x 1 = 0         0           FACW species         50         x 2 = 100         100           FAC species         105         x 3 = 315         15           FACU species         20         x 4 = 80         100           UPL species         0         x 5 = 0         0           Column Totals:         175         (A)         495         (B)
Tree Stratum         (Plot size: 30-ft )         % Cover           1. Fraxinus pennsylvanica / Green ash         50           2. Quercus macrocarpa / Bur oak         20           3.	Species? Yes Yes  Total Cove Yes Yes Yes Yes	FACU FAC FAC	Total Number of Dominant           Species Across All Strata:         7         (B)           Percent of Dominant Species           That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
1. Fraxinus pennsylvanica / Green ash       50         2. Quercus macrocarpa / Bur oak       20         3.       4.         5.       6.         7.       70         Sapling/Shrub Stratum (Plot size: 15-ft )       1. Rhamnus cathartica / European buckthorn 35         2. Viburnum lentago / Nanny-berry 20       20         3. Cornus racemosa / Gray dogwood 15       15         4.       5.         6.       7.         Herb Stratum (Plot size: 5-ft )       70         1. Rhamnus cathartica / European buckthorn 25       25	Yes Yes  Total Cove Yes Yes Yes Yes	FACU FACU FAC FAC FAC FAC	Species Across All Strata:         7         (B)           Percent of Dominant Species         That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
2. Quercus macrocarpa / Bur oak       20         3.	Yes  = Total Cove  Yes  Yes  Yes  Yes	FACU  FAC FAC FAC	Species Across All Strata:         7         (B)           Percent of Dominant Species         That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
3.	= Total Cove Yes Yes Yes Yes	FAC FAC FAC	Percent of Dominant Species           That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
4.	= Total Cove  Yes  Yes  Yes  Yes	FAC FAC	That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         50         x 2 = 100           FAC species         105         x 3 = 315           FACU species         20         x 4 = 80           UPL species         0         x 5 = 0           Column Totals:         175         (A) 495         (B)
5	= Total Cove  Yes  Yes  Yes  Yes	FAC FAC	That Are OBL, FACW, or FAC:         85.7         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         50         x 2 = 100           FAC species         105         x 3 = 315           FACU species         20         x 4 = 80           UPL species         0         x 5 = 0           Column Totals:         175         (A) 495         (B)
5.       6.         7.       70         Sapling/Shrub Stratum (Plot size: 15-ft )       1. Rhamnus cathartica / European buckthorn 35         2. Viburnum lentago / Nanny-berry 20       2. Cornus racemosa / Gray dogwood 15         4.       5.         6.       7.         Herb Stratum (Plot size: 5-ft )       70         1. Rhamnus cathartica / European buckthorn 25       25	= Total Cove  Yes  Yes  Yes  Yes	FAC FAC	Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         50         x 2 = 100           FAC species         105         x 3 = 315           FACU species         20         x 4 = 80           UPL species         0         x 5 = 0           Column Totals:         175         (A) 495         (B)
6	= Total Cove	FAC FAC	Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
7	Yes Yes Yes Yes	FAC FAC FAC	Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
70   Sapling/Shrub Stratum (Plot size: 15-ft )   1. Rhamnus cathartica / European buckthorn   35   2. Viburnum lentago / Nanny-berry   20   3. Cornus racemosa / Gray dogwood   15   4.   5.     5.     6.     7.     70     Herb Stratum (Plot size: 5-ft )   1. Rhamnus cathartica / European buckthorn   25   2.     25   25   26   27   27   27   27   27   27   27	Yes Yes Yes	FAC FAC FAC	OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         105         x 3 =         315           FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
Sapling/Shrub Stratum (Plot size: 15-ft )       35         1. Rhamnus cathartica / European buckthorn 35       20         2. Viburnum lentago / Nanny-berry 20       3. Cornus racemosa / Gray dogwood 15         4. 5. 6. 7. 70       70         Herb Stratum (Plot size: 5-ft )       70         1. Rhamnus cathartica / European buckthorn 25       25	Yes Yes Yes	FAC FAC FAC	FACW species       50       x 2 =       100         FAC species       105       x 3 =       315         FACU species       20       x 4 =       80         UPL species       0       x 5 =       0         Column Totals:       175       (A)       495       (B)
1. Rhamnus cathartica / European buckthorn       35         2. Viburnum lentago / Nanny-berry       20         3. Cornus racemosa / Gray dogwood       15         4.       5.         6.       7.         Herb Stratum (Plot size: 5-ft )       70         1. Rhamnus cathartica / European buckthorn       25	Yes Yes	FAC FAC	FAC species       105       x 3 =       315         FACU species       20       x 4 =       80         UPL species       0       x 5 =       0         Column Totals:       175       (A)       495       (B)
2. Viburnum lentago / Nanny-berry       20         3. Cornus racemosa / Gray dogwood       15         4.       5.         6.       7.         Herb Stratum (Plot size: 5-ft )       70         1. Rhamnus cathartica / European buckthorn       25         2.       25	Yes Yes	FAC FAC	FACU species         20         x 4 =         80           UPL species         0         x 5 =         0           Column Totals:         175         (A)         495         (B)
3. Cornus racemosa / Gray dogwood 15 4	Yes	FAC	UPL species $0 \times 5 = 0$ Column Totals: $175 \times (A) \times 495 \times (B)$
4.			Column Totals: 175 (A) 495 (B)
5			
6			
7	_		
Herb Stratum (Plot size: 5-ft )  1. Rhamnus cathartica / European buckthorn 25 2.	= Total Cove		Prevalence Index = B/A = 2.83
Herb Stratum (Plot size: 5-ft )  1. Rhamnus cathartica / European buckthorn 25 2.	= Total Cove		
1. Rhamnus cathartica / European buckthorn 25 2.		r	Hydrophytic Vegetation Indicators:
2.			1 - Rapid Test for Hydrophytic Vegetation
2.	Yes	FAC	X 2 - Dominance Test is >50%
2	-		X 3 - Prevalence Index ≤3.0¹
			4 - Morphological Adaptations¹ (Provide supporting
1			Problematic Hydrophytic Vegetation¹ (Explain )
5.			1 Toblematic Hydrophytic Vegetation (Explain)
			1 Indicators of hydric call and watered by dralesy, much
6			¹Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
8			Definitions of Vegetation Strate
9			Definitions of Vegetation Strata
10			
11			<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12	_		
25	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )	_		greater than or equal to 3.28 ft (1 m) tall.
1. Vitis riparia / River-bank grape	Yes	FAC	Herb - All herbaceous (non-woody) plants, regardless of
2.			size, and woody plants less than 3.28 ft tall.
3.	-		Woody vines - All woody vines greater than 3.28 ft in
1			height.
4.	- Total Cave		
10	_ = Total Cove	ſ	Hydrophytic
			Vegetation
			Present?         Yes         X         No

SOIL Sampling Point: 08B Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Matrix Redox Features Color (moist) % Loc<sup>2</sup> (inches) Color (moist) Type<sup>1</sup> Texture Remarks 10YR 2/1 100 Clay Loam 0-30 <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) \_\_\_ Depleted Dark Surface (F7) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Yes \_\_\_ Depth (inches): **Hydric Soil Present?** No X Remarks:

Project/Site:	MCES Sanitan	y Sewer - Forest L	ake	City/Cour	ntv: F	orest Lake/Wa	shinaton	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA				ate: MN	Sampling Point:	09A
Investigator(s):	Dvlan K	ruzel, Garrett Wee		Section.	Township, Ran		-	3, T163, R36W	
Landform (hillslope, ter				_	ave, convex, n	·			e (%): 0
Subregion (LRR or ML		LRR K			21832451				m: WGS 84
Soil Map Unit Name:		123 - Dundas fi					NWI classificat		None
Are climatic / hydrologi						X (If no,	explain in Remar	ks.)	
Are Vegetation			•			`	cumstances" pres	•	X No
	 , Soil						ain any answers ir		
SUMMARY OF FI						•	•	·	
Hydrophytic Vegetat		Yes X	No		Is the Samp		, <sub> </sub>		
Hydric Soil Present?		Yes X	No No	_	within a We		Yes X	No	
Wetland Hydrology F		Yes X	No	_			e ID:		<del>_</del>
- Trouding Try droidgy T				_		ar Wolland Oll			
Remarks: (Explain a Wetlan	alternative procedu id criteria is met. A			e time of ye	ear.				
HYDROLOGY									
Wetland Hydrology	/ Indicators:								
Primary Indicators (r		guired: check all th	nat apply)				Secondary India	cators (minimum of	two required)
Surface Water			Water-Staine	ed Leaves (	(B9)			oil Cracks (B6)	
High Water Tab	` '		Aquatic Faur	,	( - )			Patterns (B10)	
Saturation (A3)			 Marl Deposit				Moss Trim	Lines (B16)	
Water Marks (B	31)	_	_ Hydrogen Su	ulfide Odor	(C1)		Dry-Seaso	n Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhi	izospheres	on Living Roof	ts (C3)	Crayfish B	urrows (C8)	
Drift Deposits (I	B3)	_	Presence of	Reduced Ir	ron (C4)		Saturation	Visible on Aerial In	nagery (C9)
Algal Mat or Cr	ust (B4)	_	Recent Iron	Reduction i	in Tilled Soils (	C6)	Stunted or	Stressed Plants (D	01)
Iron Deposits (E	35)	_	_ Thin Muck S	urface (C7)	)		X Geomorph	ic Position (D2)	
Inundation Visit	ble on Aerial Image	ery (B7)	Other (Expla	in in Rema	ırks)		Shallow Ac	quitard (D3)	
Sparsely Veget	ated Concave Sur	face (B8)						raphic Relief (D4)	
							X FAC-Neutr	al Test (D5)	
Field Observations									
Surface Water Prese		No X	Depth (inch	nes):					
Water Table Present		No X							
Saturation Present?			' '	· -		Wetland Hvd	rology Present?	Yes X	No
(includes capillary fri									
(,									
Describe Recorded	Data (stream gaug	je, monitoring well	, aerial photos,	previous in	spections), if a	vailable:			
Remarks:									
remains.									

Absolute   Dominant Indicator   Tree Stratum (Plot size:	Tree Stratum         (Plot size:	ver	Species?	Status	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: 100.0 (A/B)  Prevalence Index worksheet:
Species Across All Strata:   3   (B)	2.	)		· ———	Species Across All Strata: 3 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)  Prevalence Index worksheet:
Percent of Dominant Species   That Are OBL, FACW, or FAC:   100.0 (A/B)	4.	)		· ———	That Are OBL, FACW, or FAC: 100.0 (A/B)  Prevalence Index worksheet:
Prevalence Index worksheet:   Total K Cover of:   Multiply by:	6	)		 er	
Column   Color   Sapling/Shrub Stratum   Color   Col	Sapling/Shrub Stratum (Plot size: 15-ft )  1. Salix amygdaloides / Peachleaf willow 50  2.		= Total Cove	er	
1. Salix amygdaloides / Peachleaf willow  2.	1. Salix amygdaloides / Peachleaf willow 50	0			OBL species 15 x 1 = 15
2.	2.	0			FACW species 80 x 2 = 160
3.	2		Yes	FACW	FAC species 0 x 3 = 0
Column Totals: 95	3		: ( <del></del>		FACU species 0 x 4 = 0
5.					
Prevalence Index = B/A =   1.84   1	· · · · · · · · · · · · · · · · · · ·				Column Totals: 95 (A) 175 (B)
Herb Stratum (Plot size: 5-ft   1. Phalaris arundinacea / Reed canary grass   30	6				Prevalence Index = B/A =1.84
Herb Stratum (Plot size:			T-4-1 O		Hadron bade Wenedation In directors
1. Phalaris arundinacea / Reed canary grass 2. Carex bebbii / Bebb's sedge 3. Scirpus atrovirens / Green bulrush 5. No OBL 4 Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ 1		0	= lotal Cove	er	
2. Carex bebbii / Bebb's sedge 3. Scirpus atrovirens / Green bulrush 5. No OBL 4.		^	Voo	EACW.	
3. Scirpus atrovirens / Green bulrush 4.					
Problematic Hydrophytic Vegetation¹ (Explain )  Problematic Hydrophytic Vegetation¹ (Explain )  Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation					
5			. —		
1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation	F				Troblematic rrydrophytic vegetation (Explain)
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Hydrophytic Vegetation	•				¹Indicators of hydric soil and wetland hydrology must
8. 9. Definitions of Vegetation Strata  10. Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  12. Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  10. Woody vines - All woody vines greater than 3.28 ft in height.  11. Woody vines - All woody vines greater than 3.28 ft in height.	7				•
Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation					be present, amess distarbed of problematic.
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation					Definitions of Vegetation Strata
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.    Woody Vine Stratum	40			· ——	
breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  The property of the prop	11		• •		
Woody Vine Stratum (Plot size: 30-ft)  1.				· ——	breast height (DBH), regardless of height.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  The braceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation	4	5	= Total Cove	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation	1				
4					Woody vines - All woody vines greater than 3.28 ft in
Hydrophytic Vegetation					neight.
Vegetation		)	= Total Cove	er	Hydrophytic
Present? Tes A NO					Present? Yes X No

SOIL Sampling Point: 09A Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Matrix Redox Features Color (moist) % Loc² (inches) Color (moist) Type<sup>1</sup> Texture Remarks 10YR 4/2 90 7.5R 3/4 С Μ 0-12 Clay <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) X Depleted Matrix (F3) Stratified Layers (A5) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Depth (inches): **Hydric Soil Present?** Yes X No Remarks:

Project/Site:	MCES Sanitary	Sewer - Forest La	ake Cit	ty/County:	Forest Lake/W	ashington	Sampling Date:	10/12/2023
	•		TKDA		S	tate: MN	Sampling Point:	09B
Investigator(s):	Dylan Kru	uzel, Garrett Wee	e Se	ection, Township, F	Range:	S28	, T163, R36W	
Landform (hillslope, te	errace, etc):	Hillslope	Local relief	(concave, convex	x, none):	convex	Slope	: (%): 3
Subregion (LRR or MI			Lat:	45.2183413	Long:	-92.993755	501 Datur	n: WGS 84
Soil Map Unit Name:		123 - Dundas fi	ine sandy loam, non	-hydric soil unit		NWI classificat	ion: N	None
Are climatic / hydrolog	gic conditions on the	site typical for thi	is time of year? Ye	s N	lo X (If no	, explain in Remar	ks.)	
Are Vegetation	, Soil,	or Hydrology	significantly di	sturbed?	Are "Normal Cir	rcumstances" pres	ent? Yes	X No
Are Vegetation	, Soil,	or Hydrology	naturally probl	ematic?	(If needed, expl	lain any answers ir	n Remarks.)	
<b>SUMMARY OF F</b>	INDINGS - Atta	ch site map s	showing sampli	ing point loca	tions, transe	cts, important	features, etc.	
Hydrophytic Vegeta	ation Present?	Yes X	No	Is the Sa	mpled Area			
Hydric Soil Present		Yes X			Wetland?	Yes	No X	
Wetland Hydrology		Yes	No X	If yes, op	tional Wetland Sit		_	_
	alternative procedure nd criteria is absent.			time of year				
HYDROLOGY								
Wetland Hydrolog	v Indicators:							
	(minimum of one req	uired: check all th	hat apply)			Secondary Indic	ators (minimum of t	wo required)
Surface Water	'	<u></u>	Water-Stained Le	eaves (B9)			il Cracks (B6)	ooquou/
High Water Ta	` ,	_	Aquatic Fauna (E	` ,			atterns (B10)	
Saturation (A3	3)	_	Marl Deposits (B	15)		Moss Trim	Lines (B16)	
Water Marks (	B1)	_	Hydrogen Sulfide	Odor (C1)		Dry-Seaso	n Water Table (C2)	
Sediment Dep	osits (B2)		Oxidized Rhizosp	heres on Living F	Roots (C3)	Crayfish Bu	urrows (C8)	
Drift Deposits	(B3)	_	Presence of Red	uced Iron (C4)		Saturation	Visible on Aerial Ima	agery (C9)
Algal Mat or C	rust (B4)	_	Recent Iron Redu	uction in Tilled Soi	ils (C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits	(B5)	_	_ Thin Muck Surface	ce (C7)		Geomorphi	c Position (D2)	
Inundation Vis	sible on Aerial Image	ry (B7)	Other (Explain in	Remarks)		Shallow Ac	uitard (D3)	
Sparsely Vege	etated Concave Surfa	ace (B8)					raphic Relief (D4)	
						X FAC-Neutra	al Test (D5)	
Field Observation	e.							
Surface Water Pres		No X	Depth (inches):					
Water Table Preser	-		Depth (inches):					
Saturation Present	-	No X			Wetland Hyd	drology Present?	Yes	No X
(includes capillary f	-		Boptii (iiioiioo).	· · · · · · · · · · · · · · · · · · ·	Trouble Try	arology i rocont.		<u> </u>
(morados sapinary r								
Describe Recorded	d Data (stream gauge	, monitoring well	, aerial photos, previ	ious inspections),	if available:			
Remarks:								
Remarks.								
i .								

VEGETATION - Use scientific names of plants.				Sampling Point:09B
Tree Stratum (Plot size: 30-ft ) 1.	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 2 (A)  Total Number of Dominant
2		-		Species Across All Strata: 2 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
6. 7.				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum         (Plot size:	0			OBL species         0         x 1 =         0           FACW species         50         x 2 =         100           FAC species         0         x 3 =         0           FACU species         15         x 4 =         60           UPL species         0         x 5 =         0           Column Totals:         65         (A)         160         (B)
5				Prevalence Index = B/A =2.46
Herb Stratum (Plot size: 5-ft )	0	= Total Cov		Hydrophytic Vegetation Indicators:  X 1 - Rapid Test for Hydrophytic Vegetation
Solidago gigantea / Smooth goldenrod     Phalaris arundinacea / Reed canary grass	<u>25</u> 25	Yes Yes	FACW FACW	X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤3.0¹
3. Poa pratensis / Kentucky blue grass	10	No	FACU	4 - Morphological Adaptations¹ (Provide supporting
<ul> <li>4. Panicum amarum / Bitter panic grass</li> <li>5.</li> <li>6.</li> <li>7.</li> </ul>	_			Problematic Hydrophytic Vegetation¹ (Explain )  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. 9. 10. 11.				Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	65	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
4				neight.
	0	_ = Total Cov	er	Hydrophytic           Vegetation           Present?         YesX No
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 09B

Depth	Matrix		Redo	x Features			ce of indicator	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-2	10YR 2/1	100					Loam	
2-24	10YR 5/2	90	10YR 3/6	10	С	M	Clay Loam	PRC
								-
					· ——			-
								-
					· <del></del>			
				-				
	·		-					
T O. O	tti D. Davistina						21	tion DI Dona Linia M Matrix
ype: C=Con	centration, D=Depletion	ı, RM=Redi	iced Matrix, MS=Mas	ked Sand Gr	ains.			tion: PL=Pore Lining, M=Matrix.
lydric Soil In	idicators:						Indicators	for Problematic Hydric Soils³:
Histosol (	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 149	<b>B)</b> 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
Histic Ep	ipedon (A2)		Thin Dark Surfa	-				t Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N			,	_	Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed		(=::::, =,			Surface (S7) (LRR K, L)
	Layers (A5)		X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	.11)	Redox Dark Su	` '				Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	(11)	Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)		Redox Depress	ions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)							C Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, MLI	RA 149B)					Other	(Explain in Remarks)
3Indicators of	hydrophytic vocatation	and wattana	l budralagu muat ba n	rocent unle	aa diaturbad	or problem	actic	
Indicators of i	hydrophytic vegetation a	and welland	Triydrology must be p	mesent, unies	ss disturbed	or problem	iauc.	
Restrictive La	ayer (if observed):							
Restrictive La	ayer (if observed):						Hydric Soil P	
							riyano con r	resent? Yes X No
Type: Depth (inc								resent? Yes X No
Туре:							,	resent? Yes <u>X</u> No
Type: Depth (inc							- Injunio Comi	resent? Yes X No
Type: Depth (inc							yae ce	resent? Yes X No
Type: Depth (inc							- iyana com	resent? Yes X No
Type: Depth (inc							- I Julio Colli	resent? Yes X No
Type: Depth (inc							,	resent? Yes X No
Type: Depth (inc							,	resent? Yes X No
Type: Depth (inc							,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No
Type: Depth (inc								resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Forest I	Lake City	//County:	Forest Lake/Wa	ashington	Sampling Date:	10/12/2023
Applicant/Owner:	•		TKDA	, <u> </u>		ate: MN	Sampling Point:	10A
Investigator(s):	Dvlan Kr	uzel, Garrett We	e Sec	tion, Township, R			T163, R36W	-
Landform (hillslope, ter				concave, convex,		concave	•	(%): 0
Subregion (LRR or ML	· · · · · · · · · · · · · · · · · · ·	LRR K	Lat:	45.21991168	Long:	-92.993303		
Soil Map Unit Name:					Long	NWI classification		lone
Are climatic / hydrologi					V (If no	 explain in Remark		ione
		* *	•	turbed?		•	•	/ No
	, Soil,					cumstances" prese		( No
		_	naturally proble			ain any answers in	•	
SUMMARY OF FI	NDINGS - Atta	ch site map	showing samplir	ng point locat	ions, transed	cts, important	teatures, etc.	
Hydrophytic Vegetat	tion Present?	Yes X	No	Is the San	npled Area			
Hydric Soil Present?	?	Yes X		within a V	Vetland?	Yes X	No	
Wetland Hydrology F	Present?	Yes X		If yes, opti	onal Wetland Sit			_
								<u> </u>
Remarks: (Explain a			eparate report.) /e average for the time	of year				
vvetian	iu criteria is met. Ai	itecedent is above	ve average for the time	oi yeai				
HYDROLOGY								
	. Indiantana.							
Wetland Hydrology						0 1 1 "		
Primary Indicators (r		quired; check all	11.77	(= -)			ators (minimum of ty	wo requirea)
Surface Water	` ,	_	Water-Stained Lea	, ,			l Cracks (B6)	
High Water Tab	, ,	_	Aquatic Fauna (B1	•			atterns (B10)	
Saturation (A3)	)	_	Marl Deposits (B1	-		Moss Trim I	, ,	
Water Marks (B	31)	_	Hydrogen Sulfide	Odor (C1)		Dry-Season	Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhizosph	neres on Living Ro	oots (C3)	Crayfish Bu	rrows (C8)	
Drift Deposits (I	B3)	_	Presence of Redu	ced Iron (C4)		Saturation \	/isible on Aerial Ima	agery (C9)
Algal Mat or Cr	rust (B4)	_	Recent Iron Reduc	ction in Tilled Soils	s (C6)	Stunted or S	Stressed Plants (D1	)
Iron Deposits (E	B5)		Thin Muck Surface	e (C7)		X Geomorphic	Position (D2)	
Inundation Visit	ble on Aerial Image	ery (B7)	Other (Explain in F	Remarks)		Shallow Aq	uitard (D3)	
X Sparsely Veget	tated Concave Surf	ace (B8)	_			X Microtopogi	aphic Relief (D4)	
						X FAC-Neutra	I Test (D5)	
						· <del></del>		
Field Observations								
Surface Water Prese	ent? Yes	NoX	Depth (inches):					
Water Table Present	t? Yes	NoX	Depth (inches):					
Saturation Present?	Yes	X No	Depth (inches):	23	Wetland Hyd	Irology Present?	Yes X	No
(includes capillary fri	inge)							
Danadha Danadad	D-t- (-t							
Describe Recorded	Data (stream gaug	e, monitoring we	ll, aerial photos, previo	ous inspections), ii	avallable:			
Remarks:								
T tomanto.								
i de la companya de								

Absolute % Cover 40 20 15	Dominant Species? Yes Yes	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 6 (A
% Cover 40 20	Species? Yes	Status	
20	. ———	EA 0\4/	
	Yes	FACW	Total Number of Dominant
15		FACW	Species Across All Strata: 7 (B
	Yes	FACU	
			Percent of Dominant Species
			That Are OBL, FACW, or FAC: 85.7 (A
			Prevalence Index worksheet:
			Total % Cover of: Multiply by:
75	= Total Cov	er	OBL species 0 x 1 = 0
			FACW species 70 x 2 = 140
30	Yes	FAC	FAC species 40 x 3 = 120
			FACU species 15 x 4 = 60
			UPL species 0 x 5 = 0
			Column Totals: 125 (A) 320
			(1) <u>120</u>
			Prevalence Index = B/A = 2.56
30	= Total Cov	er	Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation
10	Yes	FAC	X 2 - Dominance Test is >50%
5	Yes	FACW	X 3 - Prevalence Index ≤3.0¹
5	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting
			Problematic Hydrophytic Vegetation¹ (Explain )
	-		
			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
	-		Definitions of Managed in Otro-to
			Definitions of Vegetation Strata
			Tree Mondy plants 2 in (7.6 cm) or many in diameter of
			Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.
			Sapling/shrub - Woody plants less than 3 in. DBH and
20	= Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.
			Herb - All herbaceous (non-woody) plants, regardless of
	-		size, and woody plants less than 3.28 ft tall.
	-		Woody vines - All woody vines greater than 3.28 ft in
	-		height.
0	- Total Cov		
U	_ = 10tal C0V	EI	Hydrophytic
			Vegetation
			Present? Yes X No
	75 30 30 10 5 5	30 Yes  30 = Total Cov  10 Yes  5 Yes  5 Yes  20 = Total Cov  0 = Total Cov	75 = Total Cover  30

SOIL Sampling Point: 10A

Depth	Matrix		Redo:	x Features			nce of indicators	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-16	10YR 2/1	98	10YR 3/4	2	C	М	Sndy Clay Lm	DRC
16-20	10YR 2/2	98	10YR 3/6	2	С	М	Clay Loam	PRC
20-24	10YR 3/3	98	7.5YR 3/4	2	С	М	Clay	FRC
	<u> </u>		-					
	-		-					
	-							
				_			-	-
ype: C=Co	ncentration, D=Depletion	on, RM=Redi	uced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
dric Soil	Indicators:						Indicators	for Problematic Hydric Soils³:
Histosol	I (A1)		Polyvalue Belov	w Surface (S	B) <b>(LRR R</b> ,	MLRA 14	9B) 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
Histic E	pipedon (A2)		Thin Dark Surfa	ice (S9) (LR	R R, MLRA	(149B)	Coas	t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N					Mucky Peat or Peat (S3) (LRR K, L, R)
_	en Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface	(A11)	Redox Dark Su	` '				Dark Surface (S9) (LRR K, L)
	ark Surface (A12)	. ,	Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)			.00 (. 0)				Spodic (TA6) (MLRA 144A, 145, 149B)
_	Redox (S5)							Parent Material (F21)
	d Matrix (S6)							Shallow Dark Surface (TF12)
	urface (S7) <b>(LRR R, M</b>	I DA 140D)						(Explain in Remarks)
Dark Su	inace (37) (LKK K, M	LIXA 149D)					Other	(Explain in Nemarks)
				resent, unles	s disturbed	or proble	matic	
ndicators of	f hydrophytic vegetation	n and wetland	a nyarology must be p	,		•	nado.	
	f hydrophytic vegetation  Layer (if observed):	n and wetland	a nydrology must be p					
		n and wetland	a nydrology must be p			•		
Restrictive I	_ayer (if observed):	n and wetland	a nydrology must be p				Hydric Soil P	resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p			· .		resent? Yes X No
Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p			·		resent? Yes X No
Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Restrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (ir	_ayer (if observed):	n and wetland	a nyarology must be p					resent? Yes X No

Project/Site:	MCES Sanitar	y Sewer - Forest La	ake (	City/County:	Forest Lake/W	/ashington	Sampling Date:	10/12/2023
Applicant/Owner:		,	TKDA	, <u> </u>		State: MN	Sampling Point:	10B
Investigator(s):	Dylan K	ruzel, Garrett Wee	5	Section, Township	, Range:	S28	, T163, R36W	
Landform (hillslope, ter				ef (concave, conv		none	Slope	(%): 0
Subregion (LRR or ML		LRR K	Lat:	-				
Soil Map Unit Name:		123 - Dundas fir	ne sandy loam, No	n-hydric soil unit		NWI classification	on: N	Vone
Are climatic / hydrologi						— o, explain in Remark	(S.)	
		, or Hydrology	•		Are "Normal C	ircumstances" prese	ent? Yes X	K No
		, or Hydrology				olain any answers in	Remarks.)	
SUMMARY OF FI		<del>-</del>				ects, important	features, etc.	
Hydrophytic Vegetat		Yes X			Sampled Area	, <u>, , , , , , , , , , , , , , , , , , </u>	,	
Hydric Soil Present?		Yes			a Wetland?	Yes	No X	
Wetland Hydrology F		Yes	— <del>—                           </del>		optional Wetland S	· · · · · · · · · · · · · · · · · · ·		_
Welland Hydrology 1			110	11 yes, e	phonal Welland O			
Remarks: (Explain a Wetlan		ires here or in a se t. Antecedent is ab		e time of year				
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (r		equired: check all th	nat apply)			Secondary Indic	ators (minimum of to	wo required)
Surface Water		quii ou, oiroon uii u	Water-Stained I	Leaves (B9)			l Cracks (B6)	o.ioquou/
High Water Tab	` ,	_	Aquatic Fauna	` ,			atterns (B10)	
Saturation (A3)	,	_	Marl Deposits (	` '		Moss Trim I		
Water Marks (B		_	Hydrogen Sulfic	•		Dry-Seasor	Water Table (C2)	
Sediment Depo	sits (B2)	_	Oxidized Rhizo	spheres on Living	Roots (C3)	Crayfish Bu		
Drift Deposits (I	B3)		Presence of Re	duced Iron (C4)		Saturation \	/isible on Aerial Ima	agery (C9)
Algal Mat or Cr	ust (B4)	_	Recent Iron Re	duction in Tilled S	oils (C6)	Stunted or	Stressed Plants (D1	<b>)</b>
Iron Deposits (E	35)	_	Thin Muck Surfa	ace (C7)		Geomorphi	Position (D2)	
Inundation Visit	ble on Aerial Image	ery (B7)	Other (Explain i	in Remarks)		Shallow Aq	uitard (D3)	
Sparsely Veget	ated Concave Sur	face (B8)				Microtopogi	aphic Relief (D4)	
						X FAC-Neutra	Il Test (D5)	
Field Observations	•							
Surface Water Prese		s No X	Depth (inches	)·				
Water Table Present					-			
Saturation Present?				·	Wetland Hv	drology Present?	Yes	No X
(includes capillary fri		NOX	Deptil (illenes	·	- Welland Hy	arology r resent.	100	<u> </u>
(moradeo capinary in								
Describe Recorded	Data (stream gauເ	ge, monitoring well,	aerial photos, pre	vious inspections	), if available:			
Domarka								
Remarks:								
1								

VEGETATION - Use scientific names of plants.				Sampling Point:10B
·				Dominance Test worksheet:
				Number of Dominant Species
		<b>.</b>		That Are OBL, FACW, or FAC: 5 (A)
T 01 1 (DI 1 : 00 fi	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1. Fraxinus pennsylvanica / Green ash	30	Yes	FACW	Species Across All Strata: 6 (B)
2. Populus tremuloides / Quaking aspen	15	Yes	FAC	
3.		_	· ·	Percent of Dominant Species
4		_	· ·	That Are OBL, FACW, or FAC: 83.3 (A/B)
5		_	· ·	
6		_	· ·	Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
0 11 101 1 01 1 1 1 1 1 1 1 1 1	45	_ = Total Cove	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size:15-ft)				FACW species 40 x 2 = 80
1. Rhamnus cathartica / European buckthorn	40	Yes	FAC	FAC species 60 x 3 = 180
2. Fraxinus pennsylvanica / Green ash	10	Yes	FACW	FACU species 5 x 4 = 20
3				UPL species0 x 5 =0
4			· <del></del>	Column Totals:105 (A)280 (B)
5				
6	_			Prevalence Index = B/A = 2.67
7	_			
	50	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
Rhamnus cathartica / European buckthorn	5	Yes	FAC	X 2 - Dominance Test is >50%
Tilia americana / American basswood	5	Yes	FACU	X 3 - Prevalence Index ≤3.0¹
3				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
4				Problematic Hydrophytic Vegetation¹ (Explain )
5				
6	_			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				
9				Definitions of Vegetation Strata
10				
11			- 1	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12				
	10	_ = Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )				
1				<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	_			
3	_			<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
4	_			noight.
	0	_ = Total Cov	er	Hydrophytic
				Vegetation
				Present? Yes X No
				100 <u>X</u> 110
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 10B

Depth	cription: (Describe to the Matrix			x Features							
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture		Remarl	KS	
0-20	10YR 2/1	100					Loam				
20-24	10YR 2/2	98	10YR 3/4	2	С	M		DRC			
				_							
				_				-			
				_				-			
			•	_							
				_				-			
		-						-			
	<del>.</del>										
	<del>.</del> .										
	<u> </u>										
	<u> </u>			_				-			
	· <del></del>				·						
lype: C=Co	ncentration, D=Depletio	n, RM=Redu	iced Matrix, MS=Mas	ked Sand Gi	ains.		-Loca	ition: PL=P	ore Lining, M	1=Matrix.	
ydric Soil I	Indicators:						Indicators	for Probl	ematic Hydr	ric Soils³:	
Histosol	I (A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 149	B) 2 cm	Muck (A10	) (LRR K, L	, MLRA 149	9B)
Histic E	pipedon (A2)		Thin Dark Surfa	ice (S9) (LF	RR R, MLRA	A 149B)	Coas	t Prairie Re	edox (A16) (	LRR K, L,	R)
	istic (A3)		Loamy Mucky N			-			at or Peat (S		
	en Sulfide (A4)		Loamy Gleyed		. , -,				7) <b>(LRR K</b> ,		. ,
	d Layers (A5)		Depleted Matrix						v Surface (S8		L)
	d Below Dark Surface (/	Δ11)	Redox Dark Su	,					ce (S9) <b>(LR</b>		_,
	ark Surface (A12)	(11)	Depleted Dark						e Masses (F1		( I D)
	Mucky Mineral (S1)		Redox Depress					•	plain Soils (F	, .	
			Redux Depless	10115 (F6)							
	Gleyed Matrix (S4)								A6) (MLRA	144A, 145	, 1496)
	Redox (S5)								erial (F21)		
	d Matrix (S6)								ark Surface (	TF12)	
Dark Su	ırface (S7) (LRR R, ML	.RA 149B)					Other	(Explain i	n Remarks)		
Indicators of	f hydrophytic vegetation	and wetland	hydrology must be n	resent unle	ss disturbed	l or problem	atic				
			, arelegy maet be p			. o. p. o					
	Layer (if observed):										
Type:											
Depth (in	nches):						Hydric Soil P	resent?	Yes	No	X
Remarks:						I					
terriarito.											

Project/Site:	MCES Sanitary S	Sewer - Forest Lak	e City/Cou	ınty: F	orest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA		Sta	ite: MN	Sampling Point:	11A
	Dylan Kru	zel, Garrett Wee	Section,	Township, Ran	ge:	S2	28, T163, R36W	
Landform (hillslope, ter			Local relief (cond	cave, convex, no	one):	concave	Slope	: (%): 0
Subregion (LRR or ML			 Lat: 45.	22104475	Long:	-92.9932	I148 Datun	n: WGS 84
			and Histosols, Hydric s	oil unit		NWI classifica	ation: PEM1	A/PEM1C
-			time of year? Yes		X (If no,	explain in Rema	nrks.)	
Are Vegetation	, Soil , c	or Hydrology	significantly disturbe	ed? A	re "Normal Circ	cumstances" pre	sent? Yes	X No
			naturally problemation		f needed, expla	in any answers	in Remarks.)	
SUMMARY OF FI	NDINGS - Attac	h site map sh	 owing sampling p	oint locatio	ns, transec	ts, importan	t features, etc.	
Hydrophytic Vegetat	tion Present?	Yes X	No	Is the Samp	led Area	•	•	
Hydric Soil Present?		Yes X		within a Wet		Yes	X No	
Wetland Hydrology I		Yes X	No		al Wetland Site			_
	alternative procedure ad criteria is met. Ant		rate report.) everage for the time of y	ear.				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r		uired; check all that	t apply)			Secondary Ind	icators (minimum of t	wo required)
Surface Water	•	Х	Water-Stained Leaves	(B9)			oil Cracks (B6)	
High Water Tab	ole (A2)		Aquatic Fauna (B13)			Drainage	Patterns (B10)	
Saturation (A3)	)	_	Marl Deposits (B15)			Moss Trin	n Lines (B16)	
Water Marks (E	31)		Hydrogen Sulfide Odor	(C1)		Dry-Seas	on Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhizospheres	on Living Root	s (C3)	Crayfish E	Burrows (C8)	
Drift Deposits (	B3)		Presence of Reduced I	ron (C4)		Saturation	n Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	ust (B4)	_	Recent Iron Reduction	in Tilled Soils (0	C6)	Stunted o	r Stressed Plants (D´	1)
Iron Deposits (F	35)		Thin Muck Surface (C7	<b>'</b> )		X Geomorp	hic Position (D2)	
	ble on Aerial Imager	· · · —	Other (Explain in Rema	arks)			quitard (D3)	
Sparsely Veget	tated Concave Surfa	ce (B8)					graphic Relief (D4)	
						X FAC-Neur	tral Test (D5)	
Field Observations	):							
Surface Water Prese	ent? Yes	No X	Depth (inches):					
Water Table Present	t? Yes	No X	Depth (inches):					
Saturation Present?	Yes	No X	Depth (inches):	_	Wetland Hydr	ology Present	? Yes X	No
(includes capillary fr	inge)			_				
D 11 D 1 1				" > "	71.11			
Describe Recorded	Data (stream gauge,	, monitoring well, a	erial photos, previous in	ispections), if av	/allable:			
Remarks:								
Wetlan	d criteria is met. Ant	ecedent is above a	everage for the time of y	ear				

	Species? Yes		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
30	Species? Yes	Status FACW	That Are OBL, FACW, or FAC: 3 (A)  Total Number of Dominant Species Across All Strata: 3 (B)
30	Species? Yes	Status FACW	Total Number of Dominant Species Across All Strata: 3 (B)
30	Species? Yes	Status FACW	Total Number of Dominant Species Across All Strata: 3 (B)
30	Yes	FACW	Species Across All Strata:3 (B)
			Species Across All Strata:3 (B)
	· ·		
	· ·		Percent of Dominant Species
			Percent of Dominant Species
	- <del></del> -		
			That Are OBL, FACW, or FAC: 100.0 (A/E
			Prevalence Index worksheet:
30	= Total Cover		Total % Cover of: Multiply by:
30	_ = IOIAI COVEI		OBL species 10 x 1 = 10
			FACW species 80 x 2 = 160
60	Yes	FAC	FAC species 60 x 3 = 180
			FACU species 0 x 4 = 0
			UPL species 0 x 5 = 0
			Column Totals: 150 (A) 350 (B
			Coldifiir lotals(A)(B)
			Prevalence Index = B/A = 2.33
	<del></del> .		
60	_ = Total Cover	•	Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation
50	Yes	FACW	X 2 - Dominance Test is >50%
10	No	OBL	X 3 - Prevalence Index ≤3.01
			4 - Morphological Adaptations <sup>1</sup> (Provide supporting
			Problematic Hydrophytic Vegetation¹ (Explain )
			: resistance rigar opinique regenance (Explain)
			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
			Definitions of Managerian Otracts
			Definitions of Vegetation Strata
			Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
			breast height (DBH), regardless of height.
60	= Total Cover		Sapling/shrub - Woody plants less than 3 in. DBH and
	- 10101 00101		greater than or equal to 3.28 ft (1 m) tall.
			Herb - All herbaceous (non-woody) plants, regardless of
			size, and woody plants less than 3.28 ft tall.
			Weedy vines All woody vines greater than 2.29 ft in
			<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
	= Total Cove		
	Iotal Govel		Hydrophytic
			Vegetation
			Present? Yes X No
	60 50 10	60 = Total Cover  50 Yes  10 No  60 = Total Cover  60 = Total Cover	60 = Total Cover  50

SOIL Sampling Point: 11A

Depth	Matrix		Redox	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-6	10YR 2/1	98	7.5YR 3/4	2	С	М	Sandy Loam	PRC
6-9	10YR 3/3	95	7.5YR 3/4	5	С	М	Sandy Loam	PRC
9-12	10YR 5/4	95	7.5YR 3/4	10	С	М	Sity Clay Loam	PRC
			·					
		-						
	-							-
			-					
	-							
ype: C=Co	ncentration, D=Depletion	on, RM=Red	luced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
/dric Soil	Indicators:						Indicators	for Problematic Hydric Soils3:
Histosol			Polyvalue Belov	w Surface (St	3) <b>(LRR R,</b>	MLRA 14		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa				_	Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed I					Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix	(F3)				alue Below Surface (S8) (LRR K, L)
 Deplete	d Below Dark Surface (	(A11)	X Redox Dark Sur	rface (F6)			Thin [	Dark Surface (S9) (LRR K, L)
Thick D	ark Surface (A12)		Depleted Dark S	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L, R)
Sandy N	Mucky Mineral (S1)		Redox Depress	ions (F8)			Piedm	nont Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleyed Matrix (S4)		_				Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Material (F21)
Stripped	d Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
				resent unles	s disturbed	or proble	matic.	
ndicators of	f hydrophytic yegetation	າ and wetlan	a nvaroioav must be b					
	f hydrophytic vegetation	n and wetlan	na nyarology must be p			o. p. 00.0		
estrictive L	Layer (if observed):		a nyarology must be p	room, amoc		от <b>р</b> товло		
estrictive L	Layer (if observed): Rock/roo		a nyarology must be p	Toodin, dilloc		- prezio		resent? Yes X No
estrictive L	Layer (if observed): Rock/roo	ts	a nyarology must be p	Todoni, unioc			Hydric Soil P	resent? Yes X No
Type:	Layer (if observed): Rock/roo	ts	a nyarology must be p	Todoni, umoc				resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p	iosoni, unioc		o. p. o. o.		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p			<u> </u>		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p			<u> </u>		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p			<u> </u>		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p			<u> </u>		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Restrictive L	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
Type: Depth (in	Layer (if observed): Rock/roo	ts	a nyarology must be p					resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed): Rock/roo	ts	d nydrology must be p					resent? Yes X No

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	(e	City/County:	Fo	rest Lake/Wa	shington	Sampling Date:	10/12/2023
Applicant/Owner:		7	TKDA	, -			ate: MN	Sampling Point:	11B
Investigator(s):	Dylan K	ruzel, Garrett Wee		Section, Town	nship, Range	e:	S28	3, T163, R36W	
Landform (hillslope, te			Local re	lief (concave,	convex, nor	ne):	none	Slop	e (%): 2
Subregion (LRR or ML			Lat:	45.2209	5317	Long:	-92.99329	56 Datu	ım: WGS 84
Soil Map Unit Name:			and Histosols,	Hydric Soil un	nit		NWI classificat	ion:	None
Are climatic / hydrolog	jic conditions on the	e site typical for this	time of year?	Yes	No	X (If no,	_ explain in Remar	ks.)	
Are Vegetation	, Soil	, or Hydrology	significantly	/ disturbed?	Are	"Normal Circ	cumstances" pres	ent? Yes	X No
Are Vegetation	, Soil	, or Hydrology	naturally pro	oblematic?	(If r	needed, expla	ain any answers i	n Remarks.)	
SUMMARY OF F	INDINGS - Atta	ach site map sh	owing sam	pling point	t location	s, transec	ts, important	features, etc.	
Hydrophytic Vegeta	tion Present?	Yes X	No	Ist	the Sample	ed Area	<u>-</u>		
Hydric Soil Present		Yes	No X		thin a Wetla		Yes	No X	
Wetland Hydrology		Yes	No X	_		I Wetland Site			_
- Totalia i iyalology				-   ",	, 00, 00				
		res here or in a sepa et. Antecedent is abo		the time of year	ar				
HYDROLOGY									
Wetland Hydrolog	v Indicators:								
	•	equired; check all tha	ıt annıv)				Secondary India	cators (minimum of	two required)
Surface Water		quii ou, oiroon uii uiu	Water-Stained	I Leaves (B9)				oil Cracks (B6)	tiro roquirou)
High Water Tal	` '		Aquatic Fauna	,				Patterns (B10)	
Saturation (A3			Marl Deposits					Lines (B16)	
Water Marks (F	•		Hydrogen Sulf	` '	)			n Water Table (C2)	1
Sediment Depo	•		Oxidized Rhize			(C3)		urrows (C8)	
Drift Deposits (			Presence of R	-	-	()		Visible on Aerial In	nagery (C9)
Algal Mat or Ci			Recent Iron Re	•	•	6)		Stressed Plants (D	
Iron Deposits (			Thin Muck Sur			- /		ic Position (D2)	,
	ible on Aerial Imag	erv (B7)	Other (Explain	` ,				uitard (D3)	
	tated Concave Sur		(=::  -:::::	,				raphic Relief (D4)	
		,						al Test (D5)	
Field Observations			5 " " 1	,					
Surface Water Pres		S NoX	- ' `	· -					
Water Table Presen		8 NoX	- ' `	· ——				.,	
Saturation Present?		s NoX	_ Depth (inche	es):	\ \	Wetland Hyd	rology Present?	Yes	NoX
(includes capillary fi	ringe)								
Describe Recorded	Data (stream gauc	ge, monitoring well, a	erial photos, pr	revious inspec	tions), if ava	ailable:			
	( g g	,-,	, р, р.		,,				
Remarks:									

Tree Stratum (Plot size: 30-ft )	GETATION - Use scientific names of plants.				Sampling Point: 11B
Total Number of Dominant   Species   Status   Fraxims perinsylvanical Green ash   20   Yes   FACW   Species Across All Strata:   7		Absolute	Dominant	Indicator	Number of Dominant Species
Prezistria pennsylvanica   Green ash   20   Yes   FACW   Columns americana   American elm   15   Yes   FACW   Percent of Dominant Species   That Are OBL, FACW, or FAC   57.1	ree Stratum (Plot size: 30-ft )				T. W. J. (D. )
15   Yes   FACW   Percent of Dominant Species   That Are OBL, FACW, or FAC:   57.1		20	Yes	FACW	
Percent of Dominant Species   That Are OBL, FACW, or FAC:   57.1	. Quercus rubra / Northern red oak	15	Yes	FACU	Species Across All Strata: 7 (B
That Are OBL, FACW, or FAC:	· · · · · · · · · · · · · · · · · · ·	15	Yes	FACW	Percent of Dominant Species
Total Scover of:   Multiply by:   OBL species   0				- <del> </del>	·
So			-		
### Action   Present   Pre			= Total Cov	er	
FACU species 35 x 4 = 140	apling/Shrub Stratum (Plot size: 15-ft )				·
UPL species 0 x 5 = 0 Column Totals: 160 (A) 480  Prevalence Index = B/A = 3.0  ### Mydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤ 3.0¹  ### A - Morphological Adaptations¹ (Provide supportion) Problematic Hydrophytic Vegetation¹ (Explain)  **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  #### Definitions of Vegetation Strata  #### Tree - Woody plants 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.  #### Sapling/shrub - Woody plants less than 3 in. DBH ar greater than or equal to 3.28 ft (1 m) tall.  ##### Hydrophytic Vegetation  ###################################	•				·
UPL species 0 x 5 = 0 Column Totals: 160 (A) 480  Prevalence Index = B/A = 3.0  ### Ribes cynosbati / Eastern prickly gooseberry 10 Yes FACU Rhamnus cathartica / European buckthom 10 Yes FACU Rhamnus cathartica / European buckthom 10 Yes FACU  ### Provalence Index = B/A = 3.0  ### Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤ 3.0°  4 - Morphological Adaptations¹ (Provide supporting the problematic Hydrophytic Vegetation¹ (Explain)  1 - Problematic Hydrophytic Vegetation¹ (Explain)  2 - Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.  30 = Total Cover  30 = Total Cover  30 = Total Cover  4 - Morphological Adaptations¹ (Provide supporting test han 3 in. DBH are greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3 .26 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation  Present? Yes X No			_		FACU species 35 x 4 = 140
Column Totals: 160 (A) 480  Prevalence Index = B/A = 3.0  ### Stratum (Plot size: 5-ft )  ### Ribes cynosbati / Eastern prickly gooseberry  ### Toothachetree			_		UPL species 0 x 5 = 0
Prevalence Index = B/A =			_		Column Totals: 160 (A) 480
B0					Prevalence Index = B/A = 3.0
Ribes cynosbati / Eastern prickly gooseberry       10       Yes       FACU FACU       X 2 - Dominance Test is >50%         Zanthoxylum americanum / Toothachetree       10       Yes       FACU       X 3 - Prevalence Index ≤3.0¹       4 - Morphological Adaptations¹ (Provide supporti Problematic Hydrophytic Vegetation¹ (Explain )         — Problematic Hydrophytic Vegetation¹ (Explain )       ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         Definitions of Vegetation Strata       Tree - Woody plants 3 in. (7.6 cm) or more in diameter breast height (DBH), regardless of height.         Sapling/shrub - Woody plants less than 3 in. DBH ar greater than or equal to 3.28 ft (1 m) tall.       Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.         Woody vines - All woody vines greater than 3.28 ft in height.       Hydrophytic Vegetation         Present?       Yes _X No			= Total Cov	er	
Zanthoxylum americanum / Toothachetree       10       Yes       FACU         Rhamnus cathartica / European buckthorn       10       Yes       FAC         10       Yes       FAC         2       4 - Morphological Adaptations¹ (Provide supporti Problematic Hydrophytic Vegetation¹ (Explain )         1       ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         2       Definitions of Vegetation Strata         30       = Total Cover         Yes = Total Cover       Sapling/shrub - Woody plants less than 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.         Sapling/shrub - Woody plants less than 3 in. DBH argreater than or equal to 3.28 ft (1 m) tall.         Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft in height.         Woody vines - All woody vines greater than 3.28 ft in height.         Hydrophytic Vegetation         Yes = X No		10	Vas	FΔCII	
Rhamnus cathartica / European buckthorn  10 Yes FAC  4 - Morphological Adaptations' (Provide supporting Problematic Hydrophytic Vegetation (Explain)  1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH ar greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation  Present? Yes X No	. , , , , ,				
Problematic Hydrophytic Vegetation¹ (Explain )  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH ar greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No			_		
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diamete breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH ar greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No					
Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH are greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH are greater than or equal to 3.28 ft (1 m) tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Definitions of Vegetation Strata					
30   = Total Cover   Sapling/shrub - Woody plants less than 3 in. DBH argreater than or equal to 3.28 ft (1 m) tall.   Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.   Woody vines - All woody vines greater than 3.28 ft in height.   Hydrophytic Vegetation   Present?   Yes X No			<u> </u>		Definitions of Vegetation Strata
30 = Total Cover    Sapling/shrub - Woody plants less than 3 in. DBH argreater than or equal to 3.28 ft (1 m) tall.   Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.   Woody vines - All woody vines greater than 3.28 ft in height.   O = Total Cover   Hydrophytic Vegetation   Present? Yes X No	).  -				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present?  Yes X No	2		= Total Cov	 er	Sapling/shrub - Woody plants less than 3 in. DBH and
size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No	<del></del> -				greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> - All herbaceous (non-woody) plants, regardless of
					size, and woody plants less than 3.28 ft tall.
Hydrophytic Vegetation Present? Yes X No					
		0	_ = Total Cov	er	Vegetation
	emarks: (Explain alternative procedures here or in a separ	ate report.)			

SOIL Sampling Point: \_\_\_\_\_11B

Profile Description: (Des		e depth nee			or confirm	the abse	nce of indicators	s.)			
Depth	Matrix			x Features			<b>-</b> .				
(inches) Color (r		<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remark	8	
	R 3/3	100					Loam				
<u>10-14</u> <u>10YF</u>	R 5/4	90	7.5YR 3/4	10	C	M	Sity Clay Loam	PRC			
- <u></u>											
- <u></u>											
. <u></u>											
											<u></u>
¹Type: C=Concentration, I	D=Depletion	, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pc	ore Lining, M	=Matrix.	
Hydric Soil Indicators:							Indicators	for Proble	matic Hydri	c Soils³:	
Histosol (A1)			Polyvalue Belov	v Surface (S	3) <b>(LRR R.</b>	MLRA 14			(LRR K, L,		В)
Histic Epipedon (A2)			Thin Dark Surfa	•	,		· —		dox (A16) <b>(L</b>		-
Black Histic (A3)			Loamy Mucky N			,			t or Peat (S3		•
Hydrogen Sulfide (A4	4)		Loamy Gleyed		, , –,			-	') (LRR K, L	-	. ,
Stratified Layers (A5)	•		Depleted Matrix						Surface (S8)		_)
Depleted Below Dark		.11)	Redox Dark Su						e (S9) <b>(LRF</b>		-,
Thick Dark Surface (		,	Depleted Dark						Masses (F12		L. R)
Sandy Mucky Minera	,		Redox Depress					-	lain Soils (F1		
Sandy Gleyed Matrix			Rodox Boprood	10110 (1 0)				-	(MLRA		-
Sandy Redox (S5)	. (0.)							Parent Mate		, ,	,
Stripped Matrix (S6)									rk Surface (T	F12)	
Dark Surface (S7)	IRRR MII	RA 149B)						(Explain in		/	
								(=,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	LIXIX IX, IVILI	<b>,</b>									
³Indicators of hydrophytic			hydrology must be p	resent, unles	s disturbed	or proble	natic.				
	vegetation a		hydrology must be p	resent, unles	s disturbed	or proble	matic.				
³Indicators of hydrophytic	vegetation a		hydrology must be p	resent, unles	s disturbed	or proble	matic.				
<sup>3</sup> Indicators of hydrophytic	vegetation a	and wetland	hydrology must be p	resent, unles	s disturbed	or problei	natic. Hydric Soil P	resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or probler		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or probler		resent?	Yes	No _	x
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or problei		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u> </u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or problet		resent?	Yes	No _	x
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or problet		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or problet		resent?	Yes	No _	<u>x</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u> _
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u> _
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>x</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>X</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>X</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	<u>X</u>
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or probler		resent?	Yes	No _	X
<sup>3</sup> Indicators of hydrophytic  Restrictive Layer (if obs  Type:  Depth (inches):	vegetation a erved): Rock	and wetland	hydrology must be p	resent, unles	s disturbed	or proble		resent?	Yes	No _	X

Project/Site:	MCES Sanitary	Sewer - Forest L	₋ake	City/Coun	nty: I	Forest Lake/Wa	ashington	Sampling Date:	10/12/2023
Applicant/Owner:	-		TKDA			St	ate: MN	Sampling Point:	12A
Investigator(s):	Dylan Kr	ruzel, Garrett Wee	е	Section, T	Township, Rar	nge:	S2	8, T163, R36W	
Landform (hillslope, te	errace, etc):	Toe Slope	Local re	elief (conca	ive, convex, n	one):	concave	Slop	e (%): 0
Subregion (LRR or MI	LRA):	LRR K	Lat:	45.2	2273825	Long:	-92.99399	738 Datu	m: WGS 84
Soil Map Unit Name:		75 - BI	uffton Loam, Hyd	ric soil unit			NWI classifica	tion: F	PEM1A
Are climatic / hydrolog	gic conditions on the	e site typical for th	nis time of year?	Yes	No_	X (If no.	, explain in Rema	rks.)	
Are Vegetation	, Soil,	, or Hydrology	significantly	y disturbed	l? A	Are "Normal Cir	cumstances" pres	sent? Yes	X No
Are Vegetation	, Soil,	, or Hydrology	naturally pr	roblematic?	? (	If needed, expl	ain any answers i	n Remarks.)	
<b>SUMMARY OF F</b>	INDINGS - Atta	ch site map	showing sam	pling po	oint location	ons, transec	cts, importan	t features, etc.	
Hydrophytic Vegeta	ation Present?	Yes X	No		Is the Samp	oled Area			
Hydric Soil Present		Yes X		_	within a We		Yes >	( No	
Wetland Hydrology	Present?	Yes X	No		If yes, option	nal Wetland Sit		<del></del>	_
	alternative procedu nd criteria is met. Al found.			time of yea	ar. Wetland a	ppeared to be	tilled and cropped	l for wildlife and hur	nting. Turnips
HYDROLOGY									
	v Indicators								
Wetland Hydrolog	-	guirod: abook all t	that apply)				Cocondon, Indi	aatara (minimum af	two required)
Surface Water	(minimum of one red	quireu, check all t	Water-Stained	d Loavos (F	D0)			cators (minimum of oil Cracks (B6)	two required)
High Water Ta	` '	_	Aquatic Fauna	,	59)			Patterns (B10)	
X Saturation (A3		_	Marl Deposits					Lines (B16)	
Water Marks (		_	Hydrogen Sul		(C1)			on Water Table (C2)	•
Sediment Dep	•	<del>-</del>	Oxidized Rhiz			ts (C3)		urrows (C8)	
Drift Deposits			Presence of F	•	•	()		Visible on Aerial In	nagery (C9)
Algal Mat or C	` '	_	Recent Iron R		` '	C6)		Stressed Plants (D	
Iron Deposits		_	Thin Muck Su		•	•		nic Position (D2)	,
	sible on Aerial Image	ery (B7)	Other (Explain					quitard (D3)	
Sparsely Vege	etated Concave Surf	face (B8)	_ ` `		•			graphic Relief (D4)	
_							FAC-Neuti	ral Test (D5)	
Field Observation									
Surface Water Pres			' '	-					
Water Table Preser				· · <del></del>	<u> </u>	10/-41			NI-
Saturation Present		X No	Depth (inche	es):	<u> </u>	wetland Hyd	Irology Present?	Yes X	_ No
(includes capillary f	ringe)								
Describe Recorded	l Data (stream gaug	e, monitoring wel	I, aerial photos, p	revious ins	spections), if a	vailable:			
	` 0				, ,,				
Remarks:									

Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: (A)
% Cover	Species?	Status	Total Number of Dominant Species Across All Strata: 4 (B)
			Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/I
			Prevalence Index worksheet:  Total % Cover of: Multiply by:
0	_		OBL species       5       x 1 =       5         FACW species       35       x 2 =       70         FAC species       10       x 3 =       30
			FACU species 20 x 4 = 80  UPL species 0 x 5 = 0  Column Totals: 70 (A) 185 (
			Prevalence Index = B/A = 2.64
0	= Total Cov	 er	Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation
35	Yes		2 - Dominance Test is >50%
			X 3 - Prevalence Index ≤3.0¹
			4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )
	No	OBL	Froblematic Hydrophytic vegetation (Explain)
_			¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
			Definitions of Vegetation Strata
			Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
70	= Total Cov	 er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
		<del>-</del>	<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
			<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
0	= Total Cov	er	Hydrophytic
			Vegetation           Present?         YesX No
	0 35 10 10 5	0 = Total Cove  35	0 = Total Cover  0 = Total Cover  35

SOIL Sampling Point: 12A

Depth	Matrix		Redo:	x Features			ce of indicator	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-4	10YR 2/2	100					Loam	
4-16	10YR 2/1	95	10YR 3/4	5	С	М	Loam	PRC
16-24	10YR 4/2	98	10YR 4/3	2	С	M	Loam	FRC
	<u> </u>							
	-							
		-						
	-		•					
		_						
		_						
ype: C=Co		on, RM=Red	uced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
			·					
Histosol	Indicators:		Polyvalue Belov	w Surface (S	9) <b>(I DD D</b>	MI DA 1/01		s for Problematic Hydric Soils <sup>3</sup> : Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	-			-	t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N					Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed		,, <b>-</b> -,			Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix					value Below Surface (S8) (LRR K, L)
Deplete	d Below Dark Surface (	(A11)	X Redox Dark Su	rface (F6)				Dark Surface (S9) (LRR K, L)
_	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depress	ions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
_	Gleyed Matrix (S4)							C Spodic (TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Parent Material (F21)
	d Matrix (S6)	L DA 440D)						Shallow Dark Surface (TF12)
Dark Su	ırface (S7) (LRR R, M	LKA 149D)					Other	(Explain in Remarks)
ndianta '		and wetlan	d hydrology must be p	resent, unles	ss disturbed	or problem	atic.	
nuicators of	r nydropnytic vegetatior	Tana wellan	- · · · · · · · · · · · · · · · · · · ·					
	Layer (if observed):	Tana wetan	,					
Restrictive L	Layer (if observed):	Tana wettan						
estrictive L	Layer (if observed):	Tana wettan					Hydric Soil P	resent? Yes X No
Type: Depth (in	Layer (if observed):	rand wettan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	rand wettan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	rand wettan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wettan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wedan					Hydric Soil P	resent? Yes <u>X</u> No
estrictive L Type: Depth (in	Layer (if observed):	Tand Wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tana wearing					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
Restrictive L	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	Layer (if observed):	Tand wedan					Hydric Soil P	resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Forest La	ike City	//County:	Forest Lake/Wa	ashington	Sampling Date:	10/12/2023
Applicant/Owner:			TKDA		Sta	ate: MN	Sampling Point:	12B
Investigator(s):	Dylan Krı	uzel, Garrett Wee	Sec	ction, Township, R	ange:	S28	3, T163, R36W	
Landform (hillslope, te	errace, etc):	Hillslope	Local relief (	(concave, convex,	none):	none	Slope	e (%): 2
Subregion (LRR or MI	LRA):	LRR K	Lat:	45.22275814	Long:	-92.993899	Datur	m: WGS 84
Soil Map Unit Name:			e sandy loam, Non-			_ NWI classificat	ion:	None
Are climatic / hydrolog	jic conditions on the	site typical for this	s time of year? Yes	No	X (If no,	explain in Remar	ks.)	
	, Soil,				Are "Normal Cire	cumstances" pres	ent? Yes	X No
Are Vegetation	, Soil,	or Hydrology	naturally proble	matic?	(If needed, expla	ain any answers ir	n Remarks.)	
<b>SUMMARY OF F</b>	INDINGS - Atta	ch site map s	howing samplir	ng point locat	ions, transec	cts, important	features, etc.	
Hydrophytic Vegeta	ition Present?	Yes	No X	Is the San	npled Area			
Hydric Soil Present		Yes	No X	within a W	/etland?	Yes	No X	
Wetland Hydrology	Present?	Yes	No X	If yes, option	onal Wetland Site			_
	alternative procedure nd criteria is not met		parate report.) ove average for the	time of year				
HYDROLOGY								
Wetland Hydrology	v Indicators:							
	minimum of one req	uired: check all th	at apply)			Secondary India	ators (minimum of t	two required)
Surface Water	`	juniou, onioun un un	Water-Stained Lea	aves (B9)			il Cracks (B6)	
High Water Tal	` '		Aquatic Fauna (B1	, ,			atterns (B10)	
Saturation (A3)			Marl Deposits (B1	5)			Lines (B16)	
Water Marks (F	-		Hydrogen Sulfide	•		Dry-Seaso	n Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhizosph	neres on Living Ro	oots (C3)	Crayfish Bu	urrows (C8)	
Drift Deposits (	(B3)		Presence of Redu	ced Iron (C4)		Saturation	Visible on Aerial Im	agery (C9)
Algal Mat or C	rust (B4)		Recent Iron Reduc	ction in Tilled Soils	; (C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits (	(B5)	_	Thin Muck Surface	e (C7)		Geomorph	ic Position (D2)	
Inundation Visi	ible on Aerial Image	ry (B7)	Other (Explain in F	Remarks)		Shallow Ac	juitard (D3)	
Sparsely Vege	tated Concave Surfa	ace (B8)				Microtopog	raphic Relief (D4)	
						FAC-Neutr	al Test (D5)	
Field Observations	<u> </u>							
Surface Water Pres		No X	Depth (inches):					
Water Table Presen	•		Depth (inches):					
Saturation Present?	•		Depth (inches):		Wetland Hvd	rology Present?	Yes	No X
(includes capillary fi	•	NOX_	Deptil (iliches).		wettand riyu	irology Fresent:	103	NOX
(includes capillary ii								
Describe Recorded	Data (stream gauge	e, monitoring well,	aerial photos, previo	ous inspections), if	available:			
Damarka								
Remarks:								

Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 4	(A)
% Cover	Species?	Status	Total Number of Deminant	
30	Yes	FACW		(B)
			opedes Adoss All Ollata.	(D)
		<b>-</b> (	Percent of Dominant Species	
			•	(A/B
		_		•
		- (		
	= Total Cov	er		
	_ 10101 001	OI .	· — — — — — — — — — — — — — — — — — — —	
20	Yes	FAC		_
— · ·				
				— (E
				\-
			Prevalence Index = B/A = 2.96	
				_
20	_ = Total Cov	er	Hydrophytic Vegetation Indicators:	
			1 <del>-</del>	
			<del></del>	
				···
				ung
			Problematic Hydrophytic vegetation (Explain)	
			¹Indicators of hydric soil and wetland hydrology must	
		17.00		
			Definitions of Vegetation Strata	
			Tree - Woody plants 3 in. (7.6 cm) or more in diametr	er at
	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH a	ınd
		<b>o</b> .	, , ,	,
			size, and woody plants less than 3.28 ft tall.	SS OT
			Woody vines - All woody vines greater than 3.28 ft i	n
			height.	
0	= Total Cov	er	Hudronbutio	
'	_			
	% Cover 30 30 30 20 20 20 20 15 15 15 indelion10 5	% Cover         Species?           30         Yes           30         = Total Cov           20         Yes           20         Yes           20         Yes           20         Yes           15         Yes           15         Yes           Indelion10         No           85         = Total Cov	% Cover         Species?         Status           30         Yes         FACW           30         = Total Cover           20         Yes         FAC           20         = Total Cover           20         Yes         FAC           20         Yes         FACW           15         Yes         FACU           15         Yes         FACU           15         No         FACU           5         No         FACU           85         = Total Cover	Absolute Dominant Indicator Species? Status   Species Across All Strata:   6      Species Across All Strata:   6

SOIL Sampling Point: 12B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

ppe: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.  #Location: PL=Pore Lining, M=Matrix.  #Idit Coli Indicators:  Histosol (A1)					k Features					
rpe: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.  dric Soil Indicators:       Histosol (A1)	(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²		Rema	rks
Indicators for Problematic Hydric Soils*:  Histosol (A1)	0-24	10YR 4/3	100					Loam		
Indicators for Problematic Hydric Soils*:  Histosol (A1)										
Indicators for Problematic Hydric Soils*:  Histosol (A1)										
dric Soil Indicators:    Histosol (A1)										
dric Soil Indicators:  Histosol (A1)										
dric Soil Indicators:  Histosol (A1)										
Indicators for Problematic Hydric Soils*:  Histosol (A1)										
Indicators for Problematic Hydric Soils*:  Histosol (A1)		-								
Indicators for Problematic Hydric Soils*:  Histosol (A1)					<del></del>	<del></del>		-		
Indicators for Problematic Hydric Soils*:  Histosol (A1)					<del></del>					
Indicators for Problematic Hydric Soils*:  Histosol (A1)										
Indicators for Problematic Hydric Soils*:  Histosol (A1)										
Histosol (A1)	ype: C=Con	centration, D=Depletio	n, RM=Redu	ced Matrix, MS=Masl	ked Sand Gra	ains.		²Location	: PL=Pore Lining,	M=Matrix.
Histosol (A1)	dric Soil Ir	ndicators:						Indicators for	Problematic Hyd	Iric Soils³:
Histic Epipedon (A2)  Black Histic (A3)  Loamy Mucky Mineral (F1) (LRR K, L)  Stratified Layers (A5)  Depleted Below Dark Surface (A11)  Thick Dark Surface (F6)  Thin Dark Surface (F7)  Each Mucky Mineral (F1)  Depleted Below Dark Surface (A11)  Redox Dark Surface (F7)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Depleted Dark Surface (F7)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Stripped Matrix (S6)  Dark Surface (S7) (LRR K, L)  Thick Dark Surface (A12)  Depleted Dark Surface (F7)  Iron-Manganese Masses (F12) (LRR K, L, R)  Peldmont Floodplain Soils (F19) (MLRA 1498  Sandy Redox (S5)  Stripped Matrix (S6)  Dark Surface (S7) (LRR R, MLRA 149B)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed):  Type:  Depth (inches):  Hydric Soil Present?  Yes No X				Polyvalue Belov	v Surface (S8	(LRR R.I	MLRA 149B		-	
Black Histic (A3)	_									
Hydrogen Sulfide (A4)  Stratified Layers (A5)  Depleted Matrix (F3)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Stripped Matrix (S6)  Dark Surface (S7)  Stripped Matrix (S6)  Dark Surface (A14)  Depleted Dark Surface (F7)  Iron-Manganese Masses (F12)  (LRR K, L)  Thick Dark Surface (A12)  Depleted Dark Surface (F7)  Iron-Manganese Masses (F12)  (LRR K, L, R)  Piedmont Floodplain Soils (F19)  (MLRA 1448  Mesic Spodic (TA6)  Mesic Spodic (TA6)  (MLRA 144A, 145, 149E)  Stripped Matrix (S6)  Dark Surface (S7)  (LRR K, L)  Ton-Manganese Masses (F12)  (LRR K, L, R)  Piedmont Floodplain Soils (F19)  (MLRA 144B, 145, 149E)  Stripped Matrix (S6)  Dark Surface (S7)  (LRR K, L)  Polyvalue Below Surface (S9)  (LRR K, L)  Ton-Manganese Masses (F12)  (IRR K, L)  Flooding The Manganese Masses (F12)  (IRR K, L)  Ton-Manganese Masses (F12)  (I	_						1400)			
Stratified Layers (A5)	_					LIXIX IX, L)				
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B Sandy Redox (S5) Red Parent Material (F21) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No X	_ , ,	` '								
Thick Dark Surface (A12)	_		• 440	<del></del>						
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149E Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149E Red Parent Material (F21) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No X	_		411)							
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches):  Hydric Soil Present?  Yes No _X	_									
Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches):  Hydric Soil Present? Yes No _X	Sandy M	ucky Mineral (S1)		Redox Depress	ions (F8)			Piedmont	Floodplain Soils (	F19) <b>(MLRA 149B)</b>
Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches):  Hydric Soil Present?  Yes No _X	Sandy G	leyed Matrix (S4)						Mesic Sp	odic (TA6) (MLR	A 144A, 145, 149B)
Dark Surface (S7) (LRR R, MLRA 149B)  dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  strictive Layer (if observed):  Type:  Depth (inches):  Hydric Soil Present?  Yes  No X	Sandy R	edox (S5)						Red Pare	nt Material (F21)	
dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Instrictive Layer (if observed):  Type:  Depth (inches):  Hydric Soil Present?  Yes  No X	Stripped	Matrix (S6)						Very Sha	low Dark Surface	(TF12)
dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Instrictive Layer (if observed):  Type:  Depth (inches):  Hydric Soil Present?  Yes  No X	Dark Sur	face (S7) (LRR R, ML	.RA 149B)					Other (Ex	plain in Remarks)	
Strictive Layer (if observed):   Type:   Depth (inches):   Hydric Soil Present?   Yes NoX										
Type:	ndicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	s disturbed	or problema	atic.		
Depth (inches):         Hydric Soil Present?         Yes         No         X	estrictive L	ayer (if observed):								
		• •								
marks:	_							<b>Hvdric Soil Prese</b>	ent? Yes	No X
	Type:							•		
	Type: Depth (inc						<u> </u>			
	Type: Depth (inc							,		
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	Type: Depth (inc									

Project/Site:	MCES Sanitary	Sewer - Forest La	ike C	City/County:	Forest Lake/W	/ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		S	state: MN	Sampling Point:	13A
Investigator(s):	Dylan Kr	uzel, Garrett Wee	S	Section, Township,	Range:	S2	8, T163, R36W	
Landform (hillslope, ter	rrace, etc):		Local relie	ef (concave, conve	ex, none):	concave	Slope	(%): 0
Subregion (LRR or ML			Lat:		Long:	-92.99299	857 Datum	n: WGS 84
Soil Map Unit Name:	•	75 - Blu	ffton Loam, hydric	soil unit		NWI classifica	tion: PE	EM1A
Are climatic / hydrologi	c conditions on the	site typical for this	s time of year? Y	′es	No X (If no	o, explain in Rema	rks.)	
Are Vegetation	, Soil,	or Hydrology	significantly o	disturbed?	Are "Normal Ci	ircumstances" pres	sent? Yes <u>&gt;</u>	< No
Are Vegetation	, Soil,	or Hydrology	naturally prob	olematic?	(If needed, exp	lain any answers i	n Remarks.)	
SUMMARY OF FI	NDINGS - Atta	ch site map s	howing samp	ling point loc	ations, transe	cts, importan	t features, etc.	
Hydrophytic Vegetat	ion Present?	Yes X	No	Is the S	ampled Area			
Hydric Soil Present?	•	Yes X	No	within a	Wetland?	Yes >	( No	
Wetland Hydrology F	Present?	Yes X	No	If yes, o	ptional Wetland Si	te ID:		<u> </u>
Remarks: (Explain a Wetlan	Iternative procedur d criteria is met. Ar			me of year				
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (r	minimum of one rec	quired; check all th	at apply)			Secondary Indi	cators (minimum of t	wo required)
Surface Water (	(A1)		Water-Stained L	_eaves (B9)		Surface So	oil Cracks (B6)	
High Water Tab	le (A2)		Aquatic Fauna (	(B13)		Drainage I	Patterns (B10)	
Saturation (A3)			Marl Deposits (I	B15)		Moss Trim	Lines (B16)	
Water Marks (B	31)		Hydrogen Sulfic	le Odor (C1)		Dry-Seaso	on Water Table (C2)	
Sediment Depo	sits (B2)		Oxidized Rhizos	spheres on Living	Roots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (F	B3)		Presence of Re	duced Iron (C4)		Saturation	Visible on Aerial Ima	agery (C9)
Algal Mat or Cri	ust (B4)		Recent Iron Rec	duction in Tilled So	oils (C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (E	•		Thin Muck Surfa				nic Position (D2)	
	ole on Aerial Image	- · · · —	Other (Explain i	n Remarks)			quitard (D3)	
Sparsely Veget	ated Concave Surf	ace (B8)					graphic Relief (D4)	
						X FAC-Neuti	ral Test (D5)	
Field Observations	:							
Surface Water Prese	ent? Yes	No X	Depth (inches	):				
Water Table Present	? Yes	No X	Depth (inches	): 	_			
Saturation Present?	Yes	No X	Depth (inches	): 	Wetland Hy	drology Present?	Yes X	No
(includes capillary fri	inge)		_		_			<u></u>
Describe Recorded I	Data (stream gaug	e, monitoring well,	aerial photos, pre	vious inspections)	), if available:			
Remarks:								

Number of Dominant Species   Are OBL, FACW, or FAC:   4
cies Across All Strata: 4 (B)  ent of Dominant Species Are OBL, FACW, or FAC: 100.0 (A/B)  ralence Index worksheet:  Total % Cover of: Multiply by: species 0 x 1 = 0 W species 117 x 2 = 234 species 10 x 3 = 30 U species 0 x 4 = 0 species 0 x 5 = 0
cies Across All Strata: 4 (B)  ent of Dominant Species Are OBL, FACW, or FAC: 100.0 (A/B)  ralence Index worksheet:  Total % Cover of: Multiply by: species 0 x 1 = 0 W species 117 x 2 = 234 species 10 x 3 = 30 U species 0 x 4 = 0 species 0 x 5 = 0
ent of Dominant Species Are OBL, FACW, or FAC: 100.0 (A/B)  **ralence Index worksheet:  Total % Cover of: Multiply by:  **species 0 x 1 = 0  W species 117 x 2 = 234  **species 10 x 3 = 30  U species 0 x 4 = 0  **species 0 x 5 = 0
Are OBL, FACW, or FAC:       100.0       (A/B)         valence Index worksheet:       Multiply by:         Total % Cover of:       Multiply by:         species       0       x 1 = 0         W species       117       x 2 = 234         species       10       x 3 = 30         U species       0       x 4 = 0         species       0       x 5 = 0
Are OBL, FACW, or FAC:       100.0       (A/B)         valence Index worksheet:       Multiply by:         Total % Cover of:       Multiply by:         species       0       x 1 = 0         W species       117       x 2 = 234         species       10       x 3 = 30         U species       0       x 4 = 0         species       0       x 5 = 0
Total % Cover of:         Multiply by:           species         0         x 1 =         0           W species         117         x 2 =         234           species         10         x 3 =         30           U species         0         x 4 =         0           species         0         x 5 =         0
Total % Cover of:         Multiply by:           species         0         x 1 =         0           W species         117         x 2 =         234           species         10         x 3 =         30           U species         0         x 4 =         0           species         0         x 5 =         0
species         0         x 1 =         0           W species         117         x 2 =         234           species         10         x 3 =         30           U species         0         x 4 =         0           species         0         x 5 =         0
species         10         x 3 =         30           U species         0         x 4 =         0           species         0         x 5 =         0
U species 0 x 4 = 0 species 0 x 5 = 0
species 0 x 5 = 0
mn Totals: 127 (A) 264 (B)
Prevalence Index = B/A = 2.08
rophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
2 - Dominance Test is >50%
3 - Prevalence Index ≤3.01
4 - Morphological Adaptations <sup>1</sup> (Provide supporting
Problematic Hydrophytic Vegetation¹ (Explain )
cators of hydric soil and wetland hydrology must
resent, unless disturbed or problematic.
nitions of Vegetation Strata
- Woody plants 3 in. (7.6 cm) or more in diameter at
st height (DBH), regardless of height.
ing/shrub - Woody plants less than 3 in. DBH and ter than or equal to 3.28 ft (1 m) tall.
• All herbaceous (non-woody) plants, regardless of and woody plants less than 3.28 ft tall.
dy vines - All woody vines greater than 3.28 ft in
nt.
rophytic etation eent? Yes <u>X</u> No

SOIL Sampling Point: 13A

Depth	ription: (Describe to t Matrix	- 1- 2		x Features				•
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture	Remarks
0-3	10YR 2/1	100					Loam	
3-8	10YR 5/2	90	10YR 3/4	10	С	М	Fine Sndy Lm	PRC
8-12	10YR 2/1	100					Fine Sndy Lm	
12-24	10YR 6/2	95	10YR 5/6	5	C	М	Sndy Clay Lm	PRC
	<u> </u>							
								-
	-				<del></del>			
					<del> </del>			. 5, 5
Type: C=Co	ncentration, D=Depletion	on, RM=Redu	iced Matrix, MS=Mas	ked Sand Gi	rains.		-Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belo	w Surface (S	8) <b>(LRR R</b> ,	MLRA 14		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa					t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky I			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed		,, <b>_</b> )			Surface (S7) (LRR K, L)
	d Layers (A5)		X Depleted Matrix					value Below Surface (S8) (LRR K, L)
	d Below Dark Surface (	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)	/	Depleted Dark					Wanganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depress					mont Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
	ırface (S7) (LRR R, M	LRA 149B)						r (Explain in Remarks)
<u> </u>							· <del></del>	
<sup>3</sup> Indicators of	f hydrophytic vegetation	n and wetland	I hydrology must be p	resent, unle	ss disturbed	or proble	matic.	
Restrictive L	_ayer (if observed):							
Type:	,							
Depth (in	nches):		<del></del>				Hydric Soil P	resent? Yes X No
							_	
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest	Lake	City/County	tv: F	orest Lake/Wa	ashington	Sampling Date:	10/19/2023
Applicant/Owner:	•		TKDA	_		St	ate: MN	Sampling Point:	13B
· · · · · · · · · · · · · · · · · · ·	Dylan Kru	uzel. Garrett We	ee	Section, To	ownship, Ran		-	3, T163, R36W	-
Landform (hillslope, ter				_	ve, convex, no			Slope	(%): 2
Subregion (LRR or ML				•	2635367	Long:	-92.992998		`
Soil Map Unit Name:							NWI classificat		None
Are climatic / hydrologi						(If no	_ rttti elasellieat , explain in Remar		100
Are Vegetation						`	cumstances" pres	•	No X
	, Soil,						ain any answers i		
SUMMARY OF FI						-	-	•	
							zis, important	reatures, etc.	
Hydrophytic Vegetati			( No		Is the Samp				
Hydric Soil Present?			( No		within a Wet			NoX	_
Wetland Hydrology F	Present?	Yes	NoX		If yes, option	al Wetland Site	e ID:		
Remarks: (Explain a Vegetar				vironment. W	etland criteria	ı is not met. Ar	ntecedent is above	e average for the tim	ne of year
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (n		uirod: abaak all	that apply)				Socondary India	cators (minimum of t	wo roquirod)
Surface Water (		ulleu, check all	11.7/	ed Leaves (B	10)			il Cracks (B6)	wo required)
High Water Tab	,	-	Aquatic Fau	•	59)			Patterns (B10)	
Saturation (A3)	` '	-	Marl Deposi	, ,				Lines (B16)	
Water Marks (B		-		ulfide Odor (C	C1)			n Water Table (C2)	
Sediment Depo	•	-	, ,	•	on Living Root	s (C3)		urrows (C8)	
Drift Deposits (E		-		Reduced Iron	-	s (C3)		Visible on Aerial Ima	ageny (CQ)
Algal Mat or Cru	•	-	<del></del>		Tilled Soils (0	26)		Stressed Plants (D1	• , . ,
Iron Deposits (E		-	Thin Muck S		Tilica oolis (C	30)		ic Position (D2)	1)
	ole on Aerial Image	ry (R7)		ain in Remark	(e)			quitard (D3)	
<del></del>	ated Concave Surfa		Other (Expla	alli ili iXelliaik	(3)			graphic Relief (D4)	
Oparacily veget	ated Concave Curio	acc (Do)					X FAC-Neutr		
Field Observations	:								
Surface Water Prese	ent? Yes		X Depth (incl	hes):					
Water Table Present	? Yes	No	X Depth (incl	hes):					
Saturation Present?	Yes	No	X Depth (incl	hes):		Wetland Hyd	Irology Present?	Yes	No X
(includes capillary fri	nge)								
				<u> </u>					
Describe Recorded I	Data (stream gauge	e, monitoring we	ell, aerial photos,	previous insp	pections), if av	/ailable:			
Remarks:									
. tomanto									

				Sampling Point: 13B
				Dominance Test worksheet:
				Number of Dominant Species
				·
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 3 (A
e Stratum (Plot size: 30-ft )	% Cover	Species?	Status	
		_ —		Total Number of Dominant
Fraxinus pennsylvanica / Green ash	25	Yes	FACW	Species Across All Strata: 3 (B
				opedies Adioss / iii otiata.
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 100.0 (A
				Prevalence Index worksheet:
	25	- Total Cov		Total % Cover of: Multiply by:
,	25	_ = Total Cov	er	OBL species 0 x 1 = 0
ling/Shrub Stratum (Plot size: 15-ft )				FACW species 95 x 2 = 190
raxinus pennsylvanica / Green ash	10	Yes	FACW	
axilius perinegriculus i o. con den				FAC species 0 x 3 = 0
				FACU species 40 x 4 = 160
				UPL species 0 x 5 = 0
				Column Totals:135 (A)350
				ļ
				Prevalence Index = B/A = 2.59
				FIEVAICHICE HILLEN - DIA - 2.00
	10	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Stratum (Plot size: 5-ft )				X 1 - Rapid Test for Hydrophytic Vegetation
Phalaris arundinacea / Reed canary grass	60	Yes	FACW	X 2 - Dominance Test is >50%
Stellaria media / Chickweed, Common chickweed	15	No	FACU	X 3 - Prevalence Index ≤3.0¹
Poa pratensis / Kentucky blue grass	10	No	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
Faraxacum officinale / Red seeded dandelion, Common dar	ndelion()	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
•				- Flobiciliano Hydrophyno vogonanom (-/)
Plantago major / Common plantain	5	No	FACU	ļ
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
				De present, unless disturbed of presistants.
				Definitions of Vegetation Strata
		_		
				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
				breast height (DBH), regardless of height.
	100	= Total Cov	·or	Sapling/shrub - Woody plants less than 3 in. DBH and
· · · · · · · · · · · · · · · · · · ·	100	_ = 10141 55.	CI	greater than or equal to 3.28 ft (1 m) tall.
ody Vine Stratum (Plot size: 30-ft )				
<del></del>	_			Herb - All herbaceous (non-woody) plants, regardless of
	_	-		size, and woody plants less than 3.28 ft tall.
				Woody vines - All woody vines greater than 3.28 ft in
				height.
	-			neight.
	0	= Total Cov	/or	
		_ = 10(a) 00*	eı	Hydrophytic
				Vegetation
				Present? Yes X No
				Drocont's yes x ms

SOIL Sampling Point: \_\_\_\_13B

	-	ne aeptii ne			or confirm	tne abse	nce of indicators	5.)
Depth	Matrix	0/		x Features	Turn of	1 0 02	Tavetura	Domonico
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-4	10YR 2/2	100	7.5VD 0/4				Loam	DDO
4-10	10YR 5/2	90	7.5YR 3/4	10	<u> </u>	M	Sndy Clay Lm	PRC
10-14	10YR 6/2	90	7.5YR 3/4	10	<u> </u>	M	Clay	Fill layer/PRC
14-24	10YR 2/1	95	10YR 3/4	5	C	М	Clay	PRC
		<del></del>						
		<del></del>						
				_				
				_				
1Tunes C-Cer			and Matrix MC-Man	lead Cand Co			21 000	tion, DI - Dava Lining, M-Matrix
	ncentration, D=Depletion	on, RIVI=Real	uced Matrix, MS=Mas	ked Sand Gr	ains.		Loca	tion: PL=Pore Lining, M=Matrix.
Hydric Soil II	ndicators:						Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R,</b>	MLRA 14	<b>9B)</b> 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
Histic Ep	pipedon (A2)		Thin Dark Surfa	ice (S9) (LF	RR R, MLRA	149B)	Coast	Prairie Redox (A16) (LRR K, L, R)
Black His	stic (A3)		Loamy Mucky N	/lineral (F1)	(LRR K, L)		5 cm	Mucky Peat or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)		Loamy Gleyed I	Matrix (F2)	·		_	Surface (S7) (LRR K, L)
Stratified	Layers (A5)		X Depleted Matrix	(F3)			_	alue Below Surface (S8) (LRR K, L)
Depleted	Below Dark Surface (	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
Thick Da	ark Surface (A12)		Depleted Dark S	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L, R)
Sandy M	lucky Mineral (S1)		Redox Depress	ions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
Sandy G	leyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy R	edox (S5)						Red F	Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
	rface (S7) (LRR R, MI	LRA 149B)						(Explain in Remarks)
³Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unle	ss disturbed	or proble	matic.	
Restrictive L	hydrophytic vegetation ayer (if observed):	n and wetland	d hydrology must be p	resent, unle	ss disturbed	or proble	matic.	
Restrictive L	ayer (if observed):	n and wetland	I hydrology must be p	resent, unle:	ss disturbed	or proble		
Restrictive L	ayer (if observed):	n and wetland	I hydrology must be p	resent, unle	ss disturbed	or proble	Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	n and wetland	I hydrology must be p	resent, unle	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):		<u></u>			or proble		resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Fores	st Lake	City/Cou	inty:	Forest Lake/Wa	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		-		tate: MN	Sampling Point:	14A
Investigator(s):	Dvlan Kri	uzel, Garrett W	Vee	Section.	Township, Ra		-	, T163, R36W	
Landform (hillslope, teri					cave, convex,		concave		(%): 0
Subregion (LRR or MLF		LRR K		-	22850208	Long:	-92.993666		
Soil Map Unit Name:							NWI classificati		F/PEM1A
Are climatic / hydrologic						X (If no	explain in Remar		
	, Soil ,	• •	•	antly disturbe			rcumstances" pres	•	K No
			natural				lain any answers ir	-	<u> </u>
SUMMARY OF FIN							-	•	
							cts, important	reatures, etc.	
Hydrophytic Vegetati			X No		Is the Sam	-			
Hydric Soil Present?			X No		within a W		Yes X	No	_
Wetland Hydrology P	resent?	Yes	X No	<del></del>	If yes, option	onal Wetland Sit	te ID:		
Remarks: (Explain al Wetland	Iternative procedur d criteria is met. An				ear				
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (m		nuired: check s	all that apply)				Secondary India	ators (minimum of t	wo required)
Surface Water (A		julica, cricck a	11.77	ined Leaves	(R9)			il Cracks (B6)	wo required)
High Water Tabl	` '			auna (B13)	(00)			atterns (B10)	
Saturation (A3)	` '			osits (B15)				Lines (B16)	
Water Marks (B				Sulfide Odor	(C1)			n Water Table (C2)	
Sediment Depos	-		` `		on Living Ro	ots (C3)	Crayfish Bu		
Drift Deposits (E				of Reduced I	-	,		Visible on Aerial Ima	agery (C9)
	•			n Reduction	` ,				• , . ,
Algai Mat or Cru	ıst (B4)		Recenting		III IIII <del>c</del> u Solis	(C6)	Stunted or	Stressed Plants (D1	1)
Algal Mat or Cru Iron Deposits (B						(C6)		,	1)
Iron Deposits (B		ry (B7)	Thin Muck	Surface (C7	")	(C6)	X Geomorphi Shallow Aq	c Position (D2)	1)
Iron Deposits (B	35)	• • •	Thin Muck	s Surface (C7	")	(C6)	X Geomorphi Shallow Aq	c Position (D2)	· )
Iron Deposits (B	35) ble on Aerial Image	• • •	Thin Muck	s Surface (C7	")	(C6)	X Geomorphi Shallow Aq	c Position (D2) juitard (D3) raphic Relief (D4)	,
Iron Deposits (B Inundation Visib Sparsely Vegeta	35) ble on Aerial Image ated Concave Surfa	• • •	Thin Muck	s Surface (C7	")	(C6)	X Geomorphi Shallow Aq Microtopog	c Position (D2) juitard (D3) raphic Relief (D4)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Field Observations:	35) ble on Aerial Image ated Concave Surfa	ace (B8)	Thin Muck	s Surface (C7 plain in Rema	")	(C6)	X Geomorphi Shallow Aq Microtopog	c Position (D2) juitard (D3) raphic Relief (D4)	
Iron Deposits (B Inundation Visib Sparsely Vegeta  Field Observations: Surface Water Prese	as)  ble on Aerial Image ated Concave Surfa  : ent? Yes	No	Thin Mucl Other (Ex	Surface (C7 plain in Rema	")	(C6)	X Geomorphi Shallow Aq Microtopog	c Position (D2) juitard (D3) raphic Relief (D4)	.,
Iron Deposits (B Inundation Visib Sparsely Vegeta  Field Observations: Surface Water Prese Water Table Present	asb)  ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes	No	Thin Mucl Other (Ex	c Surface (C7 plain in Rema	r) arks)	. ,	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta  Field Observations: Surface Water Prese Water Table Present?	asb)  ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes	No	Thin Mucl Other (Ex	c Surface (C7 plain in Rema	")	. ,	X Geomorphi Shallow Aq Microtopog	c Position (D2) juitard (D3) raphic Relief (D4)	No
Iron Deposits (B Inundation Visib Sparsely Vegeta  Field Observations: Surface Water Prese Water Table Present	asb)  ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes	No	Thin Mucl Other (Ex	c Surface (C7 plain in Rema	r) arks)	. ,	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Field Observations: Surface Water Present' Saturation Present? (includes capillary frinder Iron Deposits (Baturation Present)	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta  Field Observations: Surface Water Prese Water Table Present?	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Field Observations: Surface Water Present' Saturation Present? (includes capillary frinder Iron Deposits (Baturation Present)	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Field Observations: Surface Water Present' Saturation Present? (includes capillary frinder Iron Deposits (Baturation Present)	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Present' Saturation Present' (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	
Iron Deposits (B Inundation Visib Sparsely Vegeta Sparsely Vegeta Surface Water Prese Water Table Present? Saturation Present? (includes capillary frindescribe Recorded Describe Recorded Descr	as) ble on Aerial Image ated Concave Surfa  : ent? Yes ? Yes Yes nge)	No No X No	Thin Mucl Other (Ex  X Depth (ii X Depth (ii Depth (ii	c Surface (C7 plain in Rema	22	Wetland Hyd	X Geomorphi Shallow Aq Microtopog X FAC-Neutra	c Position (D2) uitard (D3) raphic Relief (D4) al Test (D5)	

SOIL Sampling Point: 14A

Depth	Matrix		Redox	x Features			nce of indicator	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-8	10YR 2/2	95	10YR 3/6	5	С	М	Sandy Loam	PRC
8-24	10YR 5/2	85	10YR 3/6	15	С	М	Sndy Clay Lm	PRC
			-, <u>-</u>					
				-				
	-							-
	-							-
Type: C=Cor	ncentration, D=Depletion	n, RM=Red	duced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
lydric Soil II								for Problematic Hydric Soils <sup>3</sup> :
Histosol	` '		Polyvalue Belov				· -	Muck (A10) (LRR K, L, MLRA 149B)
Histic Ep	pipedon (A2)		Thin Dark Surfa	ce (S9) (LR	R R, MLRA	(149B)	Coas	t Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N		(LRR K, L)			Mucky Peat or Peat (S3) (LRR K, L, R
Hydroge	n Sulfide (A4)		Loamy Gleyed I	Matrix (F2)			Dark	Surface (S7) (LRR K, L)
Stratified	I Layers (A5)		X Depleted Matrix	(F3)			Polyv	alue Below Surface (S8) (LRR K, L)
X Depleted	l Below Dark Surface (A	A11)	X Redox Dark Su	rface (F6)			Thin I	Dark Surface (S9) (LRR K, L)
Thick Da	rk Surface (A12)		Depleted Dark S	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L,
Sandy M	lucky Mineral (S1)		Redox Depress	ions (F8)			Piedn	nont Floodplain Soils (F19) <b>(MLRA 149</b>
Sandy G	leyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149
Sandy R	edox (S5)						Red F	Parent Material (F21)
Stripped	Matrix (S6)						Very	Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, ML	.RA 149B)					Other	(Explain in Remarks)
		and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble	matic.	
indicators of	hydrophytic vegetation	and wellar	.a, a. o. og, ao. o p					
	hydrophytic vegetation ayer (if observed):	and wettar	.a.r.yarorogy maor zo p					
		and wellar	The repair of th					
Restrictive L	ayer (if observed):	and wellar					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wettar					Hydric Soil P	resent? Yes X No
Restrictive L	ayer (if observed):	and wettar					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes <u>X</u> No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and weda					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and wedan					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and weda					Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (inc	ayer (if observed):	and weda					Hydric Soil P	resent? Yes X No

	MCES Sanitary	Sewer - Forest L	.ake City/C	County: F	orest Lake/Was	hington	Sampling Date:	10/19/2023
Applicant/Owner:	•		TKDA		Stat	e: MN	Sampling Point:	14B
· · · · · · · · · · · · · · · · · · ·	Dylan Kr	uzel. Garrett Wee	e Section	on, Township, Ran			, T163, R36W	
Landform (hillslope, ter				oncave, convex, n			Slope	(%): 2
Subregion (LRR or ML		LRR K	·	45.22850729	Long:	-92.993511		`
- ·	· · ———		ie sandy loam, 1 to 4 pe			NWI classificati		one
_			is time of year? Yes		X (If no e	explain in Remark		
		• •	significantly distur			umstances" pres	•	No X
			naturally problema			n any answers in		
			showing sampling		=	-	•	
		-			·	s, important	reatures, etc.	
Hydrophytic Vegetati		Yes		Is the Samp				
Hydric Soil Present?		Yes		within a We			NoX	_
Wetland Hydrology F	Present?	Yes	NoX	If yes, option	ial Wetland Site	ID:		
Remarks: (Explain a Manicu			eparate report.) not met. Antecedent is a	bove average for	the time of year			
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (n		quired: check all tl	hat annly)			Secondary Indic	ators (minimum of t	wo required)
Surface Water (		Julica, Cricck all ti	Water-Stained Leave	es (R9)	_		il Cracks (B6)	wo required)
High Water Tab	` ,	_	Aquatic Fauna (B13)	,			atterns (B10)	
Saturation (A3)	` '	_	Marl Deposits (B15)	,			Lines (B16)	
Water Marks (B			Hydrogen Sulfide Oc				Water Table (C2)	
Sediment Depo	•		Oxidized Rhizospher	. ,	ts (C3)	Crayfish Bu		
Drift Deposits (E			Presence of Reduce	-	()		√isible on Aerial Ima	agery (C9)
Algal Mat or Cru	·		Recent Iron Reduction	` ,	C6)		Stressed Plants (D1	. ,
Iron Deposits (E		_	Thin Muck Surface (	,	,		c Position (D2)	,
	•		Other (Explain in Re			Shallow Aq		
Inundation Visib	ole on Aerial Image	71 y (D <i>1 )</i>	Other (Explain in Ite			Cilanott / tq		
<del></del>	ole on Aerial Image ated Concave Surf	- · · · · -	Other (Explain in Ne	,			raphic Relief (D4)	
<del></del>	-	- · · · · -	Other (Explain in Ne	,			raphic Relief (D4)	
Sparsely Vegeta	ated Concave Surf	- · · · · -	Other (Explain in Ne			Microtopog	raphic Relief (D4)	
Sparsely Vegeta	ated Concave Surf	face (B8)				Microtopog	raphic Relief (D4)	
Sparsely Vegeta  Field Observations Surface Water Prese	ated Concave Surf	NoX	Depth (inches):			Microtopog	raphic Relief (D4)	
Field Observations Surface Water Prese Water Table Present	ated Concave Surf	No X	Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	
Field Observations Surface Water Preset Water Table Present Saturation Present?	ated Concave Surf	No X	Depth (inches): Depth (inches):		Wetland Hydro	Microtopog	raphic Relief (D4)	NoX
Field Observations Surface Water Prese Water Table Present	ated Concave Surf	No X	Depth (inches): Depth (inches):		Wetland Hydro	Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ated Concave Surf	No X No X	Depth (inches): Depth (inches): Depth (inches):			Microtopog FAC-Neutra	raphic Relief (D4) al Test (D5)	No X

VEGETATION - Use scientific names of plants.				Sampling Point:14B
Tree Stratum (Plot size:30-ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 0 (A)  Total Number of Dominant
1				Species Across All Strata: 2 (B)
5		_		Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)
6. 7.	-			Prevalence Index worksheet:
Sapling/Shrub Stratum       (Plot size:				OBL species         0         x 1 =         0           FACW species         0         x 2 =         0           FAC species         0         x 3 =         0           FACU species         80         x 4 =         320           UPL species         0         x 5 =         0           Column Totals:         80         (A)         320         (B)
6				Prevalence Index = B/A = 4.0
Herb Stratum (Plot size: 5-ft )  1. Lotus tenuis / Narrow-leaf bird's-foot trefoil	50	= Total Cove	er	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50%
Lotus tenuis / Narrow-lear bird s-root trefoil     Poa pratensis / Kentucky blue grass	20	Yes	FACU	3 - Prevalence Index ≤3.0¹
Taraxacum officinale / Red seeded dandelion, Common dandelion		No	FACU	4 - Morphological Adaptations¹ (Provide supporting
4				Problematic Hydrophytic Vegetation¹ (Explain )  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
9. 10. 11			-	Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12	80	= Total Cove	er	breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )  1.		- -		greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2. 3. 4				<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
4.	0	= Total Cov	er	Hydrophytic
				Vegetation           Present?         Yes NoX
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 14B

Profile Desci Depth	ription: (Describe to th Matrix	ie aepth ned		ne indicator k Features	or confirm t	ine absend	ce of indicators.)	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-10		100					Clay Loam	
10-24	10YR 2/1	100					Loam	
_								
Type: C=Cor	ncentration, D=Depletion	n, RM=Redu	ced Matrix, MS=Masl	ked Sand Gr	ains.		²Locatio	n: PL=Pore Lining, M=Matrix.
ludria Sail I	ndicators						Indicators fo	or Problematic Hudric Saile <sup>3</sup> :
Hydric Soil I			Dalas alsa Dalas	0f (0)	0)	41 DA 440F		or Problematic Hydric Soils <sup>3</sup> :
Histosol	` '		Polyvalue Belov				· —	uck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa			149B)		rairie Redox (A16) (LRR K, L, R)
Black Hi			Loamy Mucky N		(LRR K, L)		5 cm Mu	ucky Peat or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)		Loamy Gleyed I	Matrix (F2)			Dark Su	ırface (S7) (LRR K, L)
Stratified	d Layers (A5)		Depleted Matrix	(F3)			Polyvalu	ue Below Surface (S8) (LRR K, L)
Depleted	d Below Dark Surface (A	<b>\11</b> )	Redox Dark Sur	face (F6)			Thin Da	rk Surface (S9) (LRR K, L)
Thick Da	ark Surface (A12)		Depleted Dark S	Surface (F7)			Iron-Mai	nganese Masses (F12) (LRR K, L, R)
Sandy M	lucky Mineral (S1)		Redox Depress					nt Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)		<del>_</del>	,				spodic (TA6) (MLRA 144A, 145, 149B)
	ledox (S5)							rent Material (F21)
	Matrix (S6)							allow Dark Surface (TF12)
	rface (S7) (LRR R, ML	DA 140D)						Explain in Remarks)
Daik Sui	ilace (37) (LKK K, WL	KA 1430)					Other (E	Explain in Remarks)
3Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	s disturbed	or problem	atic.	
Da adadadhaa I	(:£ -  )							
Type:	ayer (if observed):							
	shoo):		<del></del>				Uvdria Cail Drag	nent? Voc No V
Depth (in	cnes):						Hydric Soil Pres	sent? Yes No _X
Remarks:								
	soils heavily manipulate	d due to the	proximity to golf cour	se.				

Project/Site:	MCES Sanitary	Sewer - Forest La	ke C	ity/County:	Forest Lake/W	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		S	tate: MN	Sampling Point:	15A
Investigator(s):	Dylan Kri	uzel, Garrett Wee	S	ection, Township, I	Range:	S2	8, T163, R36W	
Landform (hillslope, ter	rrace, etc):	Toe Slope	Local relie	f (concave, conve	x, none):	concave	Slope	(%): 0
Subregion (LRR or ML	.RA):	LRR K	Lat:	45.22954383	Long:	-92.99398	583 Datum	n: WGS 84
Soil Map Unit Name:	·	123 - Dundas fir	e sandy loam, nor	n-hydric soil unit		NWI classifica	tion: R2	UBFx
Are climatic / hydrologi	ic conditions on the	site typical for this	time of year? Ye	es N	lo X (If no	, explain in Rema	rks.)	
Are Vegetation	, Soil,	or Hydrology	significantly d	isturbed?	Are "Normal Cir	rcumstances" pres	sent? Yes X	( No
Are Vegetation	, Soil,	or Hydrology	naturally prob	lematic?	(If needed, expl	lain any answers i	n Remarks.)	
<b>SUMMARY OF FI</b>	<b>NDINGS - Atta</b>	ch site map s	nowing sampl	ing point loca	tions, transe	cts, importan	t features, etc.	
Hydrophytic Vegetat	tion Present?	Yes X	No	Is the Sa	mpled Area			
Hydric Soil Present?	•	Yes X	No	within a	Wetland?	Yes >	( No	
Wetland Hydrology F	Present?	Yes X	No	If yes, op	tional Wetland Sit			_
Remarks: (Explain a Wetlan	alternative procedur d criteria is met. An			ne of year				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r	minimum of one req	uired; check all the	at apply)			Secondary Indi	cators (minimum of t	wo required)
Surface Water	(A1)		Water-Stained L	eaves (B9)		Surface So	oil Cracks (B6)	
High Water Tab	ole (A2)		Aquatic Fauna (	B13)		Drainage I	Patterns (B10)	
Saturation (A3)	)		Marl Deposits (E	315)		Moss Trim	Lines (B16)	
Water Marks (B	31)		Hydrogen Sulfid	e Odor (C1)		Dry-Seaso	on Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhizos	pheres on Living F	Roots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (I	B3)		Presence of Rec	duced Iron (C4)		Saturation	Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	rust (B4)		Recent Iron Red	luction in Tilled Soi	ls (C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (E	•		Thin Muck Surfa				nic Position (D2)	
<del></del>	ble on Aerial Image	· · · · —	Other (Explain in	n Remarks)			quitard (D3)	
Sparsely Veget	ated Concave Surfa	ace (B8)					graphic Relief (D4)	
						X FAC-Neuti	ral Test (D5)	
Field Observations	s:							
Surface Water Prese	ent? Yes	No X	Depth (inches)	:				
Water Table Present	t? Yes	No X	Depth (inches)	:				
Saturation Present?	Yes	No X	Depth (inches)	:	Wetland Hyd	drology Present?	Yes X	No
(includes capillary fri	inge)							
Describe Recorded	Data (stream gauge	e, monitoring well,	aerial photos, prev	vious inspections),	if available:			
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point:15A
•				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 3 (A)
	Absolute	Dominant	Indicator	That Ale GBE, FAGW, GETAG:
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1				Species Across All Strata: 5 (B)
2				Species Acioss All Ottata.
3				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 60.0 (A/B)
5				That Are Obl., I AOW, or I AO.
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	0	_ = Total Cov	er	OBL species 0 $x = 0$
Sapling/Shrub Stratum (Plot size:)				FACW species 60 x 2 = 120
Salix interior / Sandbar willow	25	Yes	FACW	FAC species 0 x 3 = 0
2.				FACU species 40 x 4 = 160
3.				UPL species 0 x 5 = 0
4.				
5.	<u> </u>	- <u> </u>		.,
6.				Prevalence Index = B/A = 2.8
7.				Trevalence index. Ent.
	25	= Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		_		1 - Rapid Test for Hydrophytic Vegetation
1. Poa pratensis / Kentucky blue grass	20	Yes	FACU	X 2 - Dominance Test is >50%
2. Phalaris arundinacea / Reed canary grass	20	Yes	FACW	X 3 - Prevalence Index ≤3.0¹
Solidago altissima / Canada goldenrod	15	Yes	FACU	4 - Morphological Adaptations¹ (Provide supporting
Solidago gigantea / Smooth goldenrod	15	Yes	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
Sonchus asper / Spiny sowthistle		No	FACU	
_				¹Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
7. 8				be present, unless distarbed of presionadis.
8 9				Definitions of Vegetation Strata
9. 10.				
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
	_			breast height (DBH), regardless of height.
12		= Total Cov	or .	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )	- 10	_ = 10101 00.	CI	greater than or equal to 3.28 ft (1 m) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of
2				size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in
J			-	height.
4.		= Total Cov		
		_ = 10(a) C0v	EI	Hydrophytic
				Vegetation
				Present? Yes X No
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 15A

Depth (inches)  0-3  3-18  18-36			Redo	x Features				
0-3 3-18	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
	10YR 2/1	100					Sandy Loam	
18-36	10YR 5/2	90	10YR 3/4	10	С	М	Sndy Clay Lm	DRC
	10YR 2/1	95	10YR 3/6	5	С	М	Sndy Clay Lm	
				_				
				_				
Гуре: C=Cond	centration, D=Depletio	n, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
ydric Soil In	dicators:						Indicators	for Problematic Hydric Soils³:
-			Polyvalue Belov	v Surface (S	0) <b>(I DD D</b>	MI DA 14		Muck (A10) (LRR K, L, MLRA 149B)
Histosol (	• •			-				
	pedon (A2)		Thin Dark Surfa			1496)		t Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N		(LKK K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	Layers (A5)	Λ11\	X Depleted Matrix					ralue Below Surface (S8) (LRR K, L)
	Below Dark Surface (Ark Surface (A12)	A11)	Redox Dark Su  Depleted Dark S					Dark Surface (S9) (LRR K, L)  Manganese Masses (F12) (LRR K, L, R)
_	ucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
	eyed Matrix (S4)		Redux Depless	10115 (F0)				Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Gi								Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
	face (S7) <b>(LRR R, ML</b>	RA 149R)						(Explain in Remarks)
Dark Guii	acc (or) (ERRIN, ME	-IVA 143D)						(Explain in Nemarks)
Indicators of h	nydrophytic vegetation	and wetland	hydrology must be p	resent, unles	s disturbed	or proble	matic.	
Pootriotivo Le	wer (if abanyad).							
	ayer (if observed):							
Type:	phoc).						Hydric Soil P	recent? Vos V No
Depth (inc							Hydric Soil P	resent? Yes X No
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest La	ake Ci	ity/County:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:	· ·		TKDA	· · ·		ate: MN	Sampling Point:	15B
Investigator(s):	Dylan Kr	uzel, Garrett Wee	. Se	ection, Township, R			, T163, R36W	-
Landform (hillslope, ter				f (concave, convex		none	, ,	(%): 2
Subregion (LRR or ML		LRR K	Lat:	•	Long:	-92.993941		` ′
Soil Map Unit Name:						NWI classificati		one
Are climatic / hydrologi					(If no	explain in Remark	-	00
• •		• •	significantly di			cumstances" prese	•	No
			naturally prob			ain any answers in		
SUMMARY OF FI		·				-	•	
		-			·	is, important	reatures, etc.	
Hydrophytic Vegetat		Yes			npled Area			
Hydric Soil Present?		Yes X		within a V			NoX	-
Wetland Hydrology F	Present?	Yes	NoX	If yes, opti	onal Wetland Site	e ID:		
Remarks: (Explain a Wetlan			parate report.) bove average for the	e time of year				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r		quired: check all th	nat annly)			Secondary Indic	ators (minimum of tv	vo required)
Surface Water (		julica, cricck all ti	Water-Stained Lo	eaves (R0)			il Cracks (B6)	vo required)
High Water Tab	` '	_	Aquatic Fauna (E	` '			atterns (B10)	
Saturation (A3)	` '	_	Marl Deposits (B	,			Lines (B16)	
Water Marks (B		<del></del>	Hydrogen Sulfide	•			Water Table (C2)	
Sediment Depo	•	_	_ , ,	pheres on Living Ro	oots (C3)	Crayfish Bu		
Drift Deposits (F		_	Presence of Red		(,		√isible on Aerial Ima	aerv (C9)
Algal Mat or Cri	•	_	<del>_</del>	uction in Tilled Soils	s (C6)		Stressed Plants (D1	. ,
_ ·			<del>_</del>		,		•	•
iron Deposits (E	B5)		THIII WILL SULIA			Geomorphi	C POSITION (DZ)	
Iron Deposits (E	B5) ble on Aerial Image	-ry (B7)	Thin Muck Surfa Other (Explain in			Shallow Aq	c Position (D2) uitard (D3)	
Inundation Visit	•		_			Shallow Aq		
Inundation Visit	ble on Aerial Image		_			Shallow Aq	uitard (D3) raphic Relief (D4)	
Inundation Visit	ble on Aerial Image ated Concave Surf		_		T	Shallow Aq Microtopog	uitard (D3) raphic Relief (D4)	
Inundation Visit Sparsely Veget	ble on Aerial Image ated Concave Surf	race (B8)	Other (Explain in	Remarks)		Shallow Aq Microtopog	uitard (D3) raphic Relief (D4)	
Inundation Visit Sparsely Veget Field Observations Surface Water Prese	ble on Aerial Image ated Concave Surf :: ent? Yes	NoX	Other (Explain in	Remarks)		Shallow Aq Microtopog	uitard (D3) raphic Relief (D4)	
Inundation Visit Sparsely Veget  Field Observations Surface Water Preset Water Table Present	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes	No X	Other (Explain in  Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	
Field Observations Surface Water Preset Water Table Present Saturation Present?	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes	NoX	Other (Explain in  Depth (inches): Depth (inches):	Remarks)	Wetland Hyd	Shallow Aq Microtopog	uitard (D3) raphic Relief (D4)	NoX
Inundation Visit Sparsely Veget  Field Observations Surface Water Preset Water Table Present	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes	No X	Other (Explain in  Depth (inches): Depth (inches):	Remarks)	Wetland Hyd	Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present?	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	NoX
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X
Field Observations Surface Water Preset Water Table Present Saturation Present? (includes capillary fri	ble on Aerial Image ated Concave Surf :: ent? Yes t? Yes Yes inge)	No X No X	Depth (inches): Depth (inches): Depth (inches):	Remarks)		Shallow Aq Microtopog FAC-Neutra	uitard (D3) raphic Relief (D4) al Test (D5)	No X

				Dominance Test worksheets	
				Dominance Test worksheet:	
				Number of Dominant Species	
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 3	(A)
	% Cover	Species?	Status		
<del></del> :				Total Number of Dominant	
Acer negundo / Boxelder, Box elder	15	Yes	FAC	Species Across All Strata: 7	(B)
Ulmus americana / American elm	10	Yes	FACW		` .
				Percent of Dominant Species	
				·	/ A /F
				That Are OBL, FACW, or FAC: 42.9	(A/E
			-	- I to	
				Prevalence Index worksheet:	
	25	= Total Cov		Total % Cover of: Multiply by:	_
		_ = Total Cove	er	OBL species 0 x 1 = 0	_
oling/Shrub Stratum (Plot size: 15-ft )				FACW species 20 x 2 = 40	
				FAC species 15 x 3 = 45	_
			- <del>-</del>	FACU species 45 x 4 = 180	_
					_
				UPL species 10 x 5 = 50	— .
				Column Totals: 90 (A) 315	(
					· <u>-</u> ·
				Prevalence Index = B/A = 3.5	
					_
	0	= Total Cove	er	Hydrophytic Vegetation Indicators:	
b Stratum (Plot size: 5-ft )		- '	<b>.</b>	1 - Rapid Test for Hydrophytic Vegetation	
	25	Voc	FACIL	2 - Dominance Test is >50%	
Solidago altissima / Canada goldenrod	25	Yes	FACU		
Cirsium arvense / Canada thistle	10	Yes	FACU	3 - Prevalence Index ≤3.0¹	
Phalaris arundinacea / Reed canary grass	10	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting	ng
Poa pratensis / Kentucky blue grass	10	Yes	FACU	Problematic Hydrophytic Vegetation¹ (Explain )	
Bromus inermis / Smooth brome, Smooth brome, Hungarian		Yes	UPL		
		_		<sup>1</sup> Indicators of hydric soil and wetland hydrology must	
_			-		
				be present, unless disturbed or problematic.	
					_
				Definitions of Vegetation Strata	
				Tree - Woody plants 3 in. (7.6 cm) or more in diamete	er af
				breast height (DBH), regardless of height.	
				Sapling/shrub - Woody plants less than 3 in. DBH an	~d
	65	_ = Total Cove	er	greater than or equal to 3.28 ft (1 m) tall.	lu
ody Vine Stratum (Plot size: 30-ft )					
	_		_	Herb - All herbaceous (non-woody) plants, regardless	3 01
			-	size, and woody plants less than 3.28 ft tall.	
		-	-	Woody vines - All woody vines greater than 3.28 ft in	1
				height.	
					_
	0	_ = Total Cov	er	Hydrophytic	_
				Vegetation	
				Present?         Yes         No         X	

SOIL Sampling Point: 15B

Depth	Matrix		Redox	<ul><li>Features</li></ul>				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-6	10YR 2/1	100					Sandy Loam	
6-24	10YR 5/2	98	10YR 3/4	2	C	M	Sndy Clay Lm	prc
	-							
							-	
					· —— -			
			-					
				_	·		-	
 Гуре: C=Con	centration, D=Depletion	n, RM=Redu		ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
rdria Cail Ir	dicatoro							
ydric Soil Ir Histosol			Polyvalue Belov	v Surface (S	8) <b>/I DD D</b> I	MI DA 140		for Problematic Hydric Soils <sup>3</sup> : Muck (A10) (LRR K, L, MLRA 149B)
	ipedon (A2)		Thin Dark Surfa	-			· —	Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky M			1430)		Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed N		(=:\:\ I L)			Surface (S7) (LRR K, L)
	Layers (A5)		X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	A11)	Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	,	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)		Redox Depressi					nont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149B
Sandy R	edox (S5)						Red F	Parent Material (F21)
Stripped	Matrix (S6)						Very :	Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, ML	RA 149B)					Other	(Explain in Remarks)
				rocent unlo				
ndicators of	hydrophytic vegetation	and wetland	l hydrology muet he n			or proble	matic	
	hydrophytic vegetation	and wetland	hydrology must be p	resent, unie	ss disturbed	or problei	natic. I	
estrictive L	hydrophytic vegetation ayer (if observed):	and wetland	l hydrology must be p	resem, unie:	ss disturbed	or problei	matic.	
estrictive La	ayer (if observed):	and wetland	I hydrology must be p	resent, unie:	ss disturbed	or proble		rocont? Vec Y No
estrictive L	ayer (if observed):	and wetland	I hydrology must be p	resent, unie:	ss disturbed	or problei	natic.  Hydric Soil P	resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	resent, unie:	ss disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	resent, unie:	ss disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ss disturbed	or problei		resent? Yes <u>X</u> No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ss disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ss disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ss disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or probler		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
Type:	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
Type:	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ssaisturbea	or proble		resent? Yes X No
estrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	s disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	ss disturbed	or proble		resent? Yes X No
testrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	s disturbed	or probler		resent? Yes X No
estrictive La Type: Depth (inc	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	s disturbed	or probler		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	s disturbed	or proble		resent? Yes X No
estrictive La Type: Depth (ind	ayer (if observed):	and wetland	I hydrology must be p	esent, unies	s disturbed	or probler		resent? Yes X No

Project/Site:	MCES Sanitary	Sewer - Forest	Lake City/C	county: F	orest Lake/Was	shington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	·	Sta		Sampling Point:	16A
· · ·	Dylan Kru	ızel. Garrett We	ee Sectio	on, Township, Ran			T163, R36W	-
Landform (hillslope, ter				oncave, convex, no		concave		(%): 0
Subregion (LRR or MLI				45.2294687	Long:	-92.993415		
• `	· -		Bluffton Loam, Hydric soil			NWI classification		UBFx
_			this time of year? Yes		X (If no	explain in Remark	-	<u> </u>
		• •	significantly distur			umstances" prese	•	. No
			naturally problema			in any answers in		
		_	showing sampling		-	-	•	
						is, important	reatures, etc.	
Hydrophytic Vegetati		Yes X		Is the Samp				
Hydric Soil Present?			K No	within a We			No	_
Wetland Hydrology F	resent?	Yes X	( No	If yes, option	al Wetland Site	ID:		
Remarks: (Explain al Wetland			separate report.) vve average for the time o	f year				
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (n		uired: check all	that apply)			Secondary Indica	ators (minimum of to	wo required)
X Surface Water (		ulleu, check all	Water-Stained Leave	ac (R0)			l Cracks (B6)	wo required)
X High Water Tab		=	Aquatic Fauna (B13)	, ,		X Drainage Pa	, ,	
X Saturation (A3)	` '	-	Marl Deposits (B15)			Moss Trim I		
Water Marks (B		-	Hydrogen Sulfide Od				Water Table (C2)	
Sediment Depo	•	-	Oxidized Rhizospher		te (C3)	Crayfish Bu		
Drift Deposits (E		-	Presence of Reduce	-	is (C3)		/isible on Aerial Ima	gery (C0)
Algal Mat or Cru	•	-	Recent Iron Reduction	` ,	C6)		Stressed Plants (D1	. ,
Iron Deposits (E		-	Thin Muck Surface (	•	00)	X Geomorphic	,	,
	ole on Aerial Imager	ry (B7)	Other (Explain in Re	•		Shallow Aq		
<del></del>	ated Concave Surfa		Other (Explain in Net	marks)			raphic Relief (D4)	
Oparacily vegeta	ated Corleave Curia	icc (DO)				X FAC-Neutra		
						<u> </u>		
Field Observations	:							
Surface Water Prese	ent? Yes _	X No	Depth (inches):	4				
Water Table Present	? Yes_	X No	Depth (inches):	0				
Saturation Present?	Yes _	X No	Depth (inches):	0	Wetland Hydr	ology Present?	Yes X	No
(includes capillary fri	ingo)							
(IIICiuues capillary III	nige)							
. ,								
. ,		, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
. ,		, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
. ,		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			
Describe Recorded [		e, monitoring we	ell, aerial photos, previous	s inspections), if a	vailable:			

			Sar	mpling Point:	16A
			Dominance Test worksheet:		
			·		
Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC	: 4	(A
			Total Number of Dominant		
30	Yes	FAC		5	(E
20	Yes	FAC	Species Acioss Aii Gilata.		(-
-			1		
-			Percent of Dominant Species		
		<del> </del>	That Are OBL, FACW, or FAC	. 80.0	O (A
			Brayalanaa Inday workshoo		
			Total % Cover of:	Multiply	/ by:
50	_ = Total Cov	er	OBL species 10	x 1 =	10
			· -	_ v 2 =	90
10	Yes	FACII			
-			FAC species 60	_ x3=	180
10	Yes	FAC	FACU species 10	x 4 =	40
			UPI species 0		0
			Column Totals: 125	(A)	320
			Prevalence Index = B/A	= 2.50	6
-			Trovalence index Birt		
20	- Total Cov	or.	Hydrophytic Vegetation Indi	oatore:	
	_ = 10(a) COV	CI			
			1 - Rapid Test for Hydrop	hytic Vegetation	1
35	Yes	FACW	X 2 - Dominance Test is >5	0%	
10	No	FACW	X 3 - Prevalence Index <3 (	<b>)</b> 1	
-					
-					
			Problematic Hydrophytic	Vegetation1 (Ex	plain )
		· · · · · · · · · · · · · · · · · · ·	1Indicators of hydric soil and w	otland budralas	n, must
					ly musi
			be present, unless disturbed of	or problematic.	
			Definitions of Vegetation St	rata	
- ———					
					diameter a
			breast height (DBH), regardles	ss of height.	
- <u></u>	- Total Cav		Sapling/shrub - Woody plant	s less than 3 in.	DBH and
	_ = 10(a) Cov	er			
			Herb - All herbaceous (non-w	oody) plants, re	gardless o
-	-		size, and woody plants less th	an 3.28 ft tall.	
- ——		<del></del>	Woody vines - All woody vine	es areater than '	3 28 ft in
			_	o greater than t	J.20 It III
			noight.		
0	= Total Cov	er			
		<b>.</b>	Hydrophytic		
			Vegetation		
			_	X No	
	50 10 10 10 20 35 10 10	% Cover         Species?           30         Yes           20         Yes           50         = Total Cov           10         Yes           10         Yes           10         Yes           10         No           10         No           10         No           55         = Total Cov	% Cover         Species?         Status           30         Yes         FAC           20         Yes         FAC      FAC	Absolute Dominant Indicator % Cover Species? Status 30 Yes FAC 20	Absolute  Absol

SOIL Sampling Point: 16A

Depth	Matrix		Redo	x Features			nce of indicators	
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture	Remarks
0-4	10YR 2/1	100					Sandy Loam	
4-16	10YR 5/2	95	10YR 3/4	5	С	М	Sndy Clay Lm	PRC
16-24	10YR 2/1	95	10YR 3/6	5	C	М	Sndy Clay Lm	PRC
			-	_				
ype: C=Co	ncentration, D=Depletion	on, RM=Redu	uced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
vdric Soil I	Indicators:						Indicators	for Problematic Hydric Soils³:
-			Polyvalue Belov	w Surface (S	0\	MI DA 14		Muck (A10) (LRR K, L, MLRA 149B)
_ Histosol	` '			-				
	pipedon (A2)		Thin Dark Surfa			(149B)		Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N		(LKK K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	d Layers (A5)	/A / / \	X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
_	Mucky Mineral (S1)		Redox Depress	sions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
_	Gleyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Material (F21)
Stripped	d Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
				rocent unlo	ee dieturhad	or proble		
Indicators of	f hydronhytic vegetation	n and wetland	t hydrology must be n					
ndicators of	f hydrophytic vegetation	n and wetland	d hydrology must be p	neseni, unie	ss disturbed	or proble	matic.	
	f hydrophytic vegetation  Layer (if observed):	n and wetland	I hydrology must be p	oresent, unie:	ss distarbed	or proble	matic.	
Restrictive I	Layer (if observed):	n and wetland	I hydrology must be p	nesent, unie:	ss disturbed	or proble		
lestrictive l	Layer (if observed):	n and wetland	I hydrology must be p	oresent, unie:	ss disturbed	ог рговіе	Hydric Soil P	resent? Yes X No
Sestrictive I Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	resent, unle	ss disturbed	ог рговіе		resent? Yes X No
Sestrictive I Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	nesent, unles	ss disturbed	or proble		resent? Yes X No
Sestrictive I Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	nesent, unies	ss disturbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	nesent, unie:	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (ir	Layer (if observed):	n and wetland	i hydrology must be p	Jesent, unies	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	i hydrology must be p	Jesent, unies	ss distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	i hydrology must be p	левен, инне	s distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	i hydrology must be p	левен, ине	s distulbed	or proble		resent? Yes X No
Restrictive I Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	ss distulbed	or proble		resent? Yes X No
Restrictive I Type: Depth (ir	Layer (if observed):	n and wetland	d hydrology must be p	левен, инне	ss distulbed	or proble		resent? Yes X No
Restrictive I Type: Depth (ir	Layer (if observed):	n and wetland	d hydrology must be p	Jesent, unies	ss distulbed	or proble		resent? Yes X No
Restrictive I	Layer (if observed):	n and wetland	I hydrology must be p	Jesent, unies	ss distulbed	or proble		resent? Yes X No
Type: Depth (ir	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	ss distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, ине	ss distulbed	or proble		resent? Yes X No
estrictive I Type: Depth (in	Layer (if observed):	n and wetland	I hydrology must be p	левен, инне	ss distulbed	or proble		resent? Yes X No

Project/Site:	MCES Sanita	ary Sewer - Forest La	ake City/C	ounty: F	Forest Lake/Was	shington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	· · ·		te: MN	Sampling Point:	16B
Investigator(s):	Dylan	Kruzel, Garrett Wee	Sectio	on, Township, Ran	nge:	S28	, T163, R36W	
Landform (hillslope, ter				ncave, convex, n			Slope	(%): 0
Subregion (LRR or ML				15.22939203	Long:	-92.993634		
Soil Map Unit Name:			uffton loam, Hydric soil u	unit	_	NWI classification	on: N	lone
			s time of year? Yes		X (If no, e	explain in Remark	(s.)	
		• •	significantly disturb		re "Normal Circ	umstances" prese	ent? Yes X	( No
			naturally problema		lf needed, explai	in any answers in	Remarks.)	
			howing sampling		ns, transect	s, important	features, etc.	
Hydrophytic Vegetat		Yes		Is the Samp	·			
Hydric Soil Present?		Yes		within a We		Vac	No X	
Wetland Hydrology F		Yes				ID:		_
- veliana riyarology i	resent:			ii yes, option	iai Weliana Olic			
		dures here or in a seg net. Antecedent is ab	parate report.) pove average for the tim	ne of year				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
		required; check all th	iat apply)			Secondary Indica	ators (minimum of to	wo required)
Surface Water	(A1)	•	Water-Stained Leave	es (B9)		Surface Soi	il Cracks (B6)	
High Water Tab	ole (A2)		Aquatic Fauna (B13)	)		Drainage Pa	atterns (B10)	
Saturation (A3)		_	Marl Deposits (B15)			Moss Trim L	∟ines (B16)	
Water Marks (B	31)	_	Hydrogen Sulfide Od	lor (C1)		Dry-Season	Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhizospher	es on Living Roof	ts (C3)	Crayfish Bu	rrows (C8)	
Drift Deposits (I	B3)	_	Presence of Reduced	d Iron (C4)		Saturation \	Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	ust (B4)	_	Recent Iron Reductio	on in Tilled Soils (	C6)	Stunted or S	Stressed Plants (D1	)
Iron Deposits (E	•	_	_ Thin Muck Surface (0	•			c Position (D2)	
<u> </u>	ble on Aerial Ima	<del>-</del>	Other (Explain in Rer	marks)		Shallow Aqu		
Sparsely Veget	ated Concave Su	urface (B8)					raphic Relief (D4)	
						FAC-Neutra	ıl Test (D5)	
Field Observations	:							
Surface Water Prese		es No X	Depth (inches):					
Water Table Present								
Saturation Present?			_ ' ' _		Wetland Hydro	ology Present?	Yes	No X
(includes capillary fri	inge)		_ · · · _		-	-		
Describe Recorded	Data (stream gau	uge, monitoring well,	aerial photos, previous	inspections), if a	vailable:			
Remarks:			-		-		-	
rtemants.								

VEGETATION - Use scientific names of plants.				Sampling Point:16B
				Dominance Test worksheet:
				Number of Dominant Species
	A I I 4 -	D t	l	That Are OBL, FACW, or FAC: 3 (A)
	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
Populus tremuloides / Quaking aspen	50	Yes	FAC	Species Across All Strata: 7 (B)
2.				
3				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 42.9 (A/B)
5.				
6.			<del></del>	Prevalence Index worksheet:
7		- Total Cau		Total % Cover of: Multiply by:
Capling/Charle Charters (Dataine) 45 ft	50	_ = Total Cov	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )	20	Vaa	<b>FAC</b>	FACW species 5 x 2 = 10
Rhamnus cathartica / European buckthorn      Agenth and turn amorticanum / Tachbach area	30	Yes	FAC	FAC species 90 x 3 = 270
2. Zanthoxylum americanum / Toothachetree	10	Yes	FACU	FACU species 25 x 4 = 100
3.		_	<del> </del>	UPL species x 5 = 100
4				Column Totals:140 (A)480 (B)
5.				
6.				Prevalence Index = B/A = 3.43
7		T-4-1 O		Hadron badis Vernadadis in India da inc
Harle Otractions (Distained E. f.	40	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )	1-1:40	V	FACIL	1 - Rapid Test for Hydrophytic Vegetation
Taraxacum officinale / Red seeded dandelion, Common dand      Annual and a seeded dandelion, Common dand      Annual and a seeded dandelion, Common dan		Yes	FACU	2 - Dominance Test is >50%
2. Apocynum androsaemifolium / Spreading dogbane, Bitter do	10	Yes	UPL	3 - Prevalence Index ≤3.0¹
3. Bromus inermis / Smooth brome, Smooth brome, Hungarian	10	Yes	UPL	4 - Morphological Adaptations¹ (Provide supporting
4. Poa pratensis / Kentucky blue grass	5	No No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5. Phalaris arundinacea / Reed canary grass	5	No	FACW	
6				¹Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				Definitions of Vegetation Strata
9.				
10		<del>-</del>		Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11				breast height (DBH), regardless of height.
12	40	- Total Cau		Sapling/shrub - Woody plants less than 3 in. DBH and
Manda Vina Charlesa (Diet sine) 20 ft	40	_ = Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )  1. Vitis riparia / River-bank grape	10	Voo	EAC	Herb - All herbaceous (non-woody) plants, regardless of
	10	Yes	FAC_	size, and woody plants less than 3.28 ft tall.
2.		_	<del> </del>	Woody vines - All woody vines greater than 3.28 ft in
3.		_	<del> </del>	height.
4.		- Total Cau		
	10	_ = Total Cov	er	Hydrophytic
				Vegetation
				Present? Yes No X
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 16B

Depth	Matrix		Redox	Features						
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	
0-18	10YR 3/3	100	`				Sndy Clay Lm			
18-24	10YR 2/1	100				_	Sndy Clay Lm			
							chay chay zim			
								-		
				<del></del> -				-		
				<del></del>				-		
Type: C=Cor	centration, D=Depletion,	RM=Reduc	ed Matrix, MS=Mask	ed Sand Grain	ns.		²Loca	tion: PL=P	ore Lining, M=Matrix.	
Hydric Soil II	ndicators:						Indicators	for Proble	ematic Hydric Soils <sup>3</sup>	:
Histosol			Polyvalue Below	Surface (S8)	(I RR R M	I RΔ 149			) (LRR K, L, MLRA	
	ipedon (A2)	-	Thin Dark Surfac						edox (A16) (LRR K, I	
		_				430)				-
Black His		_	Loamy Mucky Mi		rr r, L)			-	at or Peat (S3) (LRR	r, L, r()
, ,	n Sulfide (A4)	_	Loamy Gleyed M						7) (LRR K, L)	<b>.</b>
	Layers (A5)	_	Depleted Matrix (						Surface (S8) (LRR	K, L)
	Below Dark Surface (A1	1) _	Redox Dark Surf						ce (S9) (LRR K, L)	:
	rk Surface (A12)	_	Depleted Dark S					•	Masses (F12) (LRF	
	ucky Mineral (S1)	_	Redox Depression	ns (F8)					plain Soils (F19) <b>(ML</b> I	
Sandy G	leyed Matrix (S4)						Mesic	Spodic (T	A6) (MLRA 144A, 1	45, 149B)
	edox (S5)						Red F	Parent Mate	erial (F21)	
Stripped	Matrix (S6)						Very	Shallow Da	ark Surface (TF12)	
Dark Sui	face (S7) (LRR R, MLR	A 149B)					Other	(Explain ir	n Remarks)	
Indicators of	hydrophytic vegetation ar	nd wetiand r	nyarology must be pre	esent, uniess	disturbed o	r problem	iatic.			
	ayer (if observed):									
Type:										
Depth (in	ches):						Hydric Soil P	resent?	Yes N	<u> X</u>
Remarks:										

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	e City/Co	ounty:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:	<u> </u>		TKDA			ate: MN	Sampling Point:	17A
Investigator(s):	Dylan K	Cruzel, Garrett Wee	Section	n, Township, Rar	nge:	S28	, T163, R36W	
Landform (hillslope, te			Local relief (con	icave, convex, n	ione):	concave	Slope	e (%): 0
Subregion (LRR or MI			 Lat: 45	5.23017338	Long:	-92.993767	'88 Datur	n: WGS 84
Soil Map Unit Name:			on Loam, Hydric soil ur	nit		NWI classificati	on: P	EM1C
Are climatic / hydrolog	gic conditions on th	e site typical for this	time of year? Yes	No	X (If no,	_ explain in Remarl	ks.)	
Are Vegetation	, Soil	, or Hydrology	significantly disturb	ed?	Are "Normal Circ	cumstances" pres	ent? Yes	X No
			naturally problemat		If needed, expla	ain any answers ir	Remarks.)	
SUMMARY OF F	INDINGS - Atta	ach site map sh	owing sampling	point location	ons, transec	ts, important	features, etc.	
Hydrophytic Vegeta		Yes X	No	Is the Samp		, ,	,	
Hydric Soil Present		Yes X	No	within a We		Yes X	No	
Wetland Hydrology		Yes X	No No		nal Wetland Site	· · · · · · · · · · · · · · · · · · ·		_
- Trouding Flydrology				you, option	Tai VVolidi la Oile			
		ures here or in a sepa Antecedent is above a	arate report.) average for the time of y	year				
HYDROLOGY								
Wetland Hydrolog	v Indicatore:							
, ,	•	equired; check all that	t apply)			Socondary India	ators (minimum of	two required)
Surface Water		equired, check all trial	Water-Stained Leaves	(RQ)			il Cracks (B6)	.wo required)
High Water Ta	` '	_	Aquatic Fauna (B13)	, (69)			atterns (B10)	
Saturation (A3		_	Marl Deposits (B15)				Lines (B16)	
Water Marks (		_	Hydrogen Sulfide Odo	or (C1)			n Water Table (C2)	
Sediment Dep	•		Oxidized Rhizosphere		te (C3)	Crayfish Bu		
Drift Deposits		_	Presence of Reduced	-	13 (03)		Visible on Aerial Im	agery (C0)
Algal Mat or C			Recent Iron Reduction	` '	(C6)		Stressed Plants (D	
Iron Deposits (		_	Thin Muck Surface (C	•	(00)	X Geomorphi	=	')
	ible on Aerial Imag		Other (Explain in Rem	•		Shallow Aq		
	tated Concave Sur	· · · · —	Curor (Explain in real	idino)			raphic Relief (D4)	
		(20)				X FAC-Neutra		
						<del></del>		
Field Observations								
Surface Water Pres		s NoX	- ' ` <i></i>					
Water Table Preser		S NoX	- ' ` /					
Saturation Present?		s <u>X</u> No	Depth (inches):	20	Wetland Hydi	rology Present?	Yes X	No
(includes capillary f	ringe)							
Describe Recorded	Data (stream gaug	ge monitoring well a	erial photos, previous i	inspections) if a	vailable:			
Booting Hooding	Data (otroam gaas	jo, monitoring won, a	ional priotos, provioso i	nopodiono), n d	.valiable:			
Remarks:								

				Sampling Point: 17A
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 7 (A)
ree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Descious
. Salix bebbiana / Gray willow, Bebb's willow	30	Yes	FACW	Total Number of Dominant
. Salix interior / Sandbar willow	15	Yes	FACW	Species Across All Strata: 7 (B)
· <u></u>				Percent of Dominant Species
·				·
				That Are OBL, FACW, or FAC: 100.0 (A/I
				Prevalence Index worksheet:
·				Total % Cover of: Multiply by:
	45	= Total Cov	er er	OBL species 0 x 1 = 0
apling/Shrub Stratum (Plot size: 15-ft )				FACW species 95 x 2 = 190
Salix bebbiana / Gray willow, Bebb's willow	20	Yes	FACW	FAC species 25 x 3 = 75
Rhamnus cathartica / European buckthorn	15	Yes	FAC	FACU species 0 x 4 = 0
Salix amygdaloides / Peachleaf willow	15	Yes	FACW	UPL species 0 x 5 = 0
Cornus alba / Red osier	10	No	FACW	Column Totals: 120 (A) 265 (
				(1) 200 (
				Prevalence Index = B/A = 2.21
				Trevalence index = B/A = 2.21
	60	= Total Cov	ver	Hydrophytic Vegetation Indicators:
erb Stratum (Plot size: 5-ft )		_		1 - Rapid Test for Hydrophytic Vegetation
Phalaris arundinacea / Reed canary grass	5	Yes	FACW	X 2 - Dominance Test is >50%
- Halane dranamacou / Hood candi y grace				X 3 - Prevalence Index ≤3.0¹
-	<del></del>			4 - Morphological Adaptations¹ (Provide supporting
·				Problematic Hydrophytic Vegetation¹ (Explain )
·		<del>-</del>	<del></del>	Problematic Hydrophytic vegetation (Explain)
·				the disease of headrings it and continued headrals are const
				¹Indicators of hydric soil and wetland hydrology must
·				be present, unless disturbed or problematic.
· <u> </u>				Definitions of Vegetation Strata
· <u> </u>				Definitions of Vegetation Strata
D				Tree Mediumbate 2 in (7.6 am) as mass in diameter of
1				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
2				
/oody Vine Stratum (Plot size: 30-ft )	5	_ = Total Cov	er er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Vitis riparia / River-bank grape	10	Yes	FAC	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
				Woody vines - All woody vines greater than 3.28 ft in height.
	10	_ = Total Cov	er er	Hydrophytic
				Vegetation
				Present?         YesX No

SOIL Sampling Point: 17A

Depth	Matrix		Redo	x Features			nce of indicators	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-4	10YR 2/1	100					Sandy Loam	
4-20	10YR 5/2	90	10YR 3/4	10	С	М	Sndy Clay Lm	PRC
20-24	10YR 2/2	90	10YR 3/6	10	С	М	Sndy Clay Lm	PRC
				_				
	-							
				_				
	-			_				
ype: C=Co	ncentration, D=Depletion	on, RIVI=Reau	iced Matrix, MS=Mas	ked Sand Gr	ains.		-Loca	tion: PL=Pore Lining, M=Matrix.
ydric Soil I	ndicators:						Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histosol			Polyvalue Belov	w Surface (S	3) <b>(LRR R</b> ,	MLRA 14		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	-				Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed		. , ,			Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
Thick Da	ark Surface (A12)		Depleted Dark	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L, R)
Sandy N	Mucky Mineral (S1)		Redox Depress	ions (F8)			Piedn	nont Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Material (F21)
Stripped	d Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
ladiantora of								
Indicators of	hydrophytic vegetation	n and wetland	hydrology must be p	resent, unies	ss disturbed	or proble	matic.	
	hydrophytic vegetation -ayer (if observed):	n and wetland	I hydrology must be p	resent, unles		or proble	matic.	
		n and wetland	I hydrology must be p	resent, unles		or proble		
Restrictive L	_ayer (if observed):	n and wetland	I hydrology must be p	resent, unles	is disturbed	ог рговіе	Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resent, unies	s disturbed	ог рговіе		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resent, umes	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resent, umes	s distulbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unles	s distulbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unles	susuibeu	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, umes	susuibeu	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, umes	sustantea	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustanted	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustantea	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustantea	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustantea	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustanted	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	sustanted	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unles	sustanted	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	sustanted	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	Sustained	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resert, unies	Sustained	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	s distulbed	or proble		resent? Yes X No
Restrictive L	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	s distulbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	s distulbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	s distulbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	s distulbed	or proble		resent? Yes X No
Restrictive I Type: Depth (in	_ayer (if observed):	n and wetland	I hydrology must be p	resett, utiles	is disturbed	or proble		resent? Yes X No

Project/Site:	MCES Sanitary	y Sewer - Forest La	ake (	City/County:	Forest Lake/W	ashington	Sampling Date:	10/19/2023
	-		TKDA	·	S	tate: MN	Sampling Point:	17B
Investigator(s):	Dylan Kı	ruzel, Garrett Wee	5	Section, Township,			8, T163, R36W	
Landform (hillslope, te	errace, etc):	Hillslope	Local reli	ef (concave, conve	ex, none):	none	Slope	(%): 3
Subregion (LRR or ML	_RA):	LRR K	Lat:	45.23022873	Long:	-92.99381	712 Datun	n: WGS 84
Soil Map Unit Name:		123 - Dundas fir	ne sandy loam, no	n-hydric soil unit		NWI classifica	tion: PE	EM1C
Are climatic / hydrolog	ic conditions on the	e site typical for this	s time of year?	/es 1	No X (If no	, explain in Rema	rks.)	
Are Vegetation	, Soil	, or Hydrology	significantly of	disturbed?	Are "Normal Ci	rcumstances" pres	sent? Yes	K No
Are Vegetation	, Soil	, or Hydrology	naturally pro	blematic?	(If needed, exp	lain any answers i	n Remarks.)	
SUMMARY OF F	INDINGS - Atta	ich site map s	howing samp	ling point loca	ations, transe	cts, importan	t features, etc.	
Hydrophytic Vegeta	tion Present?	Yes	No X	Is the Sa	ampled Area			
Hydric Soil Present		Yes			Wetland?	Yes	No X	
Wetland Hydrology		Yes	No X		otional Wetland Si			_
Remarks: (Explain a								
HYDROLOGY								
Wetland Hydrolog	v Indicators:							
Primary Indicators (	•	quired: check all th	nat annly)			Secondary Indi	cators (minimum of t	wo required)
Surface Water		quireu, crieck air til	Water-Stained I	eaves (R9)			oil Cracks (B6)	wo required)
High Water Tal	` '		Aquatic Fauna	, ,			Patterns (B10)	
Saturation (A3			Marl Deposits (	,			Lines (B16)	
Water Marks (F	•	_	Hydrogen Sulfic	•			on Water Table (C2)	
Sediment Depo	•	_		spheres on Living	Roots (C3)		urrows (C8)	
Drift Deposits (	· · · · ·	_	_	duced Iron (C4)	(55)		Visible on Aerial Ima	agery (C9)
Algal Mat or Ci	` '	_	_	duction in Tilled Sc	oils (C6)		Stressed Plants (D1	• , , ,
Iron Deposits (		·	Thin Muck Surfa				ic Position (D2)	,
I —	ible on Aerial Image	ery (B7)	Other (Explain i				quitard (D3)	
_	tated Concave Surf	-	(	,			graphic Relief (D4)	
, ,		, ,					ral Test (D5)	
Field Observations								
Surface Water Pres		No X	Denth (inches	١٠				
Water Table Presen			_ ' '		-			
Saturation Present?			_ · ·	· ———	- Wotland Hy	drology Present?	Vec	No X
(includes capillary fi		NO	Deptil (iliches	)	- vveuanu nye	urology Fresent?	Yes	NO
(Includes capillary II	ilige)							
Describe Recorded	Data (stream gaug	je, monitoring well,	, aerial photos, pre	vious inspections)	, if available:			
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point:17B
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 1 (A)
Tree Stratum         (Plot size:	% Cover	Species?	Status	Total Number of Dominant Species Across All Strata: 2 (B)
3				Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/B)
6				Prevalence Index worksheet:  Total % Cover of: Multiply by:
	0	= Total Cov	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )  1. Salix interior / Sandbar willow	15	Yes	FACW	FACW species
2. 3.				FACU species 45 x 4 = 180
4.				UPL species 10 x 5 = 50 (A) 280 (B)
5				
6				Prevalence Index = B/A =3.5
Herb Stratum (Plot size: 5-ft )	15	_ = Total Cov	er	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
Poa pratensis / Kentucky blue grass	35	Yes	FACU	2 - Dominance Test is >50%
2. Solidago gigantea / Smooth goldenrod	10	No	FACW	3 - Prevalence Index ≤3.0¹
Solidago altissima / Canada goldenrod     Promus incernis / Smooth brome, Smooth brome, Hungarian	10	No No	FACU	4 - Morphological Adaptations¹ (Provide supporting
<ol> <li>Bromus inermis / Smooth brome, Smooth brome, Hungarian</li> <li></li></ol>		No	UPL	Problematic Hydrophytic Vegetation¹ (Explain )
6.				¹Indicators of hydric soil and wetland hydrology must
7.				be present, unless disturbed or problematic.
8. 9.				Definitions of Vegetation Strata
10				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11 12.		_		breast height (DBH), regardless of height.
	65	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )  1.				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2. 3.				Woody vines - All woody vines greater than 3.28 ft in height.
4		= Total Cov		
		_ 10101 001	Ci	Hydrophytic Vegetation Present?  Yes NoX
Remarks: (Explain alternative procedures here or in a separate	report.)			
Tolliano. (Expain atolliano piesessa es incis e in a ele-	10001			

SOIL Sampling Point: 17B

Depth	Matrix		Redo:	x Features			nce of indicators				
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture		Remarl	ks	
0-18	10YR 3/3	100					Sandy Loam				
18-24	10YR 2/1	98	10YR 3/4	2	С	М	Sndy Clay Lm	DRC			
				_							
			•								
							•	-			
							-	-			
							·				
				_			·				
				_							
								-			
			•				-				
				_			·				
Type: C=Cor	centration, D=Depletion	n. RM=Redu	 iced Matrix. MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=P	ore Lining, M	1=Matrix.	
			, , , , , , , , , , , , , , , , , , , ,								
lydric Soil Ir									ematic Hydr		
Histosol	(A1)		Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> ,	MLRA 149	<b>9B)</b> 2 cm	Muck (A10	) (LRR K, L	, MLRA 149	B)
Histic Ep	ipedon (A2)		Thin Dark Surfa	ice (S9) (LF	RR R, MLRA	149B)	Coas	Prairie Re	edox (A16) (	(LRR K, L, F	<b>?</b> )
Black His	stic (A3)		Loamy Mucky N	/lineral (F1)	(LRR K, L)			-	nt or Peat (S		L, R)
Hydroger	n Sulfide (A4)		Loamy Gleyed	Matrix (F2)			Dark	Surface (S	7) <b>(LRR K</b> ,	L)	
Stratified	Layers (A5)		Depleted Matrix	(F3)			Polyv	alue Below	Surface (S8	3) <b>(LRR K,</b>	L)
Depleted	l Below Dark Surface (A	<b>\11</b> )	Redox Dark Su	rface (F6)			Thin I	Dark Surfac	ce (S9) (LR	R K, L)	
Thick Da	rk Surface (A12)		Depleted Dark	Surface (F7)			Iron-N	/langanese	Masses (F1	2) (LRR K	, L, R)
Sandy M	ucky Mineral (S1)		Redox Depress	ions (F8)			Piedn	nont Flood	olain Soils (F	19) <b>(MLRA</b>	149B)
Sandy G	leyed Matrix (S4)						Mesic	Spodic (Ta	A6) (MLRA	144A, 145,	149B)
Sandy R	edox (S5)						Red F	Parent Mate	erial (F21)		
	Matrix (S6)								ırk Surface (	TF12)	
	face (S7) (LRR R, ML	RA 149B)							n Remarks)		
<u></u>							<u> </u>				
Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	ss disturbed	or proble	natic.				
Restrictive L	ayer (if observed):										
Restrictive La	ayer (if observed):										
							Hydric Soil P	resent?	Yes	No	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Туре:							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X

Project/Site:	MCES Sanitary	Sewer - Forest L	.ake C	city/County:	Forest Lake/Wa	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA			ate: MN	Sampling Point:	18A
	Dylan Kru	ızel. Garrett Wee	e S	ection, Township, R			T163, R36W	-
Landform (hillslope, ter				ef (concave, convex		concave		(%): 1
Subregion (LRR or ML			Lat:	•	Long:	-92.993421		
Soil Map Unit Name:			- Dundas fine sandy			NWI classification		lone
Are climatic / hydrologi			-		X (If no	_ explain in Remark	-	
		• •	•	listurbed?		cumstances" prese	•	( No
	, Soil ,					ain any answers in		<u> </u>
SUMMARY OF FI						•	•	
					·	oto, important	icatures, etc.	
Hydrophytic Vegetati		Yes X			npled Area			
Hydric Soil Present?		Yes X		within a V			No	-
Wetland Hydrology F	resent?	Yes X	No	If yes, opt	onal Wetland Site	e ID:		
Remarks: (Explain a Wetland	Iternative procedure d criteria is met. An			me of year				
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (n		uired: check all t	hat apply)			Secondary Indica	ators (minimum of to	wo required)
Surface Water (	·	uncu, check an t	Water-Stained L	eaves (RQ)			Cracks (B6)	wo required)
High Water Tab	` '	_	Aquatic Fauna (	` ,			atterns (B10)	
Saturation (A3)	` ,	_	Marl Deposits (E	•		Moss Trim L		
Water Marks (B		_	Hydrogen Sulfid	•			Water Table (C2)	
Sediment Depo	•	_		spheres on Living R	oots (C3)	Crayfish Bu		
Drift Deposits (F		_	Presence of Rec		,		/isible on Aerial Ima	agery (C9)
Algal Mat or Cru	•	_	<del>_</del>	duction in Tilled Soil	s (C6)		Stressed Plants (D1	· , ,
Iron Deposits (E		_	Thin Muck Surfa	ace (C7)	, ,	X Geomorphic	Position (D2)	,
Inundation Visib	ole on Aerial Imager	ry (B7)	Other (Explain in	n Remarks)		Shallow Aqu	uitard (D3)	
Sparsely Vegeta	ated Concave Surfa	ace (B8)	_			X Microtopogr	aphic Relief (D4)	
						X FAC-Neutra	l Test (D5)	
Field Observations		NI- V	Double (in the co)					
Surface Water Prese	-		Depth (inches)					
Water Table Present	-		Depth (inches)		Motlered Hude	luala eu c Duana eu t 2	Vaa V	Na
Saturation Present?	Yes _	NoX	Depth (inches)	):	wetiand Hyd	Irology Present?	Yes X	No
(includes capillary fri	nge)							
Describe Recorded I	Data (stream gauge	e. monitorina well	I. aerial photos, pre	vious inspections), i	f available:			
	( 99-	,	, р, р	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Remarks:								

ominant pecies? Yes Yes Yes  Total Cove Yes  Total Cove	FAC	Dominance Test worksheet:           Number of Dominant Species           That Are OBL, FACW, or FAC:         6         (A)           Total Number of Dominant         8         (B)           Percent of Dominant Species         8         (B)           Percent of Dominant Species         75.0         (A/B)           Prevalence Index worksheet:         Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         70         x 2 = 140           FAC species         70         x 3 = 210           FACU species         15         x 4 = 60           UPL species         0         x 5 = 0           Column Totals:         155         (A)         410         (B)           Prevalence Index = B/A =         2.65
yes Yes Yes Total Cove	FACW FACW FACW FACW	Species Across All Strata:         8         (B)           Percent of Dominant Species         That Are OBL, FACW, or FAC:         75.0         (A/B           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         70         x 2 = 140           FAC species         70         x 3 = 210           FACU species         15         x 4 = 60           UPL species         0         x 5 = 0           Column Totals:         155         (A)         410         (B
Yes Yes Total Cove	FACW FACW	Species Across All Strata:         8         (B)           Percent of Dominant Species         That Are OBL, FACW, or FAC:         75.0         (A/B           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         70         x 2 = 140           FAC species         70         x 3 = 210           FACU species         15         x 4 = 60           UPL species         0         x 5 = 0           Column Totals:         155         (A)         410         (B
Yes  Total Cove  Yes  Total Cove	FAC	Percent of Dominant Species           That Are OBL, FACW, or FAC:         75.0         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         70         x 2 = 140           FAC species         70         x 3 = 210           FACU species         15         x 4 = 60           UPL species         0         x 5 = 0           Column Totals:         155         (A)         410         (B
Total Cove Yes  Total Cove	FAC	That Are OBL, FACW, or FAC:         75.0         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         70         x 2 =         140           FAC species         70         x 3 =         210           FACU species         15         x 4 =         60           UPL species         0         x 5 =         0           Column Totals:         155         (A)         410         (B)
Total Cove	FAC	That Are OBL, FACW, or FAC:         75.0         (A/B)           Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         70         x 2 =         140           FAC species         70         x 3 =         210           FACU species         15         x 4 =         60           UPL species         0         x 5 =         0           Column Totals:         155         (A)         410         (B)
Total Cove	FAC	Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         70         x 2 = 140           FAC species         70         x 3 = 210           FACU species         15         x 4 = 60           UPL species         0         x 5 = 0           Column Totals:         155         (A)         410         (B
Total Cove	FAC	Total % Cover of:         Multiply by:           OBL species         0         x 1 =         0           FACW species         70         x 2 =         140           FAC species         70         x 3 =         210           FACU species         15         x 4 =         60           UPL species         0         x 5 =         0           Column Totals:         155         (A)         410         (B
Yes Total Cove	FAC	OBL species         0         x 1 =         0           FACW species         70         x 2 =         140           FAC species         70         x 3 =         210           FACU species         15         x 4 =         60           UPL species         0         x 5 =         0           Column Totals:         155         (A)         410         (B
Yes Total Cove	FAC	FACW species       70       x 2 =       140         FAC species       70       x 3 =       210         FACU species       15       x 4 =       60         UPL species       0       x 5 =       0         Column Totals:       155       (A)       410       (B
Total Cove		FAC species       70       x 3 =       210         FACU species       15       x 4 =       60         UPL species       0       x 5 =       0         Column Totals:       155       (A)       410       (B
Total Cove		FACU species       15       x 4 =       60         UPL species       0       x 5 =       0         Column Totals:       155       (A)       410       (B)
Total Cove		UPL species         0         x 5 =         0           Column Totals:         155         (A)         410         (B)
Total Cove		Column Totals: 155 (A) 410 (B
Total Cove		(,,(
Total Cove		Prevalence Index = B/A = 2.65
Total Cove		Prevalence index – B/A – 2.05
	r	
Yes		Hydrophytic Vegetation Indicators:
Yes	E4.0	1 - Rapid Test for Hydrophytic Vegetation
	FAC	X 2 - Dominance Test is >50%
Yes	FACU	X 3 - Prevalence Index ≤3.0¹
Yes	FACU	4 - Morphological Adaptations¹ (Provide supporting
		Problematic Hydrophytic Vegetation¹ (Explain )
		¹Indicators of hydric soil and wetland hydrology must
		be present, unless disturbed or problematic.
		Definitions of Vanatation Otracts
		Definitions of Vegetation Strata
		Tree Woody plants 2 in (7.6 cm) or more in diameter at
		<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
		Sapling/shrub - Woody plants less than 3 in. DBH and
Total Cove	r	greater than or equal to 3.28 ft (1 m) tall.
Yes	FAC	<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
		Woody vines - All woody vines greater than 3.28 ft in
		height.
Total Cove	r	Hydrophytic Vegetation
		Present?         YesX No
	Total Cove	Total Cover

SOIL Sampling Point: \_\_\_\_\_18A

	ption: (Describe to th	e depth nee			or confirm	the abser	nce of indicator	s.)
Depth	Matrix			Features				
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-4	10YR 2/1	100					Loam	
4-30	10YR 5/1	90	7.5YR 4/6	10	C	M	Sndy Clay Lm	PRC
								-
								-
¹Type: C=Cond	centration, D=Depletion	RM=Reduc	ed Matrix MS=Mask	ed Sand Gr	ains .		²l oca	ation: PL=Pore Lining, M=Matrix.
		.,						
Hydric Soil In								s for Problematic Hydric Soils³:
Histosol (	A1)	_	Polyvalue Belov	v Surface (S8	B) <b>(LRR R,</b>	MLRA 149	<b>9B)</b> 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
Histic Epi	pedon (A2)	_	Thin Dark Surfa	ce (S9) (LR	R R, MLRA	(149B)	Coas	t Prairie Redox (A16) (LRR K, L, R)
Black His	tic (A3)		Loamy Mucky M	lineral (F1)	(LRR K, L)		5 cm	Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen	Sulfide (A4)	-	Loamy Gleyed N	Matrix (F2)			Dark	Surface (S7) (LRR K, L)
	Layers (A5)	-	X Depleted Matrix					value Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	-	Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	k Surface (A12)	_	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)	-	Redox Depressi					mont Floodplain Soils (F19) (MLRA 149B)
		-	Redux Deplessi	ons (Fo)				
	eyed Matrix (S4)							C Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Re								Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Surf	ace (S7) (LRR R, MLI	RA 149B)					Other	r (Explain in Remarks)
<sup>3</sup> Indicators of h	nydrophytic vegetation a	and wetland	hydrology must be p	resent, unles	s disturbed	or probler	natic.	
	yer (if observed):							
	iyer (ii observed).							
Type:	L \.		<del></del>				Usedela Osli D	
Depth (inc	hes):		<u> </u>				Hydric Soil P	resent? Yes X No
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest La	ke City/C	County:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		Sta	ate: MN	Sampling Point:	18B
Investigator(s):	Dylan Kr	uzel, Garrett Wee	Section	on, Township, Ra	ange:	S28	3, T163, R36W	
Landform (hillslope, te	errace, etc):	Hillslope	Local relief (co	oncave, convex,	none):	none	Slope	e (%): 3
Subregion (LRR or ML	_RA):				Long:	-92.993573	Datur	n: WGS 84
Soil Map Unit Name:			e sandy loam, non-hy			NWI classificat	ion:	Vone
Are climatic / hydrolog				No	X (If no,	explain in Remar	ks.)	
	, Soil,				Are "Normal Circ	cumstances" pres	ent? Yes	X No
			naturally problem		•	ain any answers ir	•	
SUMMARY OF FI	INDINGS - Atta	ch site map sl	nowing sampling	j point locati	ons, transec	ts, important	features, etc.	
Hydrophytic Vegeta	tion Present?	Yes	No X	Is the Sam	pled Area			
Hydric Soil Present?	?	Yes	No X	within a W	etland?	Yes	No X	
Wetland Hydrology	Present?	Yes	No X	If yes, option	onal Wetland Site	e ID:		
Remarks: (Explain a Wetlar			arate report.) ove average for the tir	ne of year				
HYDROLOGY								
Wetland Hydrology	y Indicators:							
Primary Indicators (		quired; check all the	at apply)			Secondary India	ators (minimum of t	two required)
Surface Water	(A1)		Water-Stained Leav	es (B9)		Surface Sc	il Cracks (B6)	
High Water Tab	ole (A2)		Aquatic Fauna (B13	)		Drainage F	atterns (B10)	
Saturation (A3)	)		Marl Deposits (B15)			Moss Trim	Lines (B16)	
Water Marks (E	31)		Hydrogen Sulfide O	dor (C1)		Dry-Seaso	n Water Table (C2)	
Sediment Depo			Oxidized Rhizosphe	•	ots (C3)		urrows (C8)	
Drift Deposits (	,		Presence of Reduce	. ,			Visible on Aerial Im	• , , ,
Algal Mat or Cr			Recent Iron Reducti		(C6)		Stressed Plants (D	1)
Iron Deposits (	•		Thin Muck Surface (				ic Position (D2)	
	ble on Aerial Image	-	Other (Explain in Re	emarks)			juitard (D3)	
Sparsely vege	tated Concave Surf	ace (bo)					raphic Relief (D4) al Test (D5)	
					T	170-Neuti	ar rest (DO)	
Field Observations	<b>3</b> :							
Surface Water Pres			_ Depth (inches):					
Water Table Presen			_ ' ' _					
Saturation Present?		No X	Depth (inches):		Wetland Hyd	rology Present?	Yes	No X
(includes capillary fr	ringe)							
Describe Recorded	Data (stream gauge	e. monitorina well.	aerial photos, previous	s inspections), if	available:			
	3.13	,	, , , , , , , , , , , , , , , , , , ,	,				
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point:18B
·	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 3 (A)
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Species?	Indicator Status	_
Fraxinus pennsylvanica / Green ash	30	Yes	FACW	Total Number of Dominant
2.				Species Across All Strata: 6 (B)
3.				
4.				Percent of Dominant Species  That Are ORL FACW or FAC: 50.0 (A/R)
5.	<u> </u>			That Are OBL, FACW, or FAC: 50.0 (A/B)
6.				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	30	_ = Total Cov	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )		.,	<b>5.0</b>	FACW species 30 x 2 = 60
Rhamnus cathartica / European buckthorn	40	_ Yes	FAC	FAC species 50 x 3 = 150
2. Rhus copallinum / Winged sumac	5	No	UPL	FACU species 35 x 4 = 140
3.				UPL species 5 x 5 = 25
4				Column Totals: <u>120</u> (A) <u>375</u> (B)
5.		_		
6. 7.		_		Prevalence Index = B/A = 3.13
	45	= Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		=		1 - Rapid Test for Hydrophytic Vegetation
1. Toxicodendron radicans / Eastern poison ivy	10	Yes	FAC	2 - Dominance Test is >50%
2. Geranium robertianum / Robert's geranium	5	Yes	FACU	3 - Prevalence Index ≤3.0¹
3. Polygonatum biflorum / King solomon's-seal	5	Yes	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
4.				Problematic Hydrophytic Vegetation¹ (Explain )
5.				
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				Definitions of Venetation Streets
9				Definitions of Vegetation Strata
10				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11				breast height (DBH), regardless of height.
12	20	= Total Cov		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )		_ = 10(a) Cov	er	greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )  1. Parthenocissus quinquefolia / Virginia creeper	25	Yes	FACU	Herb - All herbaceous (non-woody) plants, regardless of
2.			1700	size, and woody plants less than 3.28 ft tall.
3.		_		Woody vines - All woody vines greater than 3.28 ft in
4.		_		height.
	25	= Total Cov	er	
	-	_		Hydrophytic
				Vegetation Present? Yes No X
				Present?         Yes         No         X
Remarks: (Explain alternative procedures here or in a separate	e report.)			
	. ,			

SOIL Sampling Point: 18B Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features

(inches)	Color (moist)	<u></u> %	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remarks	<b>.</b>
0-24	10YR 2/2	100					Sandy Loam			
				-						
	-	<del></del>								
	-									
-										
¹Type: C=Cor	ncentration, D=Depletion	on, RM=Redu	iced Matrix, MS=Mask	ed Sand Gr	ains.		²Loca	tion: PL=Po	ore Lining, M=	Matrix.
Hydric Soil I	ndicators:						Indicators	for Proble	matic Hydric	: Soils³:
Histosol			Polyvalue Below	Surface (S	3) <b>(LRR R.</b> I	MLRA 149			(LRR K, L, I	
	pipedon (A2)		Thin Dark Surface						dox (A16) <b>(L</b>	
Black His			Loamy Mucky M			1.102,				(LRR K, L, R)
					(LIXIX IX, L)					
	n Sulfide (A4)		Loamy Gleyed M						7) (LRR K, L)	
	Layers (A5)		Depleted Matrix						Surface (S8)	
_	d Below Dark Surface (	(A11)	Redox Dark Surf						e (S9) (LRR	
_	ark Surface (A12)		Depleted Dark S					-	-	) (LRR K, L, R)
Sandy M	lucky Mineral (S1)		Redox Depression	ons (F8)			Piedm	ont Floodp	lain Soils (F1	9) (MLRA 149B)
Sandy G	leyed Matrix (S4)						Mesic	Spodic (TA	46) <b>(MLRA 1</b>	44A, 145, 149B)
Sandy R	edox (S5)						Red F	arent Mate	erial (F21)	
Stripped	Matrix (S6)								rk Surface (TF	=12)
	rface (S7) (LRR R, MI	LRA 149B)						(Explain in		,
	ilado (o/) (Eliteri, ilii	2.01.102,						(Explain iii	r (ornario)	
					a diaturbad					
3Indicators of	hydrophytic vegetation	and wetland	l hydrology must he nr				natio			
<sup>3</sup> Indicators of	hydrophytic vegetation	n and wetland	hydrology must be pr	esent, unies	ss disturbed	or problem	natic.			
		n and wetland	hydrology must be pr	esent, unies	ss disturbed	or problem	natic.			
Restrictive L	ayer (if observed):			esent, unies	ss disturbed	or problem	natic.			
Restrictive L	ayer (if observed):	n and wetland		esent, unies	ss disturbed	or problem		ropont?	Voc	No. V
Restrictive L	ayer (if observed):			esent, unies	s disturbed	or problem	Hydric Soil Pi	resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unles	s disturbed	or problem		resent?	Yes	NoX
Restrictive L	ayer (if observed):			esent, unles	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unles	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s distulbed	or problem		resent?	Yes	NoX
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unies	s disturbed	or problem		resent?	Yes	No X
Restrictive L Type: Depth (inc	ayer (if observed):			esent, unles	s disturbed	or problem		resent?	Yes	No X

Project/Site:	MCES Sanitary	Sewer - Forest	Lake	City/County:	Forest Lake/W	/ashington	Sampling Date:	10/19/2023
Applicant/Owner:	•		TKDA	· · —		State: MN	Sampling Point:	19A
Investigator(s):	Dylan Kru	uzel. Garrett We	e	Section, Townshi	-		T163, R36W	-
Landform (hillslope, ter					vex, none):	concave		(%): 0
Subregion (LRR or ML		LRR K		•				• •
Soil Map Unit Name:			fine sandy loam, i			NWI classification		lone
Are climatic / hydrologi						NVVI classification, explain in Remark	-	ione
		* *	•			•	•	' No
	, Soil,	_		y disturbed?		ircumstances" prese		( No
	, Soil,	_				olain any answers in	•	
SUMMARY OF FI	NDINGS - Atta	ch site map	showing sam	pling point lo	cations, transe	cts, important	teatures, etc.	
Hydrophytic Vegetat	tion Present?	Yes X	No	ls the	Sampled Area			
Hydric Soil Present?	•	Yes X			a Wetland?	Yes X	No	
Wetland Hydrology F	Present?	Yes X			optional Wetland Si			_
Remarks: (Explain a	alternative procedure id criteria is met. An			time of year				
VVettari	iu chiena is met. An	tecedent is abo	ve average for the	unie or year.				
HYDROLOGY								
	. Indicators							
Wetland Hydrology						0 1 1 "		
Primary Indicators (r		uired; check all	11.7/				ators (minimum of ty	wo requirea)
Surface Water (	` '	-		d Leaves (B9)			l Cracks (B6)	
High Water Tab	` '	_	Aquatic Faun				atterns (B10)	
Saturation (A3)		-	Marl Deposits			Moss Trim I	` '	
Water Marks (B	31)	-	Hydrogen Sul	fide Odor (C1)		Dry-Season	Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhiz	ospheres on Livin	g Roots (C3)	Crayfish Bu	rrows (C8)	
Drift Deposits (	B3)	<u>-</u>	Presence of F	Reduced Iron (C4)		Saturation \	/isible on Aerial Ima	gery (C9)
Algal Mat or Cri	rust (B4)	_	Recent Iron R	teduction in Tilled	Soils (C6)	Stunted or S	Stressed Plants (D1	)
Iron Deposits (E	B5)		Thin Muck Su	rface (C7)		X Geomorphic	Position (D2)	
Inundation Visit	ble on Aerial Image	ry (B7)	Other (Explain	n in Remarks)		Shallow Aq	uitard (D3)	
Sparsely Veget	ated Concave Surfa	ace (B8)				X Microtopogi	aphic Relief (D4)	
						X FAC-Neutra	l Test (D5)	
Field Observations								
Surface Water Prese	•		X Depth (inche		_			
Water Table Present	t? Yes		X Depth (inche	es):	_			
Saturation Present?		No	X Depth (inche	es):	Wetland Hy	drology Present?	Yes X	No
(includes capillary fri	inge)							
	D 1 / 1	., .			\ '.'.			
Describe Recorded I	Data (stream gauge	e, monitoring we	eli, aeriai pnotos, p	revious inspection	s), if available:			
Remarks:								
ixemaixs.								

GETATION - Use scientific names of plants.				Sampli	ng Point:	19A
	Absolute	Dominant	Indicator	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:	6	(A)
ree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant		
. Ulmus americana / American elm	40	Yes	FACW	Species Across All Strata:	6	(B)
. Fraxinus pennsylvanica / Green ash	15	Yes	FACW			(_)
·		<del>-</del> .		Percent of Dominant Species		
				That Are OBL, FACW, or FAC:	100.0	(A/E
·				Prevalence Index worksheet:		
				Total % Cover of:	Multiply b	v:
	55	_ = Total Cov	er		x 1 = 25	
apling/Shrub Stratum (Plot size: 15-ft )		.,		FACW species 65	x 2 = 13	0
Rhamnus cathartica / European buckthorn	30	Yes	FAC	· · · · · · · · · · · · · · · · · · ·	x 3 = <u>13</u>	5
·				· — —	x 4 =20	
				· —	x = 0	
				Column Totals: 140	(A) <u>31</u>	<u>0                                    </u>
				Prevalence Index = B/A =	2.21	
·						
	30	_ = Total Cov	er	Hydrophytic Vegetation Indicate		
erb Stratum (Plot size: 5-ft )	05	\/	ODI	1 - Rapid Test for Hydrophyti	c Vegetation	
Boehmeria cylindrica / Smallspike false nettle Solanum ptychanthum / Eastern black nightshade	<u>25</u> 5	Yes No	FACU	X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤3.0¹		
•		INU	FACU	4 - Morphological Adaptation	ıs¹ (Provide su	norting
		_		Problematic Hydrophytic Veg		
					,	,
				<sup>1</sup> Indicators of hydric soil and wetla	and hydrology	must
•				be present, unless disturbed or pr	roblematic.	
·				B. C. W		
. <u> </u>				Definitions of Vegetation Strata	l	
0				Tree - Woody plants 3 in. (7.6 cm	) or more in di	meter at
1		_		breast height (DBH), regardless of		arriotor at
2	30	= Total Cov		Sapling/shrub - Woody plants les	ss than 3 in. D	BH and
Voody Vine Stratum (Plot size: 30-ft )		10(a) 000	Ci	greater than or equal to 3.28 ft (1		
. Vitis riparia / River-bank grape	15	Yes	FAC	Herb - All herbaceous (non-wood		rdless of
. Echinocystis lobata / Wild cucumber	10	Yes	FACW	size, and woody plants less than		
				<b>Woody vines</b> - All woody vines g height.	reater than 3.2	8 ft in
·				neight.		
	25	_ = Total Cov	er	Hydrophytic		
				Vegetation		
				Present? Yes X	No	

SOIL Sampling Point: 19A

Depth	cription: (Describe to to Matrix		Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-6	10YR 2/1	100					Loam	
6-16	10YR 4/2	98	10YR 3/6	2	С	М	Loam	PRC
16-24	10YR 6/2	60	10YR 3/6	40	С	М	Sandy Loam	Calcium deposits /PRC
	-							
	oncentration, D=Depletion	on, RM=Real	iced Matrix, MS=Mas	ked Sand Gr	ains.			tion: PL=Pore Lining, M=Matrix.  for Problematic Hydric Soils <sup>3</sup> :
Hydrogo Stratifie X Deplete Thick D Sandy N Sandy S Sandy F Stripped	en Sulfide (A4) ed Layers (A5) ed Below Dark Surface eark Surface (A12) Mucky Mineral (S1) Gleyed Matrix (S4) Redox (S5) d Matrix (S6) urface (S7) (LRR R, M		Loamy Mucky M Loamy Gleyed I X Depleted Matrix Redox Dark Su Depleted Dark S Redox Depress	Matrix (F2) (F3) rface (F6) Surface (F7)			Dark Polyv Thin I Iron-N Piedn Mesic Red F	Mucky Peat or Peat (S3) (LRR K, L, R) Surface (S7) (LRR K, L) alue Below Surface (S8) (LRR K, L) Dark Surface (S9) (LRR K, L) Manganese Masses (F12) (LRR K, L, R) nont Floodplain Soils (F19) (MLRA 149B) E Spodic (TA6) (MLRA 144A, 145, 149B) Parent Material (F21) Shallow Dark Surface (TF12) (Explain in Remarks)
	f hydrophytic vegetation Layer (if observed):	n and wetland	d hydrology must be p	resent, unles	ss disturbed	or proble	matic.	
Type:	Layer (ii observed).							
Depth (ir	nches):						Hydric Soil P	resent? Yes X No
Remarks:								

Project/Site:	MCES Sanitar	y Sewer - Forest Lak	ке	City/Count	ty: F	orest Lake/Wa	ashington	Sampling Date:	10/19/2023
Applicant/Owner:		<del>,</del>	TKDA		,		ate: MN	Sampling Point:	
Investigator(s):	Dylan K	(ruzel, Garrett Wee		Section, To	ownship, Ran	ge:	S2	8, T163, R36W	
Landform (hillslope, te	rrace, etc):	Hillslope	Local re	elief (concav	ve, convex, no	one):	none	Slop	oe (%): 2
Subregion (LRR or ML			Lat:		332902			408 Dati	um: WGS 84
Soil Map Unit Name:			Dundas fine san	ndy loam			NWI classifica	tion:	None
Are climatic / hydrolog	ic conditions on th	e site typical for this	time of year?	Yes	No	X (If no,	explain in Rema	rks.)	
Are Vegetation	, Soil	, or Hydrology	significantly	y disturbed?	? A	re "Normal Cir	cumstances" pre	sent? Yes	X No
Are Vegetation	, Soil	, or Hydrology	naturally pr	oblematic?	(It	f needed, expl	ain any answers	in Remarks.)	
<b>SUMMARY OF FI</b>	NDINGS - Att	ach site map sh	nowing sam	pling poi	int locatio	ns, transec	cts, importan	t features, etc.	
Hydrophytic Vegetat		Yes X	No _		Is the Samp		•		
Hydric Soil Present?		Yes	No X		within a Wet		Yes	No X	
Wetland Hydrology I		Yes	No X	_			e ID:		
		ures here or in a sepa et. Antecedent is abo		the time of	year				
HYDROLOGY									
Wetland Hydrology	/ Indicators:								
		equired; check all tha	at apply)				Secondary Indi	cators (minimum o	f two required)
Surface Water		rquireu, erreeit uii ure	Water-Stained	d Leaves (B	39)			oil Cracks (B6)	· ····o · · oquiliou)
High Water Tab	` '		Aquatic Fauna	•	-,			Patterns (B10)	
Saturation (A3)			Marl Deposits					Lines (B16)	
Water Marks (E	31)		Hydrogen Sul	fide Odor (C	C1)		Dry-Seaso	on Water Table (C2	2)
Sediment Depo	osits (B2)		Oxidized Rhiz	ospheres o	n Living Root	s (C3)	Crayfish E	Burrows (C8)	
Drift Deposits (	B3)		Presence of R	Reduced Iro	n (C4)		Saturation	Visible on Aerial I	magery (C9)
Algal Mat or Cr	ust (B4)		Recent Iron R	eduction in	Tilled Soils (0	C6)	Stunted o	r Stressed Plants (I	D1)
Iron Deposits (I	B5)		Thin Muck Su	rface (C7)			Geomorph	nic Position (D2)	
Inundation Visit	ble on Aerial Imag	ery (B7)	Other (Explain	n in Remark	(s)		Shallow A	quitard (D3)	
Sparsely Veget	tated Concave Sur	rface (B8)					Microtopo	graphic Relief (D4)	
							FAC-Neut	ral Test (D5)	
Field Observations	<del></del>								
Surface Water Prese		s No X	Denth (inche	oe).					
Water Table Present		s NoX s NoX		-					
Saturation Present?			Depth (inche	· —	<del></del>	Wetland Hyd	rology Present?	? Yes	NoX
(includes capillary fr		, NO	_ Deptil (iliche			wettand nyu	irology Fresent		_ NO
(Includes capillary II	gc <i>)</i>								
Describe Recorded	Data (stream gaug	ge, monitoring well, a	aerial photos, p	revious insp	pections), if a	vailable:			
Demorker									
Remarks:									

				Sampling Point: 19B
				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 5 (A
	Absolute	Dominant	Indicator	That File OBE, Friend, of Frie.
e Stratum (Plot size: 30-ft )	% Cover	Species?	Status	
Acer negundo / Boxelder, Box elder	30	Yes	FAC	Total Number of Dominant
Fraxinus pennsylvanica / Green ash	20	Yes	FACW	Species Across All Strata: 7 (B
		163	FACTO	
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 71.4 (A
				Inal Are Odl, FACW, Or FAC.
				Prevalence Index worksheet:
		_		
	50	= Total Cov		Total % Cover of: Multiply by:
(D) 1 0) 1 (D) 1 (E) 1		_ = 10tai 00v	EI	OBL species 0 x 1 = 0
ing/Shrub Stratum (Plot size: 15-ft )				FACW species 20 x 2 = 40
Phamnus cathartica / European buckthorn	20	Yes	FAC	FAC species 70 x 3 = 210
				FACU species 40 x 4 = 160
				UPL species 0 x 5 = 0
		—: (———————————————————————————————————		·
				Column Totals:130 (A)410
				Prevalence Index = B/A = 3.15
	-			Trovalence mass. 2
	20	= Total Cov		Hydrophytic Vegetation Indicators:
O' 1 (District) E # \		_ = 10141 55.	Cı	
O Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
Geranium robertianum / Robert's geranium	25	Yes	FACU	X 2 - Dominance Test is >50%
Seum aleppicum / Aleppo avens, Aleppo or yellow avens	10	Yes	FAC	3 - Prevalence Index ≤3.0¹
arex blanda / Eastern woodland sedge	10	Yes	FAC	4 - Morphological Adaptations¹ (Provide supporting
libes cynosbati / Eastern prickly gooseberry	5	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
, , , , ,			FACC	Problematic riyurophytic vegetation (Explain)
				1
			<del>-</del>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
				Definitions of Vegetation Strata
	- ——			_
				T (Manufacture 2 in 77.6 cm) or more in diameter s
				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
				breast height (DBH), regardless of height.
	50	= Total Cov	/er	Sapling/shrub - Woody plants less than 3 in. DBH and
ody Vine Stratum (Plot size: 30-ft )			Ci	greater than or equal to 3.28 ft (1 m) tall.
	40	Vaa	E4011	Herb - All herbaceous (non-woody) plants, regardless of
Parthenocissus quinquefolia / Virginia creeper	10	Yes	FACU	size, and woody plants less than 3.28 ft tall.
	. —			Woody vines - All woody vines greater than 3.28 ft in
	-			height.
	10	- Total Cov		
	10	IUIAI UUV	er	Hydrophytic
				_
				FIESEIL: 100 A 110
	10	= Total Cov	er	<u> </u>

SOIL Sampling Point: 19B

Depth	Matrix		Redox	x Features							
inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remar	ks	
0-14	10YR 2/2	100					Sndy Clay Lm				
14-24	10YR 3/3	100					Sndy Clay Lm				
					· <u></u>						
					· <u></u>						
					· <u></u>						
					· <u></u>						
						,					
ype: C=Con	centration, D=Depletion	, RM=Redu	iced Matrix, MS=Masl	ked Sand Gr	ains.		²Locat	ion: PL=P	ore Lining, N	л=Matrix.	
dric Soil In	ndicators:						Indicators	for Proble	ematic Hyd	ric Soils³:	
Histosol (			Polyvalue Belov	v Surface (S	8) <b>(LRR R,</b> l	MLRA 149	B) 2 cm f	Muck (A10	) (LRR K, L	., MLRA 149B	()
	ipedon (A2)		Thin Dark Surfa	ce (S9) (LR	RR R, MLRA	149B)	Coast	Prairie Re	dox (A16)	(LRR K, L, R)	
Black His			Loamy Mucky N			,				3) <b>(LRR K, L</b> ,	
_	n Sulfide (A4)		Loamy Gleyed I		, ,				7) (LRR K,		,
	Layers (A5)		Depleted Matrix							8) <b>(LRR K, L</b> )	)
_	Below Dark Surface (A	11)	Redox Dark Sui	` ,					ce (S9) (LR		
_	rk Surface (A12)	,	Depleted Dark S							12) <b>(LRR K</b> ,	L. R
	ucky Mineral (S1)		Redox Depress					-	-	-19) <b>(MLRA 1</b>	
_	leyed Matrix (S4)		Rodox Boproco	10110 (1 0)						10) (III.2101 1 144A, 145, 1	
_	edox (S5)							arent Mate			,
	Matrix (S6)								rk Surface (	TF12)	
	face (S7) (LRR R, MLF	RΔ 149R)							Remarks)	11 12)	
	idoo (or) (Eratra, iner	011102,						(Explain ii	r romano,		
nalinete:		and wetland	l hydrology must be n	resent, unles	ss disturbed	or problen	natic.				
naicators of i	hydrophytic vegetation a	and welland	injurology muot bo p								
		and wettand	Trydrology made bo p								
estrictive La	hydrophytic vegetation a	and welland	mydrology maet 20 p								
estrictive La	ayer (if observed):	and welland	- Try drology made 50 p					esent?	Yes	No	X
estrictive La	ayer (if observed):	and wettand					Hydric Soil Pr	resent?	Yes	No	Х
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						esent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wedard						esent?	Yes	No	Х
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	X
Type:	ayer (if observed):	and wedard						esent?	Yes	No	Х
Type:	ayer (if observed):	and wettand						esent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wedard						esent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						esent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						esent?	Yes	No	Х
estrictive La Type: Depth (inc	ayer (if observed):	and wedard						esent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						esent?	Yes	No	x
Type:	ayer (if observed):	and wettand						esent?	Yes	No	x
Type:	ayer (if observed):	and wettand						esent?	Yes	No	X
Type:	ayer (if observed):	and wettand						resent?	Yes	No	X
Type:	ayer (if observed):	and wettand						resent?	Yes	No	x
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	x
estrictive La	ayer (if observed):	and wettand						resent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	x
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	X
estrictive La Type: Depth (inc	ayer (if observed):	and wettand						resent?	Yes	No	<u>x</u>
Type:	ayer (if observed):	and wettarid						resent?	Yes	No _	X
strictive La Type: Depth (inc	ayer (if observed):	and wettarid						resent?	Yes	No _	X

Project/Site:	MCES Sanitary	y Sewer - Forest La	ke	City/Cou	inty:	Forest Lake/W	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	_		S	tate: MN	Sampling Point:	20A
	Dylan Kı	ruzel, Garrett Wee		Section,	Township, Ra	inge:	S2	28, T163, R36W	
Landform (hillslope, terr	•	andscape depressi		-	ave, convex,	-	concave		e (%): 0
Subregion (LRR or MLF	· · · · —				23469872	Long:	-92.99317		
Soil Map Unit Name:	· -		123				NWI classifica	ation:	None
Are climatic / hydrologic	conditions on the	e site typical for this	time of year?	Yes	X No	(If no	— , explain in Rema		
Are Vegetation X			•				rcumstances" pre	•	No X
		, or Hydrology					lain any answers	· · · · · · · · · · · · · · · · · · ·	
SUMMARY OF FIN		· · · · · · · · · · · · · · · · · · ·					•	•	
		-		pg p					
Hydrin Soil Broont?		Yes X Yes X	No No	_	Is the Sam within a W	-	Voo	V No	
Hydric Soil Present?				_			Yes	X No	_
Wetland Hydrology P	resent?	Yes X	No		ii yes, opiic	onal Wetland Si	ie iD		
	d criteria is met. W		a ag field. The			•		of site investigation.	Hydrophytic
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (m		quired: check all th	at apply)				Secondary Ind	icators (minimum of t	two required)
Surface Water (A		4	Water-Staine	ed Leaves	(B9)			oil Cracks (B6)	
High Water Tabl	,		Aquatic Faur		()			Patterns (B10)	
Saturation (A3)	- (-)		Marl Deposit					n Lines (B16)	
Water Marks (B	1)		Hydrogen Su		(C1)			on Water Table (C2)	
Sediment Depos	•				on Living Ro	ots (C3)		Burrows (C8)	
Drift Deposits (B			Presence of	•	-	( ,		n Visible on Aerial Im	agery (C9)
X Algal Mat or Cru	•		-		in Tilled Soils	(C6)		r Stressed Plants (D	• • • •
Iron Deposits (B			Thin Muck S			()		hic Position (D2)	,
	le on Aerial Image	erv (B7)	Other (Expla	-	-			quitard (D3)	
	ated Concave Surf				,			graphic Relief (D4)	
		,					X FAC-Neut		
							<del></del>		
Field Observations:			5 " " .	,					
Surface Water Prese		NoX	_ ' `	· —					
Water Table Present?			(	· —					
Saturation Present?	Yes	X No	_ Depth (inch	nes):	22	Wetland Hyd	drology Present	? Yes X	No
(includes capillary frir	nge)								
Describe Recorded D	Data (stream gaug	je, monitoring well,	aerial photos,	previous in	spections), if	available:			
Domarka									
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point: 20A
<u>Tree Stratum</u> (Plot size: <u>30-ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 2 (A)  Total Number of Dominant
2. 3. 4.	_			Species Across All Strata: 2 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
5. 6.				Prevalence Index worksheet:
7.	0	= Total Cov	er	Total % Cover of:         Multiply by:           OBL species         15         x 1 = 15
Sapling/Shrub Stratum       (Plot size:				FACW species       0       x 2 =       0         FAC species       40       x 3 =       120         FACU species       0       x 4 =       0         UPL species       0       x 5 =       0         Column Totals:       55       (A)       135       (B)
6.				Prevalence Index = B/A = 2.45
Herb Stratum (Plot size: 5-ft )	0	= Total Cov		Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
Echinochloa crus-galli / Barnyard grass     Nasturtium officinale / Watercress, Water cress   4.				X       2 - Dominance Test is >50%         X       3 - Prevalence Index ≤3.0¹         4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )
5	_			¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
9. 10.	_	_		Definitions of Vegetation Strata
11. 12.		_		<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	55	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1	_			Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3. 4.	_	_		Woody vines - All woody vines greater than 3.28 ft in height.
	0	_ = Total Cov	er	Hydrophytic Vegetation Present?  Yes X No
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 20A

Depth	cription: (Describe to to Matrix			x Features				•			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks			
0-10	10YR 2/1	100					Clay Loam				
10-16	10YR 4/2	98	7.5R 4/6	2	С	М	Sndy Clay Lm	PRC			
16-24	10YR 6/2	95	10YR 3/6	5	С	М	Clay Loam	PRC			
				_							
	<u> </u>				- ——						
	· ·										
				_	- ——						
	-						-	-			
Гуре: С=Со	ncentration, D=Depletion	on, RM=Redu	uced Matrix, MS=Mas	ked Sand G	rains.		²Loca	ation: PL=Pore Lining, M=Matrix.			
vdric Soil I	Indicators:						Indicators	s for Problematic Hydric Soils³:			
Histosol			Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> .	MLRA 14		Muck (A10) (LRR K, L, MLRA 149B)			
	pipedon (A2)		Thin Dark Surfa					t Prairie Redox (A16) (LRR K, L, R)			
	istic (A3)		Loamy Mucky N					Mucky Peat or Peat (S3) (LRR K, L, R)			
	en Sulfide (A4)		Loamy Gleyed		, ,			Surface (S7) (LRR K, L)			
	d Layers (A5)		Depleted Matrix					value Below Surface (S8) (LRR K, L)			
	d Below Dark Surface	(A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)			
	ark Surface (A12)	` '	Depleted Dark					Manganese Masses (F12) (LRR K, L, R)			
	Mucky Mineral (S1)		Redox Depress					mont Floodplain Soils (F19) (MLRA 149B)			
	Gleyed Matrix (S4)			` ,				c Spodic (TA6) (MLRA 144A, 145, 149B)			
	Redox (S5)							Parent Material (F21)			
	d Matrix (S6)						— Red Parent Material (F21) Very Shallow Dark Surface (TF12)				
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	r (Explain in Remarks)			
Indicators of	f hydrophytic vegetation	n and wetland	l hydrology must be r	resent unle	ee dieturhad	l or proble	matic				
		Tana wedane	- Trydrology made be p	Tesent, unic		TOT PRODIC	mauc.				
	Layer (if observed):										
Type: Depth (ir	iches).						Hydric Soil P	Present? Yes X No			
Deptii (ii			<del></del>				Tiyunc don t	Tesent: ICS X NO			
Remarks:											

Project/Site:	MCES Sanita	ary Sewer - Forest La	ıke	City/Count	tv: F	orest Lake/W	ashington	Sampling Dat	e: 10/19/2023
Applicant/Owner:	-	<b>,</b>	TKDA		·		tate: MN	Sampling Poi	
Investigator(s):	Dylan	Kruzel, Garrett Wee		Section, To	ownship, Rar	ige:	S2	28, T163, R36W	
Landform (hillslope, te				relief (conca	ve, convex, n	one):	None	S	ope (%): 3
Subregion (LRR or ML		LRR K	Lat:	45.23	3469872	Long:	-92.99317	7432 D	atum: WGS 84
Soil Map Unit Name:			123				NWI classifica	ation:	None
Are climatic / hydrolog	ic conditions on f	the site typical for this	s time of year?	Yes X	. No	(If no	, explain in Rema	nrks.)	
Are Vegetation X	, Soil X	, or Hydrology	significant	tly disturbed	? A	re "Normal Ci	rcumstances" pre	sent? Yes	No X
Are Vegetation	, Soil	, or Hydrology	naturally p	oroblematic?	) (I	f needed, exp	lain any answers	in Remarks.)	
SUMMARY OF FI	NDINGS - At	tach site map s	howing san	npling po	int locatio	ns, transe	cts, importan	t features, et	c.
Hydrophytic Vegetat		Yes	No X		Is the Samp		•		
Hydric Soil Present?		Yes X	No No		within a We		Yes	No	X
Wetland Hydrology I		Yes	No X			al Wetland Si			<u>·                                     </u>
					, ,				
		dures here or in a sep ent. upland area is loc		I. Vegetation	ı was availabl	e to identify. A	ntecedent precipi	tation is above a	verage.
HYDROLOGY									
Wetland Hydrology	/ Indicators:								
		required; check all th	at apply)				Secondary Ind	icators (minimum	of two required)
Surface Water		. oqu ou, on our un u	Water-Staine	ed Leaves (B	39)			oil Cracks (B6)	
High Water Tab	` '		Aquatic Faur	•	,			Patterns (B10)	
Saturation (A3)			Marl Deposit	, ,				n Lines (B16)	
Water Marks (E		_	Hydrogen Su	, ,	C1)			on Water Table (0	C2)
Sediment Depo	osits (B2)	_	Oxidized Rhi	izospheres c	on Living Roo	ts (C3)		Burrows (C8)	,
Drift Deposits (		_	Presence of	•	ū	,		n Visible on Aeria	I Imagery (C9)
Algal Mat or Cr		_	Recent Iron	Reduction in	Tilled Soils (	C6)		r Stressed Plants	
Iron Deposits (I	B5)		Thin Muck S	urface (C7)			Geomorp	hic Position (D2)	
Inundation Visil	ble on Aerial Ima	igery (B7)	Other (Expla	in in Remark	ks)		Shallow A	quitard (D3)	
Sparsely Veget	tated Concave Si	urface (B8)	_				Microtopo	graphic Relief (D	4)
							FAC-Neut	tral Test (D5)	
Field Observations									
Surface Water Prese		es No X	Denth (inch	vec).					
Water Table Present		es No X		· ·					
Saturation Present?		es No X	_ ' '	· —		Wotland Hv	drology Present	2 Vec	No X
(includes capillary fr		35 NOX	_ Deptil (ilici	ies).		wellanu ny	arology Fresent	? Yes	NO
(Includes capillary II	ilige)								
Describe Recorded	Data (stream gar	uge, monitoring well,	aerial photos,	previous ins	pections), if a	vailable:			
-									
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point: 20B
Tree Stratum (Plot size:30-ft) 1	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC:  Total Number of Dominant  Species Across All Strata:  2 (B)
2		-		Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)
6				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum       (Plot size:				OBL species         0         x 1 =         0           FACW species         0         x 2 =         0           FAC species         0         x 3 =         0           FACU species         10         x 4 =         40           UPL species         20         x 5 =         100           Column Totals:         30         (A)         140         (B)
6.				Prevalence Index = B/A = 4.67
Herb Stratum (Plot size: 5-ft )	0	= Total Cov	er UPL	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50%
Verbascum thapsus / Woolly mullein     Cirsium discolor / Field thistle	10	Yes Yes	UPL	3 - Prevalence Index ≤3.0¹
Trifolium pratense / Red clover	5	No	FACU	4 - Morphological Adaptations¹ (Provide supporting
4. Bromus arvensis / Soft brome, Field brome 5				Problematic Hydrophytic Vegetation¹ (Explain )  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
4	0	= Total Cov	 er	
		_		Hydrophytic           Vegetation           Present?         Yes         No         X
Remarks: (Explain alternative procedures here or in a separate	e report.)			

SOIL Sampling Point: 20B

Depth	Matrix		Redo:	x Features			nce of indicators	•
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-18	10YR 2/1	100					Clay Loam	
18-24	10YR 4/2	98	7.5R 4/6	2	С	М	Sndy Clay Lm	PRC
				_				
				_				
				_				
							· · · · · · · · · · · · · · · · · · ·	
Туре: С=Со	ncentration, D=Depletion	n, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
udria Cail I	ndicatora						Indicators	for Droblemetic Hydric Coiles
lydric Soil I			Dalamaka Dalam	Of (O	o)	MI DA 44		for Problematic Hydric Soils³:
Histosol	` '		Polyvalue Belov	-			· —	Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa			( 149B)		Prairie Redox (A16) (LRR K, L, R)
Black Hi			Loamy Mucky N		(LKR K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	d Layers (A5)		Depleted Matrix	` '				alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface (A	A11)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
	lucky Mineral (S1)		Redox Depress	ions (F8)			·	nont Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
	ledox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Su	rface (S7) (LRR R, ML	.RA 149B)					Other	(Explain in Remarks)
Indicate (	budaankutia waatatian	and wetland	hydrology must be p	resent unle	ss disturbed	or problem	matic	
moreators of	nvorophytic vederation		myarology maor bo p	rocorn, armo	oo diotal bod	Or problem		
Restrictive L	ayer (if observed):							
Restrictive L	ayer (if observed):							
Restrictive L	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):						Hydric Soil P	resent? Yes X No

Project/Site:	MCES Sanit	ary Sewer - Forest Lak	e Ci	ty/County:	Forest Lake/V	Vashington	Sampling Date:	10/19/2023
Applicant/Owner:		,	TKDA	, , <u> </u>		State: MN	Sampling Point:	21A
	Dylar	Kruzel, Garrett Wee	Se	ection, Township,	Range:	s	28, T163, R36W	
- · · · · · · · · · · · · ·	errace, etc):	Landscape depressio		f (concave, conve		concave	Slope	e (%): 0
Subregion (LRR or MI				-	· —			· ·
Soil Map Unit Name:			113			NWI classific		None
·		the site typical for this	ime of year? Ye	es X 1	No (If no	— o, explain in Rem	arks.)	
		, or Hydrology				•	•	No X
		, or Hydrology				olain any answers		
		ttach site map sh				•	•	
		-				oto, importar	1. 100101 00, 0101	
Hydrophytic Vegeta		Yes X Yes X			ampled Area	V	V No	
Hydric Soil Present					Wetland?	Yes	X No	_
Wetland Hydrology	Present?	Yes X	No	ii yes, op	tional Wetland S	ile iD:		
Wetlar	nd criteria is met.	dures here or in a sepa . Wetland is located in a soils were present in fie	a ag field. The we	• • •	•		of site investigation.	Hydrophytic
HYDROLOGY								
Wetland Hydrolog	v Indicators:							
, ,	•	required; check all that	apply)			Secondary Inc	dicators (minimum of t	two required)
Surface Water	•		Water-Stained Le	eaves (B9)			Soil Cracks (B6)	<u></u>
High Water Tal	` '	_	Aquatic Fauna (E	` ,			Patterns (B10)	
Saturation (A3	, ,	_	Marl Deposits (B	•		•	m Lines (B16)	
Water Marks (I			Hydrogen Sulfide	•			son Water Table (C2)	
Sediment Dep	•			oheres on Living I	Roots (C3)		Burrows (C8)	
Drift Deposits	` '	_	Presence of Red	-	(,		n Visible on Aerial Im	agery (C9)
Algal Mat or C		_		uction in Tilled So	ils (C6)		or Stressed Plants (D	• , ,
Iron Deposits (		_	Thin Muck Surface		()		phic Position (D2)	-,
<del></del>	ible on Aerial Ima	agery (B7)	Other (Explain in				Aquitard (D3)	
	tated Concave S			/			ographic Relief (D4)	
						X FAC-Neu	•	
					1	<del></del>		
Field Observations			5 " " ' ' ' '					
Surface Water Pres		es No _X	,	-	•			
Water Table Presen		es No _X	Depth (inches):				•	
Saturation Present?		es <u>X</u> No	Depth (inches):	20	. Wetland Hy	drology Present	? Yes X	No
(includes capillary fi	ringe)							
Describe Recorded	Data (stream ga	auge, monitoring well, a	erial photos, prev	ious inspections),	if available:			
	, ,							
Remarks:								

/EGETATION - Use scientific names of plants.				Sampling Point: 21A
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 3 (A)
1				Total Number of Dominant Species Across All Strata:3 (B)
3				Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
6. 7.				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum         (Plot size:				OBL species       15       x 1 =       15         FACW species       15       x 2 =       30         FAC species       20       x 3 =       60         FACU species       0       x 4 =       0
3				UPL species0 $x = 5$ 0Column Totals:50(A)105
6				Prevalence Index = B/A =2.1
Herb Stratum (Plot size: 5-ft )	0	= Total Cov	er	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
Echinochloa crus-galli / Barnyard grass     Nasturtium officinale / Watercress, Water cress	<u>20</u> 15	Yes Yes	FAC OBL	X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤3.0¹
Phalaris arundinacea / Reed canary grass     4.	15	Yes	FACW	4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )
5				¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8		_	- ————————————————————————————————————	Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11. 12.				breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size:30-ft) 1	50	_ = Total Cov	er 	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of and woody plants less than 3.29 ft tall.
2				size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
	0	= Total Cov	er	Hydrophytic Vegetation Present? Yes X No
Remarks: (Explain alternative procedures here or in a separa	ate report.)			

SOIL Sampling Point: 21A

Depth	Matrix		Redo	x Features			nce of indicators				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks			
0-8	10YR 2/1	100					Clay Loam				
8-16	10YR 4/2	98	7.5R 4/6	2	С	М	Sndy Clay Lm	PRC			
16-24	10YR 6/2	95	10YR 3/6	5	С	М	Clay Loam	PRC			
				_							
			-								
			-								
			-								
	<u> </u>										
	<u> </u>										
ype: C=Co	ncentration, D=Depletion	on, RM=Redu	uced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.			
vdric Soil I	ndicators:						Indicators	for Problematic Hydric Soils³:			
Histosol			Polyvalue Belov	w Surface (S	8) <b>(I PP P</b>	MI RA 14		Muck (A10) (LRR K, L, MLRA 149B)			
	pipedon (A2)		Thin Dark Surfa	-				Prairie Redox (A16) (LRR K, L, R)			
						1430)					
_	istic (A3)		Loamy Mucky N		(LKK N, L)			Mucky Peat or Peat (S3) (LRR K, L, R)			
_	en Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)			
	d Layers (A5)	(11)	X Depleted Matrix					alue Below Surface (S8) (LRR K, L)			
	d Below Dark Surface (	(ATT)	Redox Dark Su					Dark Surface (S9) (LRR K, L)			
_	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)			
	Mucky Mineral (S1)		Redox Depress	ions (F8)				nont Floodplain Soils (F19) (MLRA 149B)			
	Gleyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)			
_	Redox (S5)						Red Parent Material (F21)				
	d Matrix (S6)						Very Shallow Dark Surface (TF12)				
Dark Su	ırface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)			
			d bydrology must be m	resent unle	ss disturhed	or proble	matic				
Indicators of	hydrophytic vegetation	n and wetland									
ndicators of	hydrophytic vegetation	n and wetland	Trydrology must be p			•	1				
	hydrophytic vegetation ayer (if observed):	n and wetland	i nydrology must be p	, , ,							
Restrictive L	_ayer (if observed):	n and wetland				•					
estrictive L	_ayer (if observed):	n and wetland	a mydrology must be p				Hydric Soil P	resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	Triyarology mast be p					resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	Triyarology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Thydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a frydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a frydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a frydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Triyarology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a frydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a frydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Trydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Trydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Trydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Trydrology must be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	a mydrology mast be p					resent? Yes X No			
Restrictive L	_ayer (if observed):	n and wetland	a riyarology mast be p					resent? Yes X No			
Restrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a riyarology mast be p					resent? Yes X No			
Type: Depth (in	_ayer (if observed):	n and wetland	a riyarology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	a riyarology mast be p					resent? Yes X No			
estrictive L Type: Depth (in	_ayer (if observed):	n and wetland	Trydrology must be p					resent? Yes X No			

Project/Site:	MCES Sanitar	y Sewer - Forest I	Lake	City/County:	Forest Lake/V	Vashington	Sampling Date:	10/19/2023
Applicant/Owner:	-	<u> </u>	TKDA			State: MN	Sampling Point:	21B
Investigator(s):	Dylan K	(ruzel, Garrett We	e	Section, Townshi	p, Range:	S28	, T163, R36W	
Landform (hillslope, ter				- relief (concave, con		none	Slope	(%): 3
Subregion (LRR or ML	·			· ·				
Soil Map Unit Name:			123			NWI classificati	on: N	lone
Are climatic / hydrologi		e site typical for the	his time of year?	Yes X	No (If no	— o, explain in Remarl	(S.)	
Are Vegetation X	, Soil X	, or Hydrology	significan	tly disturbed?		ircumstances" pres		No X
		, or Hydrology				olain any answers in	Remarks.)	
SUMMARY OF FI		_			cations, transe	ects. important	features, etc.	
Hydrophytic Vegetat		Yes	No X		Sampled Area		,	
Hydric Soil Present?		Yes X	No X		a Wetland?	Vec	No X	
Wetland Hydrology I		Yes	No X		optional Wetland S		NO	_
vvetiand riyurology i	r resent:		NO	II yes,	optional Wetland S	ite ib.		
Remarks: (Explain a Wetlan				I. Vegetation was a	vailable to identify. A	Antecedent precipita	ation is above avera	ge.
HYDROLOGY								
Wetland Hydrology	/ Indicators					-		
Primary Indicators (r		ouired: check all	that apply)			Secondary Indic	ators (minimum of t	wo required)
Surface Water		quirou, orroon un	11.77	ed Leaves (B9)			il Cracks (B6)	
High Water Tab	` '	-	Aquatic Faur	, ,			atterns (B10)	
Saturation (A3)	` '	_	Marl Deposit				Lines (B16)	
Water Marks (E		_		ulfide Odor (C1)		Dry-Seasor	Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rh	izospheres on Livin	g Roots (C3)	Crayfish Bu		
Drift Deposits (		_		Reduced Iron (C4)	. ,		Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	•	_	Recent Iron	Reduction in Tilled	Soils (C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (I	B5)	<del>-</del>	Thin Muck S	urface (C7)		Geomorphi	c Position (D2)	
Inundation Visit	ble on Aerial Imag	ery (B7)	Other (Expla	in in Remarks)		Shallow Aq		
Sparsely Veget	ated Concave Sur	rface (B8)	_			Microtopog	raphic Relief (D4)	
						FAC-Neutra	al Test (D5)	
Field Observations	•							
Surface Water Prese		s No >	X Depth (inch	166).				
Water Table Present			X Depth (incl		—			
Saturation Present?			X Depth (incl	·	Wetland Hy	drology Present?	Yes	No X
(includes capillary fr		, NO	C Deptil (ilici	ies).	vvetiand my	urology Fresent:	163	NOX
(includes capillary in	ilige)							
Describe Recorded	Data (stream gaug	ge, monitoring we	II, aerial photos,	previous inspection	s), if available:			
-								
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point: 21B
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC:  Total Number of Dominant  (A)
1				Species Across All Strata:3 (B)
3				Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)
6. 7.				Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum       (Plot size:				OBL species         0         x 1 =         0           FACW species         0         x 2 =         0           FAC species         0         x 3 =         0           FACU species         15         x 4 =         60           UPL species         30         x 5 =         150           Column Totals:         45         (A)         210         (B)
6.				Prevalence Index = B/A = 4.67
Herb Stratum (Plot size:5-ft)	0	= Total Cov		Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
Verbascum thapsus / Woolly mullein     Cirsium discolor / Field thistle	<u>15</u> 15	Yes Yes	UPL UPL	2 - Dominance Test is >50% 3 - Prevalence Index ≤3.0¹
Trifolium pratense / Red clover	10	Yes	FACU	4 - Morphological Adaptations¹ (Provide supporting
4. Abutilon theophrasti / Velvet leaf, Velvet-leaf	5	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5				¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
9. 10.				Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11 12		= Total Cov	- ————————————————————————————————————	breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:30-ft) 1.		_ 1000. 2.2	Ci	greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> - All herbaceous (non-woody) plants, regardless of
2				size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
4	0	= Total Cov	 er	Hydrophytic
				Vegetation         Yes         No         X
Remarks: (Explain alternative procedures here or in a separat	e report.)			

SOIL Sampling Point: 21B

	iption: (Describe to th	ne depth nee			or confirm	the abse	nce of indicator	s.)
Depth	Matrix			x Features			<b>-</b> .	
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-20	10YR 2/1	100					Clay Loam	
20-26	10YR 4/2	98	7.5R 4/6	2	<u> </u>	M	Sndy Clay Lm	PRC
								-
	·	·						
¹Type: C=Con	centration, D=Depletion	n, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil Ir	ndicators:						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	v Surface (S	9) <b>/I DD D</b> I	MI DA 140		Muck (A10) (LRR K, L, MLRA 149B)
		•	Thin Dark Surfa	•			· —	
	ipedon (A2)					1490)		t Prairie Redox (A16) (LRR K, L, R)
Black His		,	Loamy Mucky N		(LKK N, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)	,	Loamy Gleyed I					Surface (S7) (LRR K, L)
	Layers (A5)		Depleted Matrix					value Below Surface (S8) (LRR K, L)
	Below Dark Surface (A	A11)	Redox Dark Sui					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	,	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	ucky Mineral (S1)	,	Redox Depress	ions (F8)				mont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)							c Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, ML	.RA 149B)					Other	r (Explain in Remarks)
3Indicators of	hydrophytic vegetation	and wetland	hydrology must be n	recent unles	e dieturbed	or probler	matic	
		and welland	Trydrology must be p	TC3CIII, UIIIC		or probler		
Restrictive La	ayer (if observed):							
Type:								
Depth (inc	ches):						Hydric Soil P	resent? Yes X No
Damarka								
Remarks:								

Project/Site:	MCES Sanitary	Sewer - Forest La	ke C	City/County:	Forest Lake/W	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		S	tate: MN	Sampling Point:	22A
	Dylan Kru		S	Section, Township,	Range:	S2	8, T163, R36W	
Landform (hillslope, ter				ef (concave, conve		concave	Slope	(%): 1
Subregion (LRR or ML			Lat:		Long:	-92.99313	161 Datun	n: WGS 84
Soil Map Unit Name:		75 - Bluf	fton Loam, Hydric	soil unit		NWI classifica	tion: N	Vone
Are climatic / hydrologi					No X (If no	 , explain in Rema	rks.)	
Are Vegetation	, Soil ,	or Hydrology	significantly of	disturbed?	Are "Normal Ci	rcumstances" pres	sent? Yes	K No
	, Soil ,					lain any answers i	n Remarks.)	
SUMMARY OF FI		· · · · · · · · · · · · · · · · · · ·				cts, importan	t features, etc.	
Hydrophytic Vegetat		Yes X	No		ampled Area		•	
Hydric Soil Present?		Yes X	No		Wetland?	Yes >	( No	
Wetland Hydrology I		Yes X	No		tional Wetland Si			<del>-</del> 
Remarks: (Explain a Wetlan	alternative procedure ad criteria is met. An			me of year				
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r	•	uired; check all tha	at apply)			Secondary Indi	cators (minimum of t	wo required)
Surface Water			Water-Stained L	_eaves (B9)			oil Cracks (B6)	. ,
High Water Tab	ole (A2)		Aquatic Fauna (	(B13)		X Drainage	Patterns (B10)	
Saturation (A3)	)		Marl Deposits (I	315)		Moss Trim	Lines (B16)	
Water Marks (E	31)		Hydrogen Sulfic	le Odor (C1)		Dry-Seaso	on Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhizos	spheres on Living F	Roots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (	B3)		Presence of Re	duced Iron (C4)		Saturation	Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	ust (B4)		Recent Iron Rec	duction in Tilled So	ils (C6)	Stunted or	Stressed Plants (D1	1)
Iron Deposits (F	35)		Thin Muck Surfa	ace (C7)		X Geomorph	nic Position (D2)	
<del></del>	ble on Aerial Image	· · · · —	Other (Explain i	n Remarks)			quitard (D3)	
Sparsely Veget	tated Concave Surfa	ace (B8)					graphic Relief (D4)	
						X FAC-Neut	ral Test (D5)	
Field Observations	):							
Surface Water Prese	ent? Yes	No X	Depth (inches	):				
Water Table Present	t? Yes	No X	Depth (inches	):				
Saturation Present?	Yes	No X	Depth (inches	):	Wetland Hyd	drology Present?	Yes X	No
(includes capillary fr	inge)							
Describe Recorded	Data (atroom gouse	monitoring well	acrial photos pro	vious inspections)	if available:			
Describe Recorded	Data (Stream gauge	e, monitoring well,	aeriai priotos, pre	vious irispections),	ii avaliable.			
Remarks:								
1								

				Sampling Point: 22A
	Abaqluta	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 4 (A)
ree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Status	
. Salix amygdaloides / Peachleaf willow	20	Yes	FACW	Total Number of Dominant
. Populus deltoides / Eastern cottonwood	10	Yes	FAC	Species Across All Strata: 4 (B)
·			FAC	
				Percent of Dominant Species
·		_	<del>-</del>	That Are OBL, FACW, or FAC: 100.0 (A/E
•		_		
		_	<del>-</del>	Prevalence Index worksheet:
· <u> </u>	30	- Total Cav		Total % Cover of: Multiply by:
anling/Chruh Stratum / Plot aiza: 15 ft		_ = Total Cov	ei	OBL species10 x 1 =10
apling/Shrub Stratum (Plot size:15-ft)  . Salix interior / Sandbar willow	-	Van	EA C) A /	FACW species 80 x 2 = 160
-	5			FAC species 10 x 3 = 30
·		_		FACU species 0 x 4 = 0
•	- ———	_		UPL species 0 x 5 = 0
·				Column Totals: 100 (A) 200 (E
•				
		_		Prevalence Index = B/A = 2.0
·				
	5	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
lerb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
. Phalaris arundinacea / Reed canary grass	50	Yes	FACW	X 2 - Dominance Test is >50%
. Typha angustifolia / Narrow leaf cattail, Narrow-leaved catta		No	OBL	X 3 - Prevalence Index ≤3.01
. Solidago gigantea / Smooth goldenrod	5	No	FACW	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
l				Problematic Hydrophytic Vegetation¹ (Explain )
5		_		
S				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
<b>7</b>				be present, unless disturbed or problematic.
3				
9.				Definitions of Vegetation Strata
10.				
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
2.				breast height (DBH), regardless of height.
	65	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and
Voody Vine Stratum (Plot size: 30-ft )		<del>_</del>		greater than or equal to 3.28 ft (1 m) tall.
				Herb - All herbaceous (non-woody) plants, regardless of
				size, and woody plants less than 3.28 ft tall.
3.	. ———			Woody vines - All woody vines greater than 3.28 ft in
				height.
•	0	= Total Cov	er	
		_ ''ota' ''o''	0.	Hydrophytic
				Vegetation
				Present? Yes X No
	report.)			
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				
Remarks: (Explain alternative procedures here or in a separate				

SOIL Sampling Point: 22A

Depth	Matrix		eeded to document tl Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-8	10YR 2/1	98	10YR 3/4	2	С	М	Sndy Clay Lm	PRC
8-16	10YR 5/2	95	10YR 3/4	5	С	М	Sndy Clay Lm	PRC
16-24	10YR 6/3	95	10YR 3/6	5	С	М	Sndy Clay Lm	PRC
			· ·				-	
			-					
	-		-					
Type: C=Cor	ncentration, D=Depletion	on, RM=Red	luced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
			, 					-
ydric Soil I								for Problematic Hydric Soils <sup>3</sup> :
Histosol	` '		Polyvalue Belov	-				Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa			(149B)		t Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky N		(LRR K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed					Surface (S7) (LRR K, L)
	d Layers (A5)		X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface (	(A11)	X Redox Dark Su					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dark					Manganese Masses (F12) (LRR K, L, R)
Sandy M	Mucky Mineral (S1)		Redox Depress	ions (F8)			Piedn	nont Floodplain Soils (F19) (MLRA 149B)
Sandy C	Sleyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red F	Parent Material (F21)
Stripped	l Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	rface (S7) (LRR R, M	LRA 149B)					Other	(Explain in Remarks)
				resent unles	s disturbed	or proble	matic.	
Indicators of	hydrophytic vegetation	n and wetlan	ia nyarology must be p	reserit, urnet				
	hydrophytic vegetation aver (if observed):	and wetlan	a nyarology must be p	Tooth, unice				
Restrictive L	hydrophytic vegetation  _ayer (if observed):	and wetlan	a nyarology must be p	resent, unice				
	ayer (if observed):	and wetlan	a nydrology must be p	recent, unio			Hydric Soil P	resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nydrology must be p	resent, unioc				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nydrology must be p	resent, unice				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	resent, unice				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	resent, unite				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	Todon, united				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	reserri, dillec				resent? Yes <u>X</u> No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	reserri, dillec				resent? Yes <u>X</u> No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserri, dillec				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	reserre, united				resent? Yes <u>X</u> No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	reserre, united				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	Toddit, dillec				resent? Yes X No
Restrictive L	ayer (if observed):	n and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	reserre, difference				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	reserre, differences				resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No
Type: Depth (in	ayer (if observed):	n and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No
estrictive L Type: Depth (in	ayer (if observed):	and wetlan	a nyarology must be p	recent, dillec				resent? Yes X No

Project/Site:	MCES Sanita	ary Sewer - Forest Lak	ke City/(	County:	Forest Lake/Wa	shinaton	Sampling Date:	10/19/2023
Applicant/Owner:		<u>., </u>	TKDA			ate: MN	Sampling Point:	22B
Investigator(s):	Dvlan	Kruzel, Garrett Wee		on, Township, Ra		-	3, T163, R36W	
Landform (hillslope, te				oncave, convex,		convex		e (%): 4
Subregion (LRR or ML				45.23669685	Long:	-92.993183		` ′———
Soil Map Unit Name:	′ <del></del>		Dundas fine sandy loa			NWI classificati		None
Are climatic / hydrolog	ic conditions on t				X (If no,	explain in Remarl	ks.)	
Are Vegetation		* * * * * * * * * * * * * * * * * * * *	•		` '	cumstances" pres	•	X No
Are Vegetation						ain any answers ir		
SUMMARY OF FI						-	·	
Hydrophytic Vegeta		Yes		Is the Sam		<u> </u>	,	
Hydric Soil Present?		Yes	No X	within a W	-	Yes	NoX	
Wetland Hydrology		Yes	No X		onal Wetland Site			_
Wolland Hydrology				n you, opile	That Worlding Oile			
		dures here or in a sepa net. Antecedent is abo		me of year				
HYDROLOGY								
Wetland Hydrology	v Indicators:							
	•	required; check all tha	et anniv)			Secondary Indic	cators (minimum of	two required)
Surface Water		equired, officer all the	Water-Stained Leav	res (B9)			oil Cracks (B6)	two required)
High Water Tab	. ,	_	Aquatic Fauna (B13	` '			Patterns (B10)	
Saturation (A3)		_	Marl Deposits (B15)	,			Lines (B16)	
Water Marks (E	,		Hydrogen Sulfide O	,			n Water Table (C2)	
Sediment Depo	•		Oxidized Rhizosphe		ots (C3)		urrows (C8)	
Drift Deposits (			Presence of Reduce	ŭ	313 (33)		Visible on Aerial Im	lagery (C9)
Algal Mat or Cr			Recent Iron Reducti	` '	(C6)		Stressed Plants (D	
Iron Deposits (			Thin Muck Surface		(00)		ic Position (D2)	1)
l — '	ible on Aerial Ima		Other (Explain in Re	` ,			uitard (D3)	
	tated Concave Su			oao,			raphic Relief (D4)	
							al Test (D5)	
						_ <del></del>		
Field Observations			5 " "					
Surface Water Pres		es NoX	- ' ` / -					
Water Table Presen		es No X	- ' ` / -				**	
Saturation Present?		es NoX_	_ Depth (inches): _		Wetland Hydi	rology Present?	Yes	No X
(includes capillary fr	inge)				<u></u>			
Describe Recorded	Data (stream gai	uge, monitoring well, a	aerial photos, previou	is inspections), if	available:			
	3	3 ,	, , , , , , , , , , , , , , , , , , ,	,,				
Remarks:								

				Dominance Test worksheet:
				Number of Dominant Species
				·
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 1 (A
e Stratum (Plot size: 30-ft )	% Cover	Species?	Status	
				Total Number of Dominant
Populus deltoides / Eastern cottonwood	15	Yes	FAC	Species Across All Strata: 4 (B
				Species Acioss Ali Gilata.
			-	
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 25.0 (A
				That Aic Obe, 17.011, 0.17.0.
				Prevalence Index worksheet:
		-		
				Total % Cover of: Multiply by:
	15	_ = Total Cov	er	OBL species 0 x 1 = 0
ing/Shrub Stratum (Plot size:15-ft)				FACW species 0 x 2 = 0
				·
				FAC species 15 x 3 = 45
				FACU species 65 x 4 = 260
				UPL species 0 x 5 = 0
				Column Totals: 80 (A) 305
				D/A = 3.01
				Prevalence Index = B/A = 3.81
	0	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Stratum (Plot size: 5-ft )		-		1 - Rapid Test for Hydrophytic Vegetation
<del></del> `	20	1/20	54011	
Melilotus officinalis / Yellow sweetclover	20	Yes	<u>FACU</u>	2 - Dominance Test is >50%
rifolium pratense / Red clover	15	Yes	FACU	3 - Prevalence Index ≤3.01
rifolium dubium / Shamrock, Little hop clover	15	Yes	FACU	4 - Morphological Adaptations¹ (Provide supporting
Solidago altissima / Canada goldenrod	10	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
Plantago major / Common plantain	5	No	FACU	
· · · · · · · · · · · · · · · · · · ·				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
		_		Definitions of Vegetation Strata
				1
				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
		-		breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants less than 3 in. DBH and
	65	_ = Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.
ody Vine Stratum (Plot size: 30-ft )				greater than or equal to 3.20 it (1 iii) tail.
				Herb - All herbaceous (non-woody) plants, regardless of
				size, and woody plants less than 3.28 ft tall.
		-	-	Woody vines - All woody vines greater than 3.28 ft in
	<del></del>			height.
	0	_ = Total Cov	er	Hydronhytic
				Present? Yes No X
				Hydrophytic           Vegetation           Present?         Yes         No         X

SOIL Sampling Point: 22B

Depth	Matrix		Redo	x Features		the abse					
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²	Texture		Remar	ks	
0-18	10YR 3/6	100					Sndy Clay Lm				
18-24	10YR 3/4	95	10YR 4/4	5	С	М	Sndy Clay Lm				
				_							
				_							
				_							
			-	_				-			
ype: C=Cor	ncentration, D=Depletion	n, RM=Redu	uced Matrix, MS=Mas	ked Sand G	ains.		²Loca	tion: PL=P	ore Lining, N	л=Matrix.	
ydric Soil Ir	ndicators:						Indicators	for Probl	ematic Hydi	ric Soils³:	
Histosol			Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> .	MLRA 149			) (LRR K, L		)B)
	pipedon (A2)		Thin Dark Surfa				· ·	•	dox (A16)	•	•
Black His			Loamy Mucky N			,			at or Peat (S		
	n Sulfide (A4)		Loamy Gleyed		(, -,			-	7) <b>(LRR K,</b>		-, <b>,</b>
	Layers (A5)		Depleted Matrix						Surface (S		L)
	Below Dark Surface (A	(11)	Redox Dark Su						ce (S9) (LR		,
	rk Surface (A12)	,	Depleted Dark						Masses (F1		(. L. R)
_	lucky Mineral (S1)		Redox Depress					-	plain Soils (F		
	leyed Matrix (S4)			( - /					A6) (MLRA		
	edox (S5)								erial (F21)	, -,	,
	Matrix (S6)								ark Surface (	TF12)	
	face (S7) (LRR R, MLI	RA 149B)							n Remarks)	,	
_	, , , ,	,					_	` '	,		
Indicators of	hydrophytic vegetation a	and wetland	I hydrology must be p	resent, unle	ss disturbed	or proble	natic.				
Restrictive L	ayer (if observed):										
Restrictive L	ayer (if observed):										
							Hydric Soil P	resent?	Yes	No	Х
Type: Depth (inc			<u></u>				Hydric Soil P	resent?	Yes	No _	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	Х
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil Pi	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil Pi	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil Pi	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil Pi	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Туре:							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X
Type: Depth (inc							Hydric Soil P	resent?	Yes	No _	X

Project/Site:	MCES Sanitary S	Sewer - Forest L	_ake City/Co	ounty: Forest I	_ake/Washington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	-	State: MN	Sampling Point:	23A
	Dylan Kru	zel. Garrett Wee	e Section	n, Township, Range:		, T163, R36W	-
Landform (hillslope, ter				ncave, convex, none):			o): 0
Subregion (LRR or ML				· · <del></del>	ong: -92.993625		-
Soil Map Unit Name:			- Dundas fine sandy loan		NWI classificati		
_			nis time of year? Yes		(If no, explain in Remark	-	.,,
, ,			significantly disturb		rmal Circumstances" prese	•	No
			naturally problema		ed, explain any answers in		
					ransects, important	•	
					-	reatures, etc.	
Hydrophytic Vegetati		Yes X		Is the Sampled Ar			
Hydric Soil Present?		Yes X		within a Wetland?		No	
Wetland Hydrology F	resent?	Yes X	No	If yes, optional Wet	land Site ID:		
Remarks: (Explain a Wetland			eparate report.) ve average for the time of	year			
HYDROLOGY							
Wetland Hydrology	Indicators:						
Primary Indicators (n		uired: check all t	that apply)		Secondary Indic	ators (minimum of two	required)
Surface Water (		anca, cricck an a	Water-Stained Leave	e (RQ)		il Cracks (B6)	required)
High Water Tab	` ,	_	Aquatic Fauna (B13)	3 (53)		atterns (B10)	
Saturation (A3)	, ,	_	Marl Deposits (B15)			Lines (B16)	
Water Marks (B		_	Hydrogen Sulfide Od	or (C1)		Water Table (C2)	
Sediment Depo	•	_		es on Living Roots (C3)			
Drift Deposits (F		_	Presence of Reduced	• ,	<del></del> '	√isible on Aerial Image	ery (C9)
Algal Mat or Cru	•	_	Recent Iron Reductio	, ,	<del></del>	Stressed Plants (D1)	, ,
Iron Deposits (E		_	Thin Muck Surface (C	(7)	X Geomorphi	c Position (D2)	
Inundation Visib	ole on Aerial Imager	y (B7)	Other (Explain in Rer	narks)	Shallow Aq	uitard (D3)	
Sparsely Vegeta	ated Concave Surfa	ice (B8)			Microtopog	raphic Relief (D4)	
					X FAC-Neutra	al Test (D5)	
Field Observations		N- V	( D				
Surface Water Prese	-		Depth (inches):				
Water Table Present	<del>-</del>		Depth (inches):		and Hudwalamy Dreams (2)	Vaa V N	la.
Saturation Present?	<del>-</del>	NoX	Depth (inches):	vvetia	ind Hydrology Present?	Yes X	No
(includes capillary fri	nge)						
Describe Recorded I	Data (stream gauge	. monitorina wel	I, aerial photos, previous	inspections), if available	<del></del>		
	( 99	,	., р, р	,,,			
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							
Remarks:							

EGETATION - Use scientific names of plants.				Sampling Point: 23A
				Dominance Test worksheet:
				Number of Dominant Species That Are OBL, FACW, or FAC: 3 (a)
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 3 (A
ree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Deminant
Populus deltoides / Eastern cottonwood	10	Yes	FAC	Total Number of Dominant
				Species Across All Strata: 4
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 75.0
				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
	10	= Total Cov	er	OBL species 7 x 1 = 7
apling/Shrub Stratum (Plot size: 15-ft )		_		FACW species 47 x 2 = 94
Salix amygdaloides / Peachleaf willow	20	Yes	FACW	·
				· — — — — — — — — — — — — — — — — — — —
				UPL species 0 x 5 = 0
		-		Column Totals:119 (A)351
-		-	<del> </del>	B 1 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
				Prevalence Index = B/A = 2.95
	20	= Total Cov		Hydrophytic Vegetation Indicators:
orb Stratum (Diot aize: E ft )		_ = 10tal Cov	ы	
erb Stratum (Plot size: 5-ft )	00	V	FAOU	1 - Rapid Test for Hydrophytic Vegetation
Poa pratensis / Kentucky blue grass	30	Yes	FACU	X 2 - Dominance Test is >50%
Phalaris arundinacea / Reed canary grass	20	Yes	FACW	X 3 - Prevalence Index ≤3.0¹
Trifolium dubium / Shamrock, Little hop clover	15	No No	FACU	4 - Morphological Adaptations¹ (Provide supporting
Solidago altissima / Canada goldenrod	10	No No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
. Scirpus atrovirens / Green bulrush	5	No No	OBL	
Solidago gigantea / Smooth goldenrod	5	No No	FACW	¹Indicators of hydric soil and wetland hydrology must
. Carex brunnescens / Brownish sedge	2	No No	FACW	be present, unless disturbed or problematic.
. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattail	2	No	OBL	Definitions of Vegetation Strate
			_,	Definitions of Vegetation Strata
0			_,	Tree Mondy plants 2 in (7.6 am) or more in diameter
1				<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter breast height (DBH), regardless of height.
2				
	89	_ = Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
/oody Vine Stratum (Plot size: 30-ft )				. , ,
		_		<b>Herb</b> - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.
				<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
				noight.
	0	= Total Cov	er	Hydrophytic
				Vegetation
				Present?         YesX No
				Fleseit: 165 A NO

SOIL Sampling Point: 23A

Profile Desci Depth	ription: (Describe to the Matrix	ne deptn n	eeded to document th	<b>ne indicator</b> x Features	or confirm	the abse	nce of indicators	s.)
•	Color (moist)	%	Color (moist)	% realures	Typo1	Loc²	Texture	Remarks
(inches) 0-2	10YR 2/2	95	10YR 3/6	- <del>70</del> 5	Type <sup>1</sup> C	M	Sndy Clay Lm	PRC
								Calcium deposits / PRC
2-14	10YR 6/2	85	10YR 3/6	15		M	Shay Clay Lin	Calcium deposits / PRC
	· <del></del>							
			_					
			<u> </u>					
			_					
<sup>1</sup> Type: C=Cor	ncentration, D=Depletion	n, RM=Red	duced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histosol			Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> .	MLRA 149		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	•	, .		· —	Prairie Redox (A16) (LRR K, L, R)
Black Hi			Loamy Mucky N			1430)		Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed I		(LIXIX IX, L)			Surface (S7) (LRR K, L)
	d Layers (A5)	۸ 4 4 )	X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	d Below Dark Surface (A	411)	X Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depress	ions (F8)				nont Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Su	rface (S7) (LRR R, ML	.RA 149B)					Other	(Explain in Remarks)
<sup>3</sup> Indicators of	hydrophytic vegetation	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or probler	natic.	
	hydrophytic vegetation	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or proble	natic.	
Restrictive L	hydrophytic vegetation ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or proble	matic.	
Restrictive L	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or proble		
Restrictive L	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or proble	natic.  Hydric Soil P	resent? Yes <u>X</u> No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	ss disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or probler		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No No
Restrictive L Type: Depth (in	ayer (if observed):	and wetlar	nd hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X No

	MCES Sanitary	Sewer - Forest L	ake City/C	ounty: Fore	est Lake/Washing	gton	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		State:	MN	Sampling Point:	23B
· · ·	Dylan Kr	uzel. Garrett Wee	e Sectio	n, Township, Range		S28.	T163, R36W	-
Landform (hillslope, ter				ncave, convex, none		none	,	(%): 2
Subregion (LRR or MLI		LRR K		5.23752775	Long:	-92.9936184		` '———
- ·			ine sandy loam, Non hyd			VI classification		one
_			is time of year? Yes		(If no, expla		-	00
		• •	significantly distur		"Normal Circums		•	No
			naturally problema		eeded, explain ar	•		
			showing sampling		· ·	-	•	
		-				inportant	eatures, etc.	
Hydrophytic Vegetati		Yes		Is the Sampled				
Hydric Soil Present?		Yes		within a Wetlar			NoX	=
Wetland Hydrology F	resent?	Yes	NoX	If yes, optional	Wetland Site ID:			
Remarks: (Explain al Wetland			eparate report.) bove average for the tim	e of year				
HYDROLOGY								
Wetland Hydrology	Indicators							
Primary Indicators (n		nuired: check all th	hat apply)		Sec	condary Indica	tors (minimum of tw	vo required)
Surface Water (		julieu, check all ti	Water-Stained Leave	ne (R0)	<u>Sec</u>		Cracks (B6)	vo required)
High Water Table	,		Aquatic Fauna (B13)	` '		Drainage Pa	,	
Saturation (A3)	` '		Marl Deposits (B15)			Moss Trim L		
Water Marks (B			Hydrogen Sulfide Od	or (C1)			Water Table (C2)	
Sediment Depor	•		Oxidized Rhizospher	` ,	——————————————————————————————————————	Crayfish Bu		
Drift Deposits (E			Presence of Reduce			•	isible on Aerial Ima	gon/(C0)
Algal Mat or Cru	•		Recent Iron Reduction	` ,			stressed Plants (D1	• , ,
Iron Deposits (E			Thin Muck Surface (	` '	<u> </u>		Position (D2)	)
	ole on Aerial Image		Other (Explain in Rer	•		Shallow Aqu		
<del></del>	ated Concave Surf	- · · · —	_ Other (Explain in Rei	ilains)	_	-	aphic Relief (D4)	
Sparsely vegeta	ateu Concave Sun	ace (Bo)			<del></del>	FAC-Neutra		
						TAO-Neutra	Test (Do)	
Field Observations:	:							
0 ( )** : 5	ent? Yes	NoX	Depth (inches):					
Surface Water Prese		No X	Depth (inches):					
Surface Water Prese Water Table Present	? Yes	INU A	<del>_</del>	w	etland Hydrolog	y Present?	Yes	No X
	? Yes	No X	Depth (inches):					
Water Table Present	Yes		Depth (inches):		, , , , , , , , , , , , , , , , , , ,			
Water Table Present' Saturation Present? (includes capillary fri	Yes	No X						
Water Table Present' Saturation Present? (includes capillary fri	Yes	No X	Depth (inches): , aerial photos, previous	inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				
Water Table Present' Saturation Present? (includes capillary fri Describe Recorded I	Yes	No X		inspections), if avail				

VEGETATION - Use scientific names of plants.				Sampling Point:23B
·				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 0 (A)
	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1				Species Across All Strata: 2 (B)
2				Opecies Across Air Strata.
3				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 0.0 (A/B)
5				That Ale Obe, I Aow, of I Ao. (Ab)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	0	_ = Total Cove	er	OBL species 2 x 1 = 2
Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 4 x 2 = 8
1		_		FAC species 0 x 3 = 0
2				FACU species 50 x 4 = 200
3				UPL species 0 x 5 = 0
4				Column Totals: 56 (A) 210 (B)
5.				
6.				Prevalence Index = B/A = 3.75
7.				
	0	= Total Cove	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		_		1 - Rapid Test for Hydrophytic Vegetation
1. Poa pratensis / Kentucky blue grass	30	Yes	FACU	2 - Dominance Test is >50%
2. Trifolium pratense / Red clover	15	Yes	FACU	3 - Prevalence Index ≤3.0¹
3. Taraxacum officinale / Red seeded dandelion, Common dand	delion5	No	FACU	4 - Morphological Adaptations¹ (Provide supporting
4. Solidago gigantea / Smooth goldenrod	2	No	FACW	Problematic Hydrophytic Vegetation¹ (Explain )
5. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattail	2	No	OBL	_ , , , , , ,
6. Phalaris arundinacea / Reed canary grass	2	No	FACW	¹Indicators of hydric soil and wetland hydrology must
7.		_	·	be present, unless disturbed or problematic.
8.				
9.		_		Definitions of Vegetation Strata
10				
11		_	·	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12.		_	·	breast height (DBH), regardless of height.
	56	= Total Cove	er	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )		_		greater than or equal to 3.28 ft (1 m) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of
2.			·	size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in
4.				height.
	0	= Total Cove	er	
		_		Hydrophytic
				Vegetation
				Present?         Yes         No         X
Remarks: (Explain alternative procedures here or in a separate i	renort )			
Nemarks. (Explain alternative procedures here of in a separate i	eport.)			

SOIL Sampling Point: 23B

Depth (inches)         Matrix         Redox Features           0-13         10YR 4/3         100         Type¹         Loc²         Texture         Rema           13-24         10YR 6/2         95         10YR 3/4         5         C         M         Sndy Clay Lm         PRC	rke
0-13 10YR 4/3 100 Sndy Clay Lm	rks
	INO
13-24 10YR 6/2 95 10YR 3/4 5 C M Sndy Clay Lm PRC	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, Inc.	M=Matrix.
Hydric Soil Indicators: Indicators for Problematic Hyd	Iric Soile <sup>3</sup> :
•	
Histosol (A1) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) 2 cm Muck (A10) (LRR K, I	•
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16)	
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S	
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K	
Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S	
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LF	
Thick Dark Surface (A12)  Depleted Dark Surface (F7)  Iron-Manganese Masses (F	, , , , ,
Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (	F19) <b>(MLRA 149B)</b>
Sandy Gleyed Matrix (S4)  Mesic Spodic (TA6) (MLRA	A 144A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)	
Stripped Matrix (S6)  Very Shallow Dark Surface	(TF12)
Dark Surface (S7) (LRR R, MLRA 149B)  Other (Explain in Remarks)	
<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed):	
Type:	
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	No X
Depth (inches): Hydric Soil Present? Yes	
Depth (inches): Hydric Soil Present? Yes	
Depth (inches):	

Project/Site:	MCES Sanitary	Sewer - Forest L	_ake City/	County: F	orest Lake/Was	shington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	-	Sta		Sampling Point:	24A
	Dylan Kru	uzel. Garrett Wee	e Secti	ion, Township, Ran			, T163, R36W	
Landform (hillslope, ter				concave, convex, no		concave		(%): 0
Subregion (LRR or MLF				45.23813866	Long:	-92.993806		• •
Soil Map Unit Name:			- Dundas fine sandy loa			NWI classification	-	M1A
Are climatic / hydrologic			•		Y (If no	explain in Remark	-	101 17 (
		• •	significantly distu			:umstances" prese	•	No
			naturally problem			in any answers in		
					-	•	•	
		on site map s	showing sampling	g point locatio	ns, transec	is, important	reatures, etc.	
Hydrophytic Vegetati		Yes X		Is the Samp	led Area			
Hydric Soil Present?		Yes X	No	within a Wet	tland?	Yes X	No	-
Wetland Hydrology F	'resent?	Yes X	No	If yes, option	al Wetland Site	ID:		
Remarks: (Explain al Wetland			eparate report.) cipitation is above aver	age for time of yea	r.			
HYDROLOGY								
Wetland Hydrology	Indicators							
, ,		المالة علم ماد مال	that annly)			Cocondon India	atawa (maimimayyaa af t	ua na muina d\
Primary Indicators (n			1.77	(DO)	-		ators (minimum of ty	vo requirea)
Surface Water (	•		X Water-Stained Leaver Aquatic Fauna (B13)	` '			I Cracks (B6)	
High Water Table	e (A2)	_	_ '	•		Moss Trim I	atterns (B10)	
Saturation (A3)	1)	_	Marl Deposits (B15)	•			,	
Water Marks (B	•	_	Hydrogen Sulfide O		to (C3)		Water Table (C2)	
Sediment Depor		_	Oxidized Rhizosphe	-	IS (C3)	Crayfish Bu		~~~ (CO)
Drift Deposits (E	•	_	Presence of Reduct	` ,	00)		/isible on Aerial Ima	• , ,
Algal Mat or Cru		_	Recent Iron Reduct	•	C6)		Stressed Plants (D1	)
Iron Deposits (E	•		Thin Muck Surface			X Geomorphic		
	le on Aerial Imager	_	Other (Explain in Re	emarks)		Shallow Aq		
X Sparsely Vegeta	ated Concave Surfa	ice (B8)					raphic Relief (D4)	
						X FAC-Neutra	al lest (D5)	
Field Observations:								
Surface Water Prese		No X	( Depth (inches):					
04.1400 114101 1 1000	-		Depth (inches):					
Water Table Present	? Yes	··· <u></u>			Wetland Hydr	ology Present?	Yes X	No
Water Table Present	-	No X	. Dopui (incinca).		**Cuana myan	ology i resent:	103 /	
Saturation Present?	Yes	NoX	<del></del> · · · <del>-</del>					
	Yes	No <u>X</u>						
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	ıs inspections), if av	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previoι	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		I, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		II, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previou	us inspections), if a	vailable:			
Saturation Present? (includes capillary fri	Yes nge)		ll, aerial photos, previoι	us inspections), if a	vailable:			

				Sampling Point: 24A
				Dominance Test worksheet:
				Number of Dominant Species
				·
	Absolute	Dominant	Indicator	That Are OBL, FACW, or FAC: 4 (A
on Stratum (Diet size: 20 ft )	% Cover			
ee Stratum (Plot size: 30-ft )		Species?	Status	Total Number of Dominant
Populus deltoides / Eastern cottonwood	30	Yes	FAC	
Salix interior / Sandbar willow	15	Yes	FACW	Species Across All Strata: 4 (B
		_		
				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 100.0 (A
	1 (			
				Prevalence Index worksheet:
		- <del> </del>		Total % Cover of: Multiply by:
	45	_ = Total Cov	er	OBL species 0 x 1 = 0
oling/Shrub Stratum (Plot size: 15-ft )				FACW species 30 x 2 = 60
Salix interior / Sandbar willow	10	Yes	FACW	· — — — — — — — — — — — — — — — — — — —
				FAC species 30 x 3 = 90
				FACU species 0 x 4 = 0
				UPL species 0 x 5 = 0
				Column Totals: 60 (A) 150
				Column rotals. 00 (A) 150
				Prevalence Index = B/A = 2.5
	10	= Total Cov	er	Hydrophytic Vegetation Indicators:
h Stratum (Plot size: 5 ft \				1 - Rapid Test for Hydrophytic Vegetation
b Stratum (Plot size: 5-ft )	_			
Phalaris arundinacea / Reed canary grass	5		FACW	X 2 - Dominance Test is >50%
				X 3 - Prevalence Index ≤3.01
				4 - Morphological Adaptations¹ (Provide supporting
				Problematic Hydrophytic Vegetation¹ (Explain )
				¹Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
				Definitions of Vegetation Strata
				Tree - Woody plants 3 in. (7.6 cm) or more in diameter a
				breast height (DBH), regardless of height.
	5	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and
adu Vina Stratum (Diot aiza: 20 ft			<b>.</b>	greater than or equal to 3.28 ft (1 m) tall.
ody Vine Stratum (Plot size: 30-ft )				Herb - All herbaceous (non-woody) plants, regardless o
	1 (			size, and woody plants less than 3.28 ft tall.
				size, and woody plants less than 3.28 it tall.
		<del>-</del>		Woody vines - All woody vines greater than 3.28 ft in
				height.
				- 3
	0	= Total Cov	er	Hadron badio
		_		Hydrophytic
				Vegetation
				Present? Yes X No
				Present? Yes X No

SOIL Sampling Point: 24A

Profile Description: (De Depth	Matrix			x Features					
(inches) Color (	(moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks	
0-12 10Y	'R 2/1	98	10YR 3/6	2	С	М	Sndy Clay Lm	PRC	
12-24 10Y	'R 6/2	95	10YR 3/6	5	С	М	Sndy Clay Lm	PRC	
								•	
								-	
								-	
<u></u>									
<del></del>							-		
								•	
							-		
Type: C=Concentration,	D=Depletion	RM=Red	luced Matrix MS=Mas	ked Sand Gr	ains		²l oca	tion: PL=Pore Lining, M=M	latrix
		.,							
lydric Soil Indicators:							Indicators	for Problematic Hydric S	Soils³:
Histosol (A1)			Polyvalue Belov	w Surface (S	3) <b>(LRR R</b> ,	MLRA 14	<b>9B)</b> 2 cm	Muck (A10) (LRR K, L, MI	LRA 149B)
Histic Epipedon (A2	2)		Thin Dark Surfa	ice (S9) (LR	R R, MLRA	(149B)	Coast	Prairie Redox (A16) (LR	R K, L, R)
Black Histic (A3)			Loamy Mucky N	Mineral (F1)	LRR K, L)		5 cm	Mucky Peat or Peat (S3) (	LRR K, L, R)
Hydrogen Sulfide (A	N4)		Loamy Gleyed	Matrix (F2)			Dark	Surface (S7) (LRR K, L)	
Stratified Layers (As	5)		Depleted Matrix	(F3)			Polyv	alue Below Surface (S8) (	LRR K, L)
X Depleted Below Dar	rk Surface (A	.11)	X Redox Dark Su	rface (F6)			Thin [	Dark Surface (S9) (LRR K	(, <b>L</b> )
Thick Dark Surface	(A12)		Depleted Dark	Surface (F7)			Iron-N	Manganese Masses (F12)	(LRR K, L, R)
Sandy Mucky Miner	al (S1)		Redox Depress	ions (F8)			Piedn	nont Floodplain Soils (F19)	(MLRA 149B)
Sandy Gleyed Matri	ix (S4)		<u> </u>					Spodic (TA6) (MLRA 14	
Sandy Redox (S5)	, ,							Parent Material (F21)	
Stripped Matrix (S6)	)							Shallow Dark Surface (TF1	2)
Dark Surface (S7)		RA 149B)						(Explain in Remarks)	,
		,						· ' '	
Indicators of hydrophytic	c vegetation a	and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble	matic.		
Indicators of hydrophytic		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble	matic.		
Restrictive Layer (if ob		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble	matic.		
Restrictive Layer (if obs		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Ves Y	No
Restrictive Layer (if ob		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble	matic. Hydric Soil P	resent? Yes X	No
Restrictive Layer (if obs		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		r <b>esent?</b> Yes <u>X</u>	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		r <b>esent?</b> Yes X	_ No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		r <b>esent?</b> Yes X	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
estrictive Layer (if obs Type: Depth (inches):		and wetlan	d hydrology must be p	oresent, unles	s disturbed	or proble		resent? Yes X	_ No
testrictive Layer (if observed):  Type:  Depth (inches):		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	_ No
Restrictive Layer (if observed) Type: Depth (inches):		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the Type:		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
Restrictive Layer (if observed to the control of th		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No
estrictive Layer (if obs Type: Depth (inches):		and wetlan	d hydrology must be p	resent, unles	s disturbed	or proble		resent? Yes X	No

Project/Site:	MCES Sanitar	y Sewer - Forest La	ake	City/County:	Forest Lake	Washington	Sampling Date:	10/19/2023
Applicant/Owner:		-	TKDA	· · ·		State: MN	Sampling Point:	24B
Investigator(s):				Section, Towns	ship, Range:	S28	3, T163, R36W	
Landform (hillslope, ter					convex, none):	none	Slope	(%): 7
Subregion (LRR or ML			Lat:					n: WGS 84
Soil Map Unit Name:						NWI classificat	ion:	
Are climatic / hydrologi	ic conditions on th	e site typical for this	s time of year?	Yes	No X (If	no, explain in Remar	ks.)	
Are Vegetation						Circumstances" pres	ent? Yes	( No
Are Vegetation						xplain any answers i	n Remarks.)	
SUMMARY OF FI					locations, trans	sects, important	features, etc.	
Hydrophytic Vegetat		Yes			he Sampled Area	•	·	
Hydric Soil Present?		Yes		-	hin a Wetland?	Yes	NoX	
Wetland Hydrology I		Yes		-	es, optional Wetland			_
Remarks: (Explain a Wetlan		ures here or in a sep et. Antecedent prec		average for th	e time of year			
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
Primary Indicators (r		equired; check all th	at apply)			Secondary India	cators (minimum of t	wo required)
Surface Water	(A1)	•	Water-Stained	Leaves (B9)		_	oil Cracks (B6)	
High Water Tab	ole (A2)		- Aquatic Fauna	(B13)		Drainage F	Patterns (B10)	
Saturation (A3)			Marl Deposits	(B15)		Moss Trim	Lines (B16)	
Water Marks (E	31)		Hydrogen Sulf	ide Odor (C1)		Dry-Seaso	n Water Table (C2)	
Sediment Depo	osits (B2)		Oxidized Rhize	ospheres on Li	ving Roots (C3)	Crayfish B	urrows (C8)	
Drift Deposits (	B3)		Presence of R	educed Iron (C	(4)	Saturation	Visible on Aerial Ima	agery (C9)
Algal Mat or Cr	ust (B4)		Recent Iron Re	eduction in Tille	ed Soils (C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (F	B5)		Thin Muck Sur	face (C7)		Geomorph	ic Position (D2)	
<del></del>	ble on Aerial Imag	<u> </u>	Other (Explain	in Remarks)			quitard (D3)	
Sparsely Veget	ated Concave Su	rface (B8)					raphic Relief (D4)	
						FAC-Neutr	al Test (D5)	
Field Observations	:							
Surface Water Prese	ent? Yes	s No X	Depth (inche	s):				
Water Table Present	t? Yes	No X	Depth (inche	s):				
Saturation Present?	Yes	No X	Depth (inche	s):	Wetland F	lydrology Present?	Yes	No X
(includes capillary fr	inge)							
Describe Recorded	Data (stream gaus	ao monitorina woll	agrial photos, pr	ovious inspect	ions) if available:			
Describe Recorded	Data (Stream gau	ge, monitoring well,	aeriai priotos, pi	evious irispecti	oris), ii avaliable.			
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point: 24B	
Tree Stratum (Plot size: 30-ft )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC:	)
1				Species Across All Strata:1 (B)	)
3				Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/	/B)
6				Prevalence Index worksheet:  Total % Cover of: Multiply by:	
Sapling/Shrub Stratum (Plot size: 15-ft )  1	0	<u> </u>		OBL species         0         x 1 =         0           FACW species         15         x 2 =         30           FAC species         0         x 3 =         0	
2. 3. 4.			<del>-</del>	FACU species 10 $\times$ 4 = 40 UPL species 75 $\times$ 5 = 375 Column Totals: 100 (A) 445 (	(B)
5				Prevalence Index = B/A =4.45	
7	0	= Total Cov	er	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation	
1. Bromus inermis / Smooth brome, Smooth brome, Hungarian	75	Yes	UPL	2 - Dominance Test is >50%	
2. Solidago gigantea / Smooth goldenrod	15	No	FACW	3 - Prevalence Index ≤3.0¹	
Solidago altissima / Canada goldenrod     Poa pratensis / Kentucky blue grass	5 5	No No	FACU FACU	4 - Morphological Adaptations¹ (Provide supporting     Problematic Hydrophytic Vegetation¹ (Explain )	
5	-			<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
9. 10.	·			Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at	t
11	100	= Total Cov		breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and	
Woody Vine Stratum (Plot size:30-ft) 1.	100	_ = 10(a) COV	GI	greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> - All herbaceous (non-woody) plants, regardless of	:
2.				size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.	
4	0	= Total Cov	er	Hydrophytic	
				Vegetation           Present?         Yes NoX	
Remarks: (Explain alternative procedures here or in a separate	report.)				

SOIL Sampling Point: 24B

Depth	Matrix		Redox	Features							
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture		Remar	ks	
0-10	10YR 3/3	100					Sndy Clay Lm				
10-24	10YR 5/3	100					Clay Loam				
			,								
								-			
ype: C=Cor	ncentration, D=Depletion, F	RM=Reduce	ed Matrix, MS=Maske	ed Sand Gra	ins.		<sup>2</sup> Locat	ion: PL=P	ore Lining, N	M=Matrix.	
ydric Soil I									ematic Hyd		
Histosol	(A1)	_	Polyvalue Below							., MLRA 149E	
_ Histic Ep	pipedon (A2)	_	_ Thin Dark Surfac	e (S9) <b>(LRF</b>	R R, MLRA 1	49B)	Coast	Prairie Re	dox (A16)	(LRR K, L, R	)
_ Black Hi	stic (A3)	_	_ Loamy Mucky Mi	neral (F1) (I	LRR K, L)		5 cm I	Mucky Pea	t or Peat (S	3) <b>(LRR K, L</b>	., R)
Hydroge	n Sulfide (A4)	_	_ Loamy Gleyed M	atrix (F2)			Dark S	Surface (S	7) <b>(LRR K</b> ,	L)	
Stratified	Layers (A5)		Depleted Matrix (	F3)			Polyva	alue Below	Surface (S	8) <b>(LRR K, L</b>	-)
Depleted	Below Dark Surface (A11	)	Redox Dark Surfa	ace (F6)			Thin D	ark Surfac	ce (S9) (LF	RR K, L)	
Thick Da	rk Surface (A12)		Depleted Dark Su	urface (F7)			Iron-M	langanese	Masses (F	12) <b>(LRR K</b> ,	L, R)
	lucky Mineral (S1)		Redox Depression	ns (F8)			_	-		F19) <b>(MLRA</b> '	
	leyed Matrix (S4)	_		` ,						A 144A, 145,	
	edox (S5)							arent Mate		, -,	,
	Matrix (S6)						_		rk Surface (	(TF12)	
	face (S7) (LRR R, MLRA	149B)							Remarks)		
Dark ou	idoc (or) (Errich, merca	1400)						(Explain iii	r (Ciriario)		
Indicators of	hydrophytic vegetation and	d wetland h	vdrology must be pre	sent unless	s disturbed o	r nrohlem	natic				
		a wouldn't	yarology maor bo pro			Problem					
Restrictive L	ayer (if observed):										
Type:			<u></u>								
Depth (in	ches):		<u></u>				Hydric Soil Pr	esent?	Yes	No	Χ
emarks:											

Project/Site:	MCES Sanitary	Sewer - Forest I	Lake	City/Cou	nty:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:	· · · · · · · · · · · · · · · · · · ·		TKDA				ate: MN	Sampling Point:	25A
Investigator(s):	Dylan Kru	ızel, Garrett We	e	Section,	Township, Ra	nge:	S28	T163, R36W	
Landform (hillslope, ter				-	ave, convex,		concave	Slope	(%): 0
Subregion (LRR or MLI		LRR K	Lat:	-	23886386	Long:	-92.993726		
Soil Map Unit Name:	· ———		sand, 1 to 6 per				NWI classification		M1C
Are climatic / hydrologic							– explain in Remark	(s.)	
	, Soil , o						cumstances" prese	•	( No
Are Vegetation			naturally p				ain any answers in	-	
SUMMARY OF FII						-	•	•	
							rto, important	10414100, 0101	
Hydrophytic Vegetati		Yes X			Is the Sam	-	Van V	Na	
Hydric Soil Present?		Yes X		_	within a W		Yes X	No	_
Wetland Hydrology F	resent?	Yes X	No		ii yes, opiio	nal Wetland Site	e ID:		-
Remarks: (Explain al Wetland	Iternative procedure d criteria is met. Ant			verage for	the time of ye	ar			
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (n		uired: check all	that apply)				Secondary Indio	ators (minimum of to	wo required)
Surface Water (		uirca, cricck aii	Water-Staine	d Leaves	(B9)			l Cracks (B6)	wo required)
High Water Table	,	_	Aquatic Faur		(00)		X Drainage Pa	` ,	
Saturation (A3)	` '	<del>-</del>	Marl Deposit				Moss Trim I		
Water Marks (B		_	Hydrogen Su		(C1)			Water Table (C2)	
Sediment Depos	•	<del>-</del>	_ , ,		on Living Ro	ots (C3)	Crayfish Bu		
Drift Deposits (E		_	Presence of	•	· ·	,		/isible on Aerial Ima	gery (C9)
Algal Mat or Cru	•	_	<del></del>		in Tilled Soils	(C6)		Stressed Plants (D1	<b>o</b> , , ,
Iron Deposits (E		_	Thin Muck S	urface (C7	)	` ,	X Geomorphic	Position (D2)	,
	ole on Aerial Imager	ry (B7)	Other (Expla		-		Shallow Aq		
Sparsely Vegeta	ated Concave Surfa	ice (B8)			•		Microtopogi	aphic Relief (D4)	
							X FAC-Neutra	l Test (D5)	
Field Observations:									
Surface Water Prese	-		Depth (inch						
Water Table Present	-		Depth (inch	· —				V V	
Saturation Present?	Yes _	X No	Depth (inch	nes):	16	Wetland Hyd	rology Present?	Yes X	No
(includes capillary fri	nge)								
Describe Recorded [	Data (stream gauge	. monitorina we	II. aerial photos. ı	previous in	spections), if	available:			
	rana (aaraam garaga	,	., p, ,						
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point: 25A
	Absolute	Dominant	Indicator	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: (A)
Tree Stratum         (Plot size:	% Cover	Species?	Status	Total Number of Dominant Species Across All Strata: 2 (B)
3			-	Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
6		= Total Cove		Prevalence Index worksheet:  Total % Cover of: Multiply by:
Sapling/Shrub Stratum       (Plot size:				OBL species       50       x 1 =       50         FACW species       25       x 2 =       50         FAC species       0       x 3 =       0         FACU species       0       x 4 =       0         UPL species       0       x 5 =       0         Column Totals:       75       (A)       100       (B)
6				Prevalence Index = B/A =1.33
Herb Stratum (Plot size: 5-ft )	0	= Total Cove		Hydrophytic Vegetation Indicators:  X 1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50%
Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattail     Phalaris arundinacea / Reed canary grass	50 15	Yes Yes	OBL FACW	X 2 - Dominance Test is >50% X 3 - Prevalence Index ≤3.0¹
Solidago gigantea / Smooth goldenrod     .	10	No	FACW	4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain )
6. 7.		_		¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8				Definitions of Vegetation Strata
11 12.				<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	75	= Total Cove	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1 2		<b>-</b>		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3. 4.				<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
	0	_ = Total Cove	er	Hydrophytic Vegetation Present? Yes X No
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 25A

	ription: (Describe to th	e depth nee			or confirm	the abse	nce of indicators	s.)
Depth (inches)	Matrix	0/		x Features	T. e= -1	1 = -2	Tout	Domonto
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-18	10YR 2/1	100	10) (D. 0) (0					
18-24	10YR 6/2	95	10YR 3/6	5	C	M	Sndy Clay Lm	PRC
					· ——			
					<del></del>			
¹Type: C=Cor	centration, D=Depletion	n, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	rains.		²Loca	tion: PL=Pore Lining, M=Matrix.
Hydric Soil II	ndicators:						Indicators	for Problematic Hydric Soils³:
Histosol	(A1)		Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> ,	MLRA 149	<b>9B)</b> 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
	ipedon (A2)		Thin Dark Surfa	•	, .		· —	t Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed		,, =/			Surface (S7) (LRR K, L)
	Layers (A5)		Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	l Below Dark Surface (A	111)	Redox Dark Su					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	(11)	Depleted Dark S				·	Manganese Masses (F12) (LRR K, L, R)
	lucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)		Redox Depress	10113 (1 0)			·	Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
		DA 440D)						
Dark Sui	face (S7) (LRR R, ML	KA 149D)					Other	(Explain in Remarks)
3Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unle	ss disturbed	or proble	natic.	
Restrictive I	ayer (if observed):							
Type:	ayer (ii observed).							
Depth (inc	chec).						Hydric Soil P	resent? Yes X No
Deptil (illi							Tiyunc 3011 F	resent: les _ A _ NO
Remarks:								

Project/Site:	MCES Sanita	ry Sewer - Forest La	ake Cit	y/County:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:		,	TKDA	· · · —		ate: MN	Sampling Point:	25B
Investigator(s):	Dylan ł	Kruzel, Garrett Wee	Se	ction, Township, F	lange:	S28	, T163, R36W	
Landform (hillslope, ter				(concave, convex		convex	Slope	(%): 2
Subregion (LRR or ML		LRR K	Lat:	•	Long:			
Soil Map Unit Name:			amy fine sand, 1 to	6 percent slopes		NWI classificati		lone
Are climatic / hydrologi					X (If no,	– explain in Remarl	(s.)	
		* * *	significantly dis		Are "Normal Circ	cumstances" prese	ent? Yes X	( No
			naturally proble		(If needed, expla	ain any answers in	Remarks.)	
SUMMARY OF FI					ions, transec	ts, important	features, etc.	
Hydrophytic Vegetati		Yes			npled Area	, <u>, , , , , , , , , , , , , , , , , , </u>	,	
Hydric Soil Present?		Yes		within a \	•	Yes	No X	
Wetland Hydrology F		Yes	_			e ID:		_
				, 555, 575				-
Remarks: (Explain a Wetland			parate report.) ipitation is above av	erage for the time	of year			
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (n		equired: check all th	at apply)			Secondary Indic	ators (minimum of t	wo required)
Surface Water (		- 1	Water-Stained Le	aves (B9)			il Cracks (B6)	
High Water Tab	le (A2)	_	- Aquatic Fauna (B	13)			atterns (B10)	
Saturation (A3)	, ,	_	Marl Deposits (B1	5)			Lines (B16)	
Water Marks (B	1)		Hydrogen Sulfide	Odor (C1)		Dry-Seasor	Water Table (C2)	
Sediment Depo	sits (B2)	_	Oxidized Rhizosp	heres on Living R	oots (C3)	Crayfish Bu	irrows (C8)	
Drift Deposits (E	33)	_	Presence of Redu	iced Iron (C4)		Saturation \	Visible on Aerial Ima	agery (C9)
Algal Mat or Cru	ust (B4)	_	Recent Iron Redu	ction in Tilled Soil	s (C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (E	35)		Thin Muck Surfac	e (C7)		Geomorphi	c Position (D2)	
Inundation Visit	ole on Aerial Imaç	gery (B7)	Other (Explain in	Remarks)		Shallow Aq	uitard (D3)	
Sparsely Vegeta	ated Concave Su	rface (B8)				Microtopog	raphic Relief (D4)	
						FAC-Neutra	al Test (D5)	
Field Observations	•							
Surface Water Prese		s No X	Depth (inches):					
Water Table Present		· — · · —						
Saturation Present?	Ye	· — · · —			Wetland Hvd	rology Present?	Yes	No X
(includes capillary fri		<u> </u>			110			
(molados sapinally in								
Describe Recorded I	Data (stream gau	ge, monitoring well,	aerial photos, previ	ous inspections), i	f available:			
Remarks:								
ixemaixs.								

VEGETATION - Use scientific names of plants.				Sampling Point: 25B
				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 0 (A)
	Absolute	Dominant	Indicator	(7)
Tree Stratum (Plot size:30-ft)	% Cover	Species?	Status	Total Number of Deminent
1				Total Number of Dominant
2.				Species Across All Strata: 2 (B)
3.				
4.				Percent of Dominant Species
5.				That Are OBL, FACW, or FAC: 0.0 (A/B)
6.				Prevalence Index worksheet:
7.		<u> </u>		
	0	= Total Cov	er	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size:15-ft)		_		OBL species 0 x 1 = 0
				FACW species 10 x 2 = 20
				FAC species 0 x 3 = 0
				FACU species 35 x 4 = 140
4				UPL species x 5 = 100
				Column Totals: 65 (A) 260 (B)
5.				
6				Prevalence Index = B/A = 4.0
7				
	0	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
1. Bromus inermis / Smooth brome, Smooth brome, Hungarian	20	Yes	UPL	2 - Dominance Test is >50%
Poa pratensis / Kentucky blue grass	15	Yes	FACU	3 - Prevalence Index ≤3.0¹
3. Phalaris arundinacea / Reed canary grass	10	No	FACW	4 - Morphological Adaptations¹ (Provide supporting
4. Solidago altissima / Canada goldenrod	10	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5. Taraxacum officinale / Red seeded dandelion, Common dand	delion5	No	FACU	
6. Plantago major / Common plantain	5	No	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				
9				Definitions of Vegetation Strata
10				
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12		- '-	- · ·	breast height (DBH), regardless of height.
	65	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )		_		greater than or equal to 3.28 ft (1 m) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of
2.				size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in
4.		<u> </u>		height.
	0	= Total Cov	er	
		_		Hydrophytic
				Vegetation
				Present?         Yes         No         X
5				
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: 25B

Depth	ription: (Describe to the Matrix	<u> </u>		x Features			•				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remar	ks	
0-12	10YR 3/6	100					Clay Loam				
12-24	10YR 2/1	100					Sndy Clay Lm				
			•								
	-			_							
	-		•								
				_							
Type: C=Co	ncentration, D=Depletion	n RM=Redu	red Matrix MS=Mas	ked Sand Gr			2l ocatio	n: PI =P	ore Lining, N	1=Matrix	
Туре. С-Со	Ticeriti attori, D-Depiettor	II, INVI-INEGO		- Sand Gi	allis.		Location	лі. г L=г ·	ore ciriling, in	/i-iviati ix.	
lydric Soil I	ndicators:						Indicators f	or Proble	ematic Hyd	ric Soils³:	
Histosol	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R,I</b>	<b>VLRA 149</b>	<b>B)</b> 2 cm M	uck (A10	) (LRR K, L	, MLRA 14	9B)
Histic E	pipedon (A2)		Thin Dark Surfa	ace (S9) (LR	R R, MLRA	149B)	Coast F	Prairie Re	dox (A16)	(LRR K, L,	R)
	istic (A3)		Loamy Mucky N			•			it or Peat (S		
	en Sulfide (A4)		Loamy Gleyed		, ,				7) <b>(LRR K</b> ,		
	d Layers (A5)		Depleted Matrix						Surface (S	-	. L)
	d Below Dark Surface (A	<b>A11</b> )	Redox Dark Su						ce (S9) (LR		, –,
	ark Surface (A12)	,	Depleted Dark						Masses (F		KIR)
	Mucky Mineral (S1)		Redox Depress					•	olain Soils (F	, .	
	Gleyed Matrix (S4)		Redox Depress	10113 (1 0)					A6) <b>(MLRA</b>		
	• • •									1 144A, 146	), 149D)
	Redox (S5)								erial (F21)	TE40\	
	Matrix (S6)	D. 4.40D)							rk Surface (	1112)	
Dark Su	ırface (S7) (LRR R, ML	.RA 149B)					Other (	Explain ir	Remarks)		
3Indicators of	hydrophytic vegetation	and wetland	hydrology must be r	resent unles	ss disturbed	or problem	natic				
- Indicators of	- Try drop Try do Togotadon	and Wolland	- Trydrology made bo p		- diotal boa	or problem	iauo.				
Restrictive L	_ayer (if observed):										
Type:											
Depth (in	nches):						Hydric Soil Pre	sent?	Yes	No	X
Remarks:											
Verriains.											

Project/Site:	MCES Sanitar	y Sewer - Forest Lake	e City/Cou	ıntv: Fo	orest Lake/Wa	shinaton	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		Sta		Sampling Point:	26A
Investigator(s):	Dvlan K	ruzel, Garrett Wee		Township, Rang		-	, T163, R36W	
Landform (hillslope, te			Local relief (cond		-			e (%): 1
Subregion (LRR or ML				.23925928	Long:	-92.993749		m: WGS 84
Soil Map Unit Name:	, <del></del>		ster loam, Hydric soil ur			NWI classificati	-	PEM1A
	ic conditions on the		time of year? Yes		X (If no,	explain in Remar		
Are Vegetation					re "Normal Circ	umstances" pres	ent? Yes	X No
			naturally problemation			in any answers ir		
			owing sampling p			-	•	
Hydrophytic Vegetat		Yes X	No	Is the Sampl				
Hydric Soil Present?		Yes X	No	within a Wet		Yes X	No	
Wetland Hydrology		Yes X	No			: ID:		_
- Wettaria Tryarology				ii yes, optione	ui vvetiaria oito			
		ires here or in a sepa intecedent precipitation	rate report.) on is above average for	the time of year	г			
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
		equired; check all that	annly)			Secondary Indic	ators (minimum of	two required)
Surface Water		quirou, orioon air triat	Water-Stained Leaves	(B9)			il Cracks (B6)	two roquirou)
High Water Tab	` ,	_	Aquatic Fauna (B13)	(20)		X Drainage P	` ,	
Saturation (A3)			Marl Deposits (B15)				Lines (B16)	
Water Marks (E	•		Hydrogen Sulfide Odor	· (C1)			n Water Table (C2)	
Sediment Depo	osits (B2)	_	Oxidized Rhizospheres	on Living Roots	s (C3)	Crayfish Bu		
Drift Deposits (	B3)		Presence of Reduced I	Iron (C4)		Saturation	Visible on Aerial Im	agery (C9)
Algal Mat or Cr	ust (B4)		Recent Iron Reduction	in Tilled Soils (C	C6)	Stunted or	Stressed Plants (D	1)
Iron Deposits (	B5)	_	Thin Muck Surface (C7	<b>'</b> )		X Geomorphi	c Position (D2)	
Inundation Visi	ble on Aerial Image	ery (B7)	Other (Explain in Rema	arks)		Shallow Aq	uitard (D3)	
Sparsely Veget	tated Concave Sur	face (B8)				Microtopog	raphic Relief (D4)	
						X FAC-Neutra	al Test (D5)	
Field Observations	•							
Surface Water Prese		No X	Depth (inches):					
Water Table Present		No X	· · · · /					
Saturation Present?			· · · · · <del></del>		Wetland Hydr	rology Present?	Yes X	No
(includes capillary fr		NOX			rrottana rrya.	ology i rocoller	100 <u>X</u>	
(e.aaee eapa.)								
Describe Recorded	Data (stream gaug	je, monitoring well, a	erial photos, previous ir	nspections), if av	/ailable:			
Remarks:								
ixemarks.								
1								

National Control	Absolute   Dominant Indicator   Tree Stratum (Plot size:	VEGETATION - Use scientific names of plants.				Sampling Point:2	26A
Total Cover	Total Number of Dominant Species   3					Number of Dominant Species	_ (A)
Percent of Dominant Species	Percent of Dominant Species	1.			Status		_ (B)
Prevalence Index worksheet:   Total % Cover of:   Multiply by:   Total % Cover of:   Total % Cover	Prevalence Index worksheet:   Total % Cover	4.	-				_ (A/B)
Sapling/Shrub Stratum (Plot size: 15-ft   15	Sapiling/Shrub Stratum	6					
FAC species	FAC species   0			= Total Cov	er		<u> </u>
2.	2.	1					
1.	1					· — — — — — — — — — — — — — — — — — — —	
Column Totals:   45   (A)   80   (B)	Column Totals:   45   (A)   80   (B)	2				· — — — — — — — — — — — — — — — — — — —	<del></del>
6.	5.	4					— (B)
7.	The position of the prevention of the prevent of the prevention o	_				(,	` ′
Herb Stratum (Plot size:5-ft)  1. Phalaris arundinacea / Reed canary grass 25 Yes FACW 2. Solidago gigantea / Smooth goldenrod 3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai 4	Herb Stratum (Plot size:					Prevalence Index = B/A = 1.78	
Herb Stratum (Plot size: 5-ft   1. Phalaris arundinacea / Reed canary grass   25   Yes   FACW   2. Solidago gigantea / Smooth goldenrod   10   Yes   FACW   3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai   10   Yes   OBL   4. Morphological Adaptations* (Provide supporting   Problematic Hydrophytic Vegetation* (Explain )   Problematic Hydrophytic vegetation* (	Herb Stratum (Plot size: 5-ft ) 1. Phalaris arundinacea / Reed canary grass 25 Yes FACW 2. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigantea / Smooth goldenrod (Explain )  5. Solidago gigantea / Smooth goldenrod 10 Yes OBL 4. Solidago gigant	7		- Total Cov		Hydrophytic Vegetation Indicators:	
1. Phalaris arundinacea / Reed canary grass 2. Solidago gigantea / Smooth goldenrod 1. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattail 1. Yes OBL 1. Problematic Hydrophytic Vegetation¹ (Explain) 1. Definitions of Vegetation Strata 1. Sapling/shrub - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. 1. Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. 1. Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height. 1. Woody vines - All woody vines greater than 3.28 ft in height. 1. Hydrophytic Vegetation 1. Hydrophytic Veget	1. Phalaris arundinacea / Reed canary grass 2. Solidago gigantea / Smooth goldenrod 1. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai 1. Yes OBL 1.	Herb Stratum (Plot size: 5-ft )		_ = 10(a) C0V	CI		
2. Solidago gigantea / Smooth goldenrod  3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattail  4.	2. Solidago gigantea / Smooth goldenrod 3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai 4.		25	Yes	FACW		
4. Problematic Hydrophytic Vegetation¹ (Explain )  5. 6.	4. Problematic Hydrophytic Vegetation¹ (Explain )  5. 6.					<del></del>	
5. 6. 7. 8. 9. 1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No	5. 6. 7. 8. 9. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai	10	Yes	OBL	4 - Morphological Adaptations¹ (Provide suppo	rting
Second Stratum	5. 6. 7. 8. 9. 10. 11. 12. Woody Vine Stratum (Plot size: 30-ft ) 1. 2. 3. 4.  0 = Total Cover   Woody Vines - All woody vines greater than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.	4.	·			Problematic Hydrophytic Vegetation¹ (Explain )	)
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No	be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? YesX No	5					
8.	8.	<u> </u>					st
9. Definitions of Vegetation Strata  10. Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  Woody vines - All woody vines greater than 3.28 ft in height.  YesX No	9. Definitions of Vegetation Strata  10. Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present? Yes X No					be present, unless disturbed or problematic.	
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	10					Definitions of Vegetation Strata	
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.    Woody Vine Stratum	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.    Moody Vine Stratum	40					
breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  The control of the control	breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation Present? Yes X No	44				Tree - Woody plants 3 in. (7.6 cm) or more in diame	eter at
Woody Vine Stratum (Plot size: 30-ft )  1.	Woody Vine Stratum (Plot size: 30-ft )  1.					breast height (DBH), regardless of height.	
2	size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation Present?  Yes X No		45	= Total Cov	er	greater than or equal to 3.28 ft (1 m) tall.	
4	4		· <del></del>			size, and woody plants less than 3.28 ft tall.	
0 = Total Cover  Hydrophytic Vegetation Present? Yes X No	0 = Total Cover  Hydrophytic Vegetation Present? Yes X No						in
Vegetation       Present?     Yes X No	Vegetation Present? Yes X No	T	0	= Total Cov	er	The described in	
	L L			-		Vegetation	
Remarks: (Explain alternative procedures here or in a separate report.)	Remarks: (Explain alternative procedures here or in a separate report.)					Tresent: 103 A NO	
Nothania. (Explain alternative procedures note of in a separate report.)		Remarks: (Explain alternative procedures here or in a separate	report.)				

SOIL Sampling Point: 26A

	ription: (Describe to th	e depth n			or confirm	the abser	nce of indicators	s.)
Depth (inches)	Matrix	0/		Features	T: 1	1 2	Te do	Demonstra
(inches)	Color (moist)	%	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-10	10YR 2/1	98	10YR 3/6	2	<u>C</u>	M	Sndy Clay Lm	
10-18	10YR 5/2	95	10YR 3/6	5	C	M	Sndy Clay Lm	PRC
								-
			· -					
¹Type: C=Coi	ncentration, D=Depletion	n, RM=Red	uced Matrix, MS=Masl	ked Sand Gr	rains.		²Loca	ation: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indicators	s for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> .	MLRA 149		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	-			· —	t Prairie Redox (A16) (LRR K, L, R)
Black Hi			Loamy Mucky M					Mucky Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleyed N		(=:::::, =)			Surface (S7) (LRR K, L)
	d Layers (A5)		X Depleted Matrix					value Below Surface (S8) (LRR K, L)
	d Below Dark Surface (A	(11)	X Redox Dark Sur					Dark Surface (S9) (LRR K, L)
	ark Surface (A12)	(11)	Depleted Dark S					Wanganese Masses (F12) (LRR K, L, R)
	fucky Mineral (S1)		Redox Depressi					mont Floodplain Soils (F19) (MLRA 149B)
	Gleyed Matrix (S4)		Redox Depressi	10113 (1 0)				Spodic (TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
	rface (S7) (LRR R, ML	DA 140D)						r (Explain in Remarks)
Dark Su	nace (37) (LIKIK IK, IMIL	IXA 143D)					Other	(Explain in Nemarks)
<sup>3</sup> Indicators of	hydrophytic vegetation	and wetlan	d hydrology must be p	resent, unle	ss disturbed	or probler	natic.	
Restrictive L	.ayer (if observed):							
Type:	,							
Depth (in	ches):						Hydric Soil P	resent? Yes X No
Remarks:								

Project/Site:	MCES Sanitary	y Sewer - Forest La	.ake City/Co	ounty: Forest Lak	e/Washington	Sampling Date: 10/19/2023
Applicant/Owner:	-	<u>,                                      </u>	TKDA		State: MN	Sampling Point: 26B
Investigator(s):	Dylan K	ruzel, Garrett Wee	Section	n, Township, Range:	S28,	T163, R36W
Landform (hillslope, ter				ncave, convex, none):		•
Subregion (LRR or ML						
Soil Map Unit Name:			ebster Loam, Hydric soil		NWI classification	n: None
			is time of year? Yes	No X (I	f no, explain in Remark	s.)
Are Vegetation	, Soil	, or Hydrology	significantly disturb	ped? Are "Norma	Il Circumstances" prese	nt? Yes X No
			naturally problema		explain any answers in	Remarks.)
				point locations, tran	sects, important	features, etc.
Hydrophytic Vegetat		Yes		Is the Sampled Area		<b>,</b>
Hydric Soil Present?		Yes		within a Wetland?	Vec	NoX
Wetland Hydrology F		Yes			d Site ID:	<del></del>
vveliand riydrology r	resent:		NOX	ii yes, optional wetiani	u Site ID.	
Remarks: (Explain a Wetlan			eparate report.) cipitation is above averaç	ge for the time of year		
HYDROLOGY						
Wetland Hydrology	Indicators:		-			
Primary Indicators (r		ouired: check all th	hat annly)		Secondary Indica	ators (minimum of two required)
Surface Water (		44	Water-Stained Leaves	s (B9)		Cracks (B6)
High Water Tab	` ,		Aquatic Fauna (B13)	- ()	Drainage Pa	` '
Saturation (A3)	,		Marl Deposits (B15)		Moss Trim L	, ,
Water Marks (B		_	Hydrogen Sulfide Odd	or (C1)		Water Table (C2)
Sediment Depo	osits (B2)		Oxidized Rhizosphere	es on Living Roots (C3)	Crayfish Bu	· ·
Drift Deposits (I		_	Presence of Reduced			isible on Aerial Imagery (C9)
Algal Mat or Cri	•		Recent Iron Reduction	n in Tilled Soils (C6)	Stunted or S	Stressed Plants (D1)
Iron Deposits (E	B5)		Thin Muck Surface (C	27)	Geomorphic	Position (D2)
Inundation Visit	ble on Aerial Image	ery (B7)	Other (Explain in Ren	narks)	Shallow Aqu	uitard (D3)
Sparsely Veget	ated Concave Sur	face (B8)	_		Microtopogr	aphic Relief (D4)
					FAC-Neutra	Test (D5)
Field Observations						
Field Observations		. No V	Donth (inches):			
Surface Water Present			Depth (inches): Depth (inches):			
Water Table Present Saturation Present?			<u> </u>	Wetland	Hydrology Procent?	Vos. No. V
(includes capillary fri		NOX	Depth (inches):	welland	Hydrology Present?	Yes NoX
(Iliciudes capillary III	<u>e</u> ,					
Describe Recorded I	Data (stream gaug	e, monitoring well	, aerial photos, previous	inspections), if available:		
	, ,	, ,	, , , , ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Remarks:						
1						

VEGETATION - Use scientific names of plants.				Sampling Point: 26B
				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 2 (A)
	Absolute	Dominant	Indicator	That / Ne OBE, 17/OV, 011/10.
Tree Stratum (Plot size:30-ft)	% Cover	Species?	Status	Total Number of Deminent
1				Total Number of Dominant
2.				Species Across All Strata: 5 (B)
3.				
4				Percent of Dominant Species
				That Are OBL, FACW, or FAC: 40.0 (A/B)
^				
·		· ·		Prevalence Index worksheet:
7			- <del> </del>	Total % Cover of: Multiply by:
	0	_ = Total Cov	er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 20 x 2 = 40
1				FAC species 0 x 3 = 0
2				FACU species 20 x 4 = 80
3				UPL species 40 x 5 = 200
4.				· — — — — — — — — — — — — — — — — — — —
_				Column Totals: 80 (A) 320 (B)
6				
				Prevalence Index = B/A = 4.0
7		T-4-1 O		Hadronkatia Wanatatian Indiadana
	0	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
1. Bromus inermis / Smooth brome, Smooth brome, Hungarian	40	Yes	UPL	2 - Dominance Test is >50%
Solidago altissima / Canada goldenrod	10	Yes	FACU	3 - Prevalence Index ≤3.0¹
3. Poa pratensis / Kentucky blue grass	10	Yes	FACU	4 - Morphological Adaptations1 (Provide supporting
4. Solidago gigantea / Smooth goldenrod	10	Yes	FACW	Problematic Hydrophytic Vegetation¹ (Explain )
5. Phalaris arundinacea / Reed canary grass	10	Yes	FACW	
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
				be present, unless disturbed of problematic.
		-		Definitions of Vegetation Strata
9				Dominione of Vogotation Strata
10				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11				breast height (DBH), regardless of height.
12				
	80	_ = Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )				greater than or equal to 3.28 ft (1 m) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of
2.				size, and woody plants less than 3.28 ft tall.
3.				Woody vines - All woody vines greater than 3.28 ft in
4.				height.
4	0	= Total Cov		
		_ = 10tal C0V	EI	Hydrophytic
				Vegetation
				Present?         Yes         No         X
Remarks: (Explain alternative procedures here or in a separate	report )			
Ternarks. (Explain alternative procedures here of in a separate	тероп.,			

SOIL Sampling Point: 26B

	ription: (Describe to the	ne depth nee			or confirm	the abse	nce of indicators	s.)			
Depth	Matrix	0/		x Features	T 1		T. 1		<b>.</b>		
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remark	S	
0-14	10YR 3/3	100					Sndy Clay Lm				
14-24	10YR 2/1	98	10YR 3/4	2	C	M	Sndy Clay Lm	PRC			
1				_							
1				_							
1											
				_							
¹Type: C=Co	ncentration, D=Depletio	n, RM=Redu	ced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=P	ore Lining, M	=Matrix.	
Hydric Soil I	ndicators:						Indicators	for Probl	ematic Hydri	ic Soils³:	
Histosol	(A1)		Polyvalue Belov	w Surface (S	8) <b>(LRR R</b> ,	MLRA 149	<b>9B)</b> 2 cm	Muck (A10	) (LRR K, L,	<b>MLRA 149</b>	B)
	pipedon (A2)		Thin Dark Surfa				· —	•	edox (A16) (I		•
	stic (A3)		Loamy Mucky N			,			at or Peat (S3		-
	n Sulfide (A4)		Loamy Gleyed		, ,				7) <b>(LRR K</b> , I		, ,
	d Layers (A5)		Depleted Matrix						Surface (S8		L)
	d Below Dark Surface (	A11)	Redox Dark Su						ce (S9) <b>(LRF</b>		-,
	ark Surface (A12)	,	Depleted Dark						Masses (F1		. L. R)
	lucky Mineral (S1)		Redox Depress					ū	plain Soils (F	, .	
	Gleyed Matrix (S4)			.00 (. 0)					A6) <b>(MLRA</b>		
	ledox (S5)								erial (F21)	, ,	,
	Matrix (S6)								ark Surface (1	F12)	
	rface (S7) (LRR R, ML	PA 149R)							n Remarks)	1 12)	
Dark ou	ridoc (O7) (Ertit it; IIIE							(Explain ii	r (ciliano)		
3Indicators of	hydrophytic vegetation	and wetland	hydrology must be p	resent, unles	ss disturbed	l or probler	natic.				
Restrictive L	.ayer (if observed):										
Type:											
Depth (in	ches):						Hydric Soil P	resent?	Yes	No	Χ
			<u></u>								
Remarks:											

Project/Site:	MCES Sanitary	Sewer - Forest	Lake C	ity/County:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA	, , <u> </u>		ate: MN	Sampling Point:	27A
Investigator(s):	Dylan Kru	ızel. Garrett We	e S	ection, Township, R			T163, R36W	
Landform (hillslope, ter				f (concave, convex	-	concave	•	(%): 0
Subregion (LRR or ML				•	Long:	-92.993195		• •
Soil Map Unit Name:						NWI classification		M1A
Are climatic / hydrologi					X (If no	explain in Remark		
		• •	significantly d			cumstances" prese	•	No
			naturally prob			ain any answers in		
SUMMARY OF FI						-	•	
					·	to, important	icatures, etc.	
Hydrophytic Vegetat		Yes X			npled Area			
Hydric Soil Present?		Yes X		within a V			No	-
Wetland Hydrology F	Present?	Yes X	No	If yes, opt	onal Wetland Site	e ID:		
Remarks: (Explain a Wetlan			eparate report.) itation is above avera	age				
HYDROLOGY								
Wetland Hydrology	/ Indicators							
Primary Indicators (r		uired: check all	that apply)			Secondary Indica	ators (minimum of tv	vo required)
Surface Water		uncu, cricck an	Water-Stained L	eaves (R9)			l Cracks (B6)	vo required)
High Water Tab	` '	-	Aquatic Fauna (	` ,			atterns (B10)	
X Saturation (A3)	` '	=	Marl Deposits (E	•		Moss Trim L		
Water Marks (B		<del>-</del>	Hydrogen Sulfid	•			Water Table (C2)	
Sediment Depo	•	-	_ · ·	pheres on Living R	oots (C3)	Crayfish Bu		
Drift Deposits (I		-	Presence of Rec		,		/isible on Aerial Ima	gery (C9)
Algal Mat or Cr	•	-		uction in Tilled Soil	s (C6)		Stressed Plants (D1)	• , ,
Iron Deposits (E		_	Thin Muck Surfa	ice (C7)	, ,	X Geomorphic	Position (D2)	
	ble on Aerial Imager	ry (B7)	Other (Explain in			Shallow Aqu		
Sparsely Veget	tated Concave Surfa	ace (B8)				Microtopogr	aphic Relief (D4)	
						X FAC-Neutra	l Test (D5)	
Field Observations								
Surface Water Prese	<del>-</del>		Depth (inches)					
Water Table Present	<del>-</del>		Depth (inches)		18/-41	l	V V	NI-
Saturation Present?	_	X No	Depth (inches)	:8	Wetland Hyd	rology Present?	Yes X	No
(includes capillary fri	inge)							
Describe Recorded	Data (stream gauge	monitoring we	ell, aerial photos, prev	vious inspections) i	f available:			
				nous mopeodons), i				
Describe Necorded	Data (otroain gaage	,og	, , , , ,		avallable.			
Describe Necorded					avallable.			
Remarks:					avallable.			
					i avallable.			
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					а ачанаыне.			

				Sampling Point: 27A
	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:  Number of Dominant Species  That Are OBL, FACW, or FAC: 2 (A)
1				Total Number of Dominant Species Across All Strata: 2 (B)
3		-		Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
6				Prevalence Index worksheet:
7	0	= Total Cov	er	
Sapling/Shrub Stratum (Plot size:15-ft)		-		FACW species 10 x 2 = 20
Salix amygdaloides / Peachleaf willow	10	Yes	FACW	FAC species 15 x 3 = 45
2				FACU species 0 x 4 = 0
ː <del></del>				UPL species 0 x 5 = 0
5				Column Totals:100 (A)140 (B)
6		-	· ———	Prevalence Index = B/A = 1.4
7	10	= Total Cov	 er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )			<b>.</b>	X 1 - Rapid Test for Hydrophytic Vegetation
1. Typha angustifolia / Narrow leaf cattail, Narrow-leaved cattai	75	Yes	OBL	X 2 - Dominance Test is >50%
2. Equisetum arvense / Common horsetail	15	No	FAC	X 3 - Prevalence Index ≤3.0¹
3.				4 - Morphological Adaptations¹ (Provide supporting
4				Problematic Hydrophytic Vegetation¹ (Explain )
6.				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7.				be present, unless disturbed or problematic.
8.				Definitions of Venetation Charts
9			·	Definitions of Vegetation Strata
10				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
11				breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )	90	= Total Cov	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
1		_	<del>-</del> ———	<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3.				<b>Woody vines</b> - All woody vines greater than 3.28 ft in height.
4	0	= Total Cov	er	
_		-		Hydrophytic Vegetation Present? Yes X No
Remarks: (Explain alternative procedures here or in a separate re	eport.)			
remains. (Explain alternative procedures fiere of in a separate re	sport.)			
Remarks: (Explain alternative procedures here or in a separate re	eport.)			

SOIL Sampling Point: 27A

	Matrix		Redox	k Features			nce of indicators	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-10	10YR 2/1	98	10YR 3/4	2	С	М	Sndy Clay Lm	PRC
10-24	10YR 5/2	95	10YR 3/6	5	С	М	Sndy Clay Lm	PRC
	·		-	-			•	
	· <u></u>						·	-
	· <u></u> -						·	-
	· <u></u> -						·	-
	·							-
	·							-
	·		-				-	-
							-	
Type: C=Co	ncentration, D=Depletion,	RM=Red	uced Matrix MS=Masl	ked Sand Gr	ains .		²l oca	tion: PL=Pore Lining, M=Matrix.
ydric Soil I	ndicators:						Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Polyvalue Belov	v Surface (S	8) <b>(LRR R,</b>	MLRA 14	<b>9B)</b> 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
Histic E	pipedon (A2)		Thin Dark Surfa	ce (S9) (LR	R R, MLRA	149B)	Coas	t Prairie Redox (A16) (LRR K, L, R)
Black Hi	istic (A3)		Loamy Mucky N	lineral (F1)	(LRR K, L)		5 cm	Mucky Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Gleyed I	Matrix (F2)			Dark	Surface (S7) (LRR K, L)
Stratified	d Layers (A5)		X Depleted Matrix	(F3)			Polyv	ralue Below Surface (S8) (LRR K, L)
X Deplete	d Below Dark Surface (A1	1)	X Redox Dark Sur	face (F6)			Thin I	Dark Surface (S9) (LRR K, L)
Thick Da	ark Surface (A12)		Depleted Dark S	Surface (F7)			Iron-N	Manganese Masses (F12) (LRR K, L, I
Sandy N	Mucky Mineral (S1)		Redox Depress	ions (F8)			Piedn	nont Floodplain Soils (F19) (MLRA 149
Sandy G	Gleyed Matrix (S4)						Mesic	Spodic (TA6) (MLRA 144A, 145, 149
Sandy F	Redox (S5)						Red F	Parent Material (F21)
	Matrix (S6)							Shallow Dark Surface (TF12)
	ırface (S7) (LRR R, MLR	A 149B)						(Explain in Remarks)
							<del></del>	
Indicators of	f hydrophytic vegetation ar	nd wetlan	d hydrology must be p	resent, unles	s disturbed	or proble	matic.	
Restrictive L	_ayer (if observed):							
Type:	,							
Depth (in	nches):						Hydric Soil P	resent? Yes X No
	<u> </u>							
Remarks:								

Project/Site:	MCES Sanitar	y Sewer - Forest La	ake City	/County:	Forest Lake/Wa	shington	Sampling Date:	10/19/2023
Applicant/Owner:		<u>,                                     </u>	TKDA			ate: MN	Sampling Point:	27B
Investigator(s):	Dylan K	(ruzel, Garrett Wee	Sec	tion, Township, R	ange:	S28	, T163, R36W	
Landform (hillslope, ter				concave, convex,			Slope	(%): 3
Subregion (LRR or ML					Long:	-92.993240		
Soil Map Unit Name:			Dundas fine sandy lo			NWI classificati	on: N	lone
Are climatic / hydrologi			•		X (If no,	– explain in Remarl	(s.)	
Are Vegetation		• •	•			cumstances" pres	•	( No
			naturally proble		(If needed, expla	ain any answers in	Remarks.)	
SUMMARY OF FI					ions, transec	ts, important	features, etc.	
Hydrophytic Vegetat		Yes			npled Area	, <u>, , , , , , , , , , , , , , , , , , </u>	,	
Hydric Soil Present?		Yes		within a W	-	Yes	No X	
Wetland Hydrology F		Yes				e ID:		=
				,				
Remarks: (Explain a Wetlan			parate report.) ipitation is above ave	erage for the time	of year			
HYDROLOGY								
Wetland Hydrology	Indicators:							
Primary Indicators (r		equired: check all th	at apply)			Secondary Indic	ators (minimum of to	wo required)
Surface Water (			Water-Stained Lea	ives (B9)	-		il Cracks (B6)	
High Water Tab	le (A2)	_	- Aquatic Fauna (B1	` '		Drainage P	atterns (B10)	
Saturation (A3)		_	Marl Deposits (B1	5)		Moss Trim	Lines (B16)	
Water Marks (B	31)	<u> </u>	Hydrogen Sulfide	Odor (C1)		Dry-Seasor	Water Table (C2)	
Sediment Depo	sits (B2)	_	Oxidized Rhizosph	neres on Living Ro	ots (C3)	Crayfish Bu	irrows (C8)	
Drift Deposits (	B3)	_	Presence of Redu	ced Iron (C4)		Saturation '	Visible on Aerial Ima	agery (C9)
Algal Mat or Cri	ust (B4)	_	Recent Iron Reduc	ction in Tilled Soils	(C6)	Stunted or	Stressed Plants (D1	)
Iron Deposits (E	35)	_	Thin Muck Surface	e (C7)		Geomorphi	c Position (D2)	
Inundation Visit	ole on Aerial Imag	ery (B7)	Other (Explain in F	Remarks)		Shallow Aq	uitard (D3)	
Sparsely Veget	ated Concave Su	rface (B8)					raphic Relief (D4)	
						FAC-Neutra	al Test (D5)	
Field Observations	:							
Surface Water Prese	ent? Yes	s No X	Depth (inches):					
Water Table Present	? Yes	No X						
Saturation Present?	Yes	s No X	Depth (inches):		Wetland Hyd	rology Present?	Yes	No X
(includes capillary fri	inge)							
. , ,								
Describe Recorded I	Data (stream gau	ge, monitoring well,	aerial photos, previo	us inspections), if	available:			
Remarks:								

VEGETATION - Use scientific names of plants.				Sampling Point: 27B
				Dominance Test worksheet:
				Number of Dominant Species
		<b>5</b>		That Are OBL, FACW, or FAC: 1 (A)
	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1.				Species Across All Strata: 2 (B)
2			<del></del>	
3				Percent of Dominant Species
4			<u> </u>	That Are OBL, FACW, or FAC: 50.0 (A/B)
5			<u> </u>	That Aic Obe, I Aort, of I Ao.
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	0	= Total Cove	er	OBL species 0 $x = 0$
Sapling/Shrub Stratum (Plot size:15-ft)		_		FACW species 25 x 2 = 50
1.				FAC species $0 \times 3 = 0$
2.				FACU species 35 x 4 = 140
3.		_		UPL species 15 x 5 = 75
4.				
				Column Totals:
6				
7			- ——	Prevalence Index = B/A = 3.53
1.		- Total Cav		Under why tie Verestetien Indicatory
	0	_ = Total Cove	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		.,	014	1 - Rapid Test for Hydrophytic Vegetation
Phalaris arundinacea / Reed canary grass	25	Yes	FACW	2 - Dominance Test is >50%
Cirsium arvense / Canada thistle	20	Yes	FACU	3 - Prevalence Index ≤3.0¹
3. Bromus inermis / Smooth brome, Smooth brome, Hungarian	10	No	UPL	4 - Morphological Adaptations¹ (Provide supporting
4. Andropogon gerardii / Big bluestem	10	No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5. Asclepias syriaca / Common milkweed	5	No	UPL	
6. Rudbeckia subtomentosa / Sweet coneflower	5	No	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
7.				be present, unless disturbed or problematic.
8.				·
9.				Definitions of Vegetation Strata
10				
11				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at
12.		_	<del> </del>	breast height (DBH), regardless of height.
·	75	= Total Cove		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size: 30-ft )			<b>,</b> 1	greater than or equal to 3.28 ft (1 m) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of
2.			<del> </del>	size, and woody plants less than 3.28 ft tall.
				Woody vines - All woody vines greater than 3.28 ft in
3				height.
4				
	0	_ = Total Cove	er	Hydrophytic
				Vegetation
				Present?         Yes         No         X
Remarks: (Explain alternative procedures here or in a separate	report.)			
	•			

SOIL Sampling Point: 27B Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Matrix Redox Features Color (moist) % Loc<sup>2</sup> (inches) Color (moist) Type<sup>1</sup> Texture Remarks 10YR 3/3 100 Clay Loam 0-24 <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) \_\_\_ Depleted Dark Surface (F7) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Yes \_\_\_ Depth (inches): **Hydric Soil Present?** No X Remarks:

Project/Site:	MCES Sanitary	Sewer - Fores	t Lake	City/Cou	nty:	Forest Lake/Wa	ashington	Sampling Date:	10/19/2023
Applicant/Owner:	· ·		TKDA	_ ′			ate: MN	Sampling Point:	28A
Investigator(s):	Dylan Kri	ızel. Garrett W	'ee	Section.	Township, Ra			, T163, R36W	-
Landform (hillslope, ter				_	ave, convex, r		concave		(%): 0
Subregion (LRR or MLF				-	24263129	Long:	-92.993548		· ·
Soil Map Unit Name:							NWI classificati		JBHx
Are climatic / hydrologic						X (If no	explain in Remark		
	, Soil,	• •	•			`	cumstances" prese	•	( No
	, Soil,						ain any answers in		<u> </u>
SUMMARY OF FIR		-					•	•	
							zis, important	reatures, etc.	
Hydrophytic Vegetati			X No		Is the Sam				
Hydric Soil Present?			X No		within a We			No	_
Wetland Hydrology P	resent?	Yes	X No	_	If yes, optio	nal Wetland Sit	e ID:		
Remarks: (Explain al Wetland	lternative procedur d criteria is met. An			average for	the time of ye	ar			
HYDROLOGY									
Wetland Hydrology	Indicators:								
Primary Indicators (m		uired: check al	II that apply)				Secondary Indic	ators (minimum of t	wo required)
Surface Water (		uncu, cricck ai	Water-Staine	ed Leaves (	'R9)	<del></del>		il Cracks (B6)	wo required)
High Water Tabl	•		Aquatic Fau		(00)			atterns (B10)	
Saturation (A3)	(*)		Marl Deposit				Moss Trim		
Water Marks (B	1)		Hydrogen Si		(C1)			Water Table (C2)	
Sediment Depos	•		, ,		on Living Roo	ots (C3)	Crayfish Bu		
Drift Deposits (E			Presence of	•	· ·	,		visible on Aerial Ima	agery (C9)
Algal Mat or Cru	•		<del></del>		in Tilled Soils	(C6)		Stressed Plants (D1	• , , ,
Iron Deposits (B			Thin Muck S	Surface (C7)	)		X Geomorphi	c Position (D2)	•
	ole on Aerial Image	ry (B7)	Other (Expla				Shallow Aq		
Sparsely Vegeta	ated Concave Surfa	ace (B8)					Microtopog	raphic Relief (D4)	
							X FAC-Neutra	al Test (D5)	
Field Observations:			V 5 " " 1						
Surface Water Prese			X Depth (inch						
Water Table Present		No	X Depth (incl	· -	40	W-41		V V	NI-
Saturation Present?	Yes	X No	Depth (inch	nes):	16	Wetland Hyd	rology Present?	Yes X	No
(includes capillary fri	nge)								
Describe Recorded D	Data (stream gauge	monitoring w	ell aerial photos	previous in	spections) if	available.			
Describe recorded b	Jata (Stream gaage	, morntoring w	cii, acriai priotos,	previous in	opcoliono), ii i	avallable.			
Remarks:									

VEGETATION - Use scientific names of plants.				Sampling Point:28A
<u>Tree Stratum</u> (Plot size:30-ft) 1	Absolute % Cover		Indicator Status	Dominance Test worksheet:  Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)  Total Number of Dominant Species Across All Strata: 1 (B)
2. 3. 4. 5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)
6. 7.			er	Prevalence Index worksheet:           Total % Cover of:
Sapling/Shrub Stratum     (Plot size:				FACW species       0       x 2 =       0         FAC species       0       x 3 =       0         FACU species       0       x 4 =       0         UPL species       0       x 5 =       0         Column Totals:       100       (A)       100       (B)
7			OBL	Hydrophytic Vegetation Indicators:  X 1 - Rapid Test for Hydrophytic Vegetation  X 2 - Dominance Test is >50%  X 3 - Prevalence Index ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)  ¹Indicators of hydric soil and wetland hydrology must
7. 8. 9.		_		be present, unless disturbed or problematic.  Definitions of Vegetation Strata
10. 11. 12.				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size:30-ft)  1		_ = Total Cov	er 	Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2. 3. 4.				Woody vines - All woody vines greater than 3.28 ft in height.
	0	_ = Total Cov	er	Hydrophytic Vegetation Present?  Yes X No
Remarks: (Explain alternative procedures here or in a separa	te report.)			

SOIL Sampling Point: 28A

	ription: (Describe to the	ne depth n			or confirm	tne abse	nce of indicators	s.)
Depth (inches)	Matrix	0/		x Features	Ti ma a 1	1 0 02	Taytura	Domestre
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-20	10YR 2/1	90	10YR 3/6		<u> </u>	M	Sndy Clay Lm	PRC
20-24	10YR 6/2	95	10YR 3/6	5	<u>C</u>	M	Sndy Clay Lm	PRC
				_				
				_				
				_				
				_				
¹Type: C=Con	ncentration, D=Depletio	n, RM=Red	duced Matrix, MS=Mas	ked Sand Gr	ains.		²Loca	tion: PL=Pore Lining, M=Matrix.
Hydric Soil Ir	ndicators:						Indicators	for Problematic Hydric Soils³:
Histosol			Polyvalue Belov	v Surface (S	8) <b>(LRR R</b> .	MLRA 149		Muck (A10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Surfa	•			· —	Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N			,		Mucky Peat or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)		Loamy Gleyed I		( II, L)			Surface (S7) (LRR K, L)
	I Layers (A5)		Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	l Below Dark Surface (A	۸11)	X Redox Dark Sui					Dark Surface (S9) (LRR K, L)
	rk Surface (A12)	~11 <i>)</i>	Depleted Dark S					Manganese Masses (F12) (LRR K, L, R)
	lucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
	• • • •		Redux Depress	ions (Fo)				
	leyed Matrix (S4)							Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)							Parent Material (F21) Shallow Dark Surface (TF12)
	Matrix (S6)						verv	Shallow Dark Surface (1F12)
וווכ אוגע	food (C7) (LDD D MI	DA 440D\						
	face (S7) (LRR R, ML	.RA 149B)						(Explain in Remarks)
	face (S7) (LRR R, ML hydrophytic vegetation			resent, unles	ss disturbed	or proble	Other	
³Indicators of	hydrophytic vegetation			resent, unles	ss disturbed	or problei	Other	
³Indicators of				resent, unles	ss disturbed	or problei	Other	
³Indicators of  Restrictive La	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or problei	Other	(Explain in Remarks)
³Indicators of	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Landscape Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
³Indicators of  Restrictive La	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive La Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or proble	Other	(Explain in Remarks)
Restrictive Language Type: Depth (inc	hydrophytic vegetation ayer (if observed):			resent, unles	ss disturbed	or probler	Other	(Explain in Remarks)

Project/Site:	MCES Sanita	ary Sewer - Forest Lak	e City/	/County:	Forest Lake/Wa	shinaton	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA			ate: MN	Sampling Point:	28B
Investigator(s):	Dylan	Kruzel, Garrett Wee	Sect	tion, Township, Ra	nge:	S28	3, T163, R36W	
Landform (hillslope, ter			-	concave, convex, i		convex	<i>.</i>	e (%): 7
Subregion (LRR or ML			<del></del>	45.24261669	Long:	-92.993533		` '
Soil Map Unit Name:	,		undas fine sandy lo			NWI classificat	ion:	None
Are climatic / hydrologi	ic conditions on t				X (If no,	explain in Remar	ks.)	
Are Vegetation			•			cumstances" pres	•	X No
Are Vegetation						ain any answers ir		
SUMMARY OF FI	_					-	•	
Hydrophytic Vegetat		Yes	-	Is the Sam	•	, <u> </u>		
Hydric Soil Present?		Yes	No X	within a W		Vac	NoX	
Wetland Hydrology I		Yes	No X		nal Wetland Site		NOX	_
vvctiana riyarology i			110 X	ii yes, optio	riai vvetiaria oite			
		dures here or in a sepa net. Antecedent precip		rage for the time o	f year			
HYDROLOGY								
Wetland Hydrology	/ Indicators:							
		required; check all tha	t annly)			Secondary Indic	ators (minimum of	two required)
Surface Water		oquilou, onoon un unu	Water-Stained Lea	ves (B9)			il Cracks (B6)	
High Water Tab	` '		Aquatic Fauna (B1:	` '			atterns (B10)	
Saturation (A3)			Marl Deposits (B15	•			Lines (B16)	
Water Marks (E			Hydrogen Sulfide C	,			n Water Table (C2)	
Sediment Depo	•		Oxidized Rhizosph		ots (C3)		urrows (C8)	
Drift Deposits (			Presence of Reduc	ŭ	(,		Visible on Aerial Im	agery (C9)
Algal Mat or Cr	•		Recent Iron Reduc	, ,	(C6)		Stressed Plants (D	
Iron Deposits (F		_	Thin Muck Surface		,		ic Position (D2)	,
<del></del>	ble on Aerial Ima	gery (B7)	Other (Explain in R	` '			juitard (D3)	
	tated Concave Su			,			raphic Relief (D4)	
		. ,					al Test (D5)	
Field Observations								
Surface Water Prese		es No X	Donth (inches):					
Water Table Present		es No X	. ' ' -	•				
Saturation Present?			- ' ` / -		Wotland Hyd	rology Present?	Vec	No X
		;S NOX	Deptil (inches).		welland Hyd	rology Present?	Yes	No <u>X</u>
(includes capillary fr	inge)							
Describe Recorded	Data (stream gau	uge, monitoring well, a	erial photos, previou	us inspections), if	available:			
Remarks:								
Remarks.								

Tree Stratum (Plot size: 30-ft   % Cover   Species?   Status	/EGETATION - Use scientific names of plants.				Sampling Point:28B
Tree Stratum (Plot size: 30-ft )					Dominance Test worksheet:
Trace Stratum (Plot size: 30-ft )					Number of Dominant Species
Absolute   Commant Indicator   Species   Status   Species   Across All Strate   Across All Strate   Across All Strate   Species   Across All Strate   Across Across All Strate   Across Across All Strate   Across Across All St					•
Total Cover   Sapling/Shrub Stratum   (Plot size: 15-ft   1.5		Absolute	Dominant	Indicator	111dt 7110 OBE, 1710VV, 01 1710.
Species Across All Strata:	Tree Stratum (Plot size:30-ft)	% Cover	Species?	Status	Total Number of Deminent
2. 3. 4. 5. 6. 6. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	1.				
Percent of Dominant Species   That Are OBL, FACW, or FAC:   0.0   (#   1.5	•				Species Across All Strata: 2 (B)
A	2				
That Are OBL, FACW, or FAC:   0.0   (A)	· · · · · · · · · · · · · · · · · · ·				Percent of Dominant Species
Prevalence Index worksheet: Total % Cover of: Multiply by:   Sapling/Shrub Stratum   (Plot size: 15-ft )					That Are OBL, FACW, or FAC: 0.0 (A/B)
Total % Cover of:					
Company   Comp					Prevalence Index worksheet:
Sapling/Shrub Stratum   (Plot size: 15-ft   )	7			- <del> </del>	Total % Cover of: Multiply by:
1. 2.		0	_ = Total Cov	er	OBL species $0   x 1 = 0$
1.	Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 0 x 2 = 0
2.	1.				
UPL species   50   x 5   250	2.				
Column Totals: 85 (A) 390  Column Totals: 85 (A) 390  Prevalence Index = B/A = 4.59  Problematic Hydrophytic Vegetation Indexoror	3.			- <u> </u>	
5. 6. 7. 8. 9. Herb Stratum (Plot size: 5-ft ) 1. Bromus inermis / Smooth brome, Smooth brome, Hungarian 50 Yes UPL 2. Trifolium repens / White clover 20 Yes FACU 3. Prevalence Index ≤ 3.0¹ 4. Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation 1 (Explain ) 5. 6. 7. 8. 9. 10. 11. 12. 85 = Total Cover  Woody Vine Stratum (Plot size: 30-ft ) 1. Woody Vine Stratum (Plot size: 30-ft ) 1. Woody vines tratum (Plot size: 30-ft ) 1. Woody vines - All woody vines greater than 3.28 ft in height.  1. Woody vines - All woody vines greater than 3.28 ft in height.  1. Woody vines - All woody vines greater than 3.28 ft in height.	4				
6.					Column Totals: <u>85</u> (A) <u>390</u> (B)
7.				·	
Herb Stratum (Plot size:5-ft)   1. Bromus inemis / Smooth brome, Smooth brome, Hungarian   50	6			- <del> </del>	Prevalence Index = B/A = 4.59
Herb Stratum (Plot size: 5-ft   1. Bromus inermis / Smooth brome, Smooth brome, Hungarian   50	7				
1. Bromus inermits / Smooth brome, Smooth brome, Hungarian 2. Trifolium repens / White clover 3. Cirsium arvense / Canada thistle 4.		0	_ = Total Cov	er	Hydrophytic Vegetation Indicators:
2. Trifolium repens / White clover 3. Cirsium arvense / Canada thistle 4.	Herb Stratum (Plot size: 5-ft )				1 - Rapid Test for Hydrophytic Vegetation
2. Trifolium repens / White clover 3. Cirsium arvense / Canada thistle 4.	1. Bromus inermis / Smooth brome, Smooth brome, Hungarian	50	Yes	UPL	2 - Dominance Test is >50%
3. Cirsium arvense / Canada thistle 4		20	Yes	FACU	3 - Prevalence Index ≤3.0¹
Problematic Hydrophytic Vegetation¹ (Explain )  Problematic Hydrophytic Vegetation¹ (Explain )  Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation¹ (Explain )  Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height.  O = Total Cover  Hydrophytic Vegetation¹ (Explain )		15	No	FACU	
5	1		-	· ——	
1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation					Problematic Hydrophytic Vegetation (Explain)
be present, unless disturbed or problematic.  Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation					
8. 9. Definitions of Vegetation Strata  10. Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  12. 85 = Total Cover  Woody Vine Stratum (Plot size: 30-ft)  1. B5 = Total Cover  Woody Vine Stratum (Plot size: 30-ft)  1. Woody Vine Stratum (Plot size: 30-ft)  2. Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation	6			- <del> </del>	
Definitions of Vegetation Strata  Definitions of Vegetation Strata  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Woody vines - All woody vines greater than 3.28 ft in height.  Hydrophytic Vegetation	7				be present, unless disturbed or problematic.
10	8			- <del> </del>	
10.	9				Definitions of Vegetation Strata
11	10				
12	44			- <u> </u>	
Woody Vine Stratum (Plot size: 30-ft )  1.					breast height (DBH), regardless of height.
Woody Vine Stratum (Plot size: 30-ft )  1.	12.	95	- Total Cov		Sapling/shrub - Woody plants less than 3 in. DBH and
1.	Woods Vine Chrotsus (Diet size) 20 ft	- 65	_ = 10tal C0V	CI	
size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover Hydrophytic Vegetation					Herh - All herhaceous (non-woody) plants, regardless of
Woody vines - All woody vines greater than 3.28 ft in height.  O = Total Cover Hydrophytic Vegetation				- <del> </del>	
4 height.  Hydrophytic Vegetation	2				
4	3				
	4.				neignt.
		0	= Total Cov	er	
			_		
Present? Yes No X					Vegetation
					Present? Yes No X
					<u> </u>
Remarks: (Explain alternative procedures here or in a separate report.)					
(	Remarks: (Explain alternative procedures here or in a separate)	report.)			

SOIL Sampling Point: 28B Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Matrix Redox Features Color (moist) % Loc<sup>2</sup> (inches) Color (moist) Type<sup>1</sup> Texture Remarks 10YR 3/4 100 Clay Loam 0-24 <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) \_\_\_ Depleted Dark Surface (F7) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Yes \_\_\_ Depth (inches): **Hydric Soil Present?** No X Remarks: Sample area located in upland spoil pile adjacent to resource 24.

Project/Site:	MCES Sanitary	Sewer - Forest La	ake City/Co	unty: Forest La	ke/Washington	Sampling Date: 10/19/2023
Applicant/Owner:	,		TKDA	•	State: MN	Sampling Point: IA-A
· · · · —	Dylan Kri	uzel Garrett Wee		, Township, Range:	_	T163, R36W
Landform (hillslope, ter				cave, convex, none):		•
Subregion (LRR or ML					ng: -92.9927626	
Soil Map Unit Name:		LITTI	75	2.22010011	NWI classification	
_		site typical for thi		No X	(If no, explain in Remark	
, ,		,,	significantly disturb		nal Circumstances" prese	,
			naturally problemat		l, explain any answers in	
					•	•
		ch site map s		point locations, tra	nsects, important	reatures, etc.
Hydrophytic Vegetat	ion Present?	Yes X	No	Is the Sampled Area	1	
Hydric Soil Present?	1	Yes X	No	within a Wetland?	Yes	NoX
Wetland Hydrology F	Present?	Yes	No X	If yes, optional Wetla	nd Site ID:	
Remarks: (Explain a Wetlan			parate report.) pitation is above average	e for time of year.		
HYDROLOGY						
	Indicatoro					
Wetland Hydrology			4 1- A		0	(i-i
Primary Indicators (r		juirea; check all tr	11.77	(D0)	<del></del>	ators (minimum of two required)
Surface Water (	` ,	_	_ Water-Stained Leaves	s (B9)		Cracks (B6)
High Water Tab	` '	_	_ Aquatic Fauna (B13)			atterns (B10)
Saturation (A3)		_	_ Marl Deposits (B15)	· (C1)	Moss Trim L	,
Water Marks (B	•	_	_ Hydrogen Sulfide Odd		<del></del>	Water Table (C2)
Sediment Depo		_	_	es on Living Roots (C3)	Crayfish Bu	
Drift Deposits (I	•	_	Presence of Reduced	` '		/isible on Aerial Imagery (C9)
Algal Mat or Cri		_	_ Recent Iron Reduction	` '		Stressed Plants (D1)
Iron Deposits (E	•		_ Thin Muck Surface (C	•		Position (D2)
<del></del>	ole on Aerial Image	· · · · —	Other (Explain in Rem	iarks)	Shallow Aqu	
Sparsely veget	ated Concave Surfa	ace (B8)				aphic Relief (D4)
					FAC-Neutra	i lest (D5)
Field Observations	:					
Surface Water Prese		No X	Depth (inches):			
Water Table Present		No X				
Saturation Present?	Yes	No X	_ · · ·	Wetlan	d Hydrology Present?	Yes No X
(includes capillary fri		NOX	Deptit (inches).		a riyarology r resent:	103 140 <u>X</u>
(includes capillary in	inge <i>)</i>					
Describe Recorded I	Data (stream gauge	e, monitoring well.	aerial photos, previous	inspections), if available:		
		,	. /1	. ,,		
Remarks:						

VEGETATION - Use scientific names of plants.				Sampling Point: IA-A
				Dominance Test worksheet:
				Number of Dominant Species
				That Are OBL, FACW, or FAC: 1 (A)
	Absolute	Dominant	Indicator	(,
Tree Stratum (Plot size: 30-ft )	% Cover	Species?	Status	Total Number of Dominant
1. Picea glauca / White spruce	30	Yes	FACU	Species Across All Strata: 3 (B)
2				
3				Percent of Dominant Species
4				That Are OBL, FACW, or FAC: 33.3 (A/B)
5			<u> </u>	Tildt Ale ODL, I AOW, OI I AO
6			<u> </u>	Prevalence Index worksheet:
7		_		Total % Cover of: Multiply by:
	30	_ = Total Cove	er	OBL species 5 $x = 5$
Sapling/Shrub Stratum (Plot size: 15-ft )				FACW species 75 x 2 = 150
1				FAC species $0 \times 3 = 0$
2.				FACU species 65 x 4 = 260
3.				UPL species $5 \times 5 = 25$
4.				Column Totals: 150 (A) 440 (B)
5.			-	Coldinii Iotais. 100 (A) 470 (B)
6.				Provolence Index = P/A = 2.02
7.			- ——	Prevalence Index = B/A = 2.93
	0	= Total Cov	er	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5-ft )		_ 10.01 55	OI .	1 - Rapid Test for Hydrophytic Vegetation
1. Phalaris arundinacea / Reed canary grass	65	Yes	FACW	2 - Dominance Test is >50%
	25			X 3 - Prevalence Index ≤3.0¹
Cirsium arvense / Canada thistle     Solidore gigantes / Smooth goldonod		Yes	FACU	<del></del>
Solidago gigantea / Smooth goldenrod     Solidago gigantea / Smooth goldenrod	10	No No	FACU	4 - Morphological Adaptations¹ (Provide supporting
4. Solidago altissima / Canada goldenrod		No No	FACU	Problematic Hydrophytic Vegetation¹ (Explain )
5. Persicaria hydropiper / Common smartweed, Waterpepper	5	No No	OBL	
6. Bromus inermis / Smooth brome, Smooth brome, Hungarian	5	No	UPL	¹Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
8				D. Culti-us of Manufaction Chapter
9				Definitions of Vegetation Strata
10				T Menderal Circ (7.0 cm) or more in diameter of
11				<b>Tree</b> - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12				
	120	_ = Total Cove	er	<b>Sapling/shrub</b> - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Woody Vine Stratum (Plot size: 30-ft )				
1		_		<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2.				
3.				Woody vines - All woody vines greater than 3.28 ft in
4.				height.
	0	= Total Cove	er	
		=		Hydrophytic
				Vegetation
				Present? Yes X No
Remarks: (Explain alternative procedures here or in a separate	report.)			

SOIL Sampling Point: <u>IA-A</u>

(inches)	Matrix		Redox	x Features			nce of indicators	
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Remarks
0-4	10YR 2/2	100					Loam	
4-8	10YR 5/2	95	10YR 4/3	5	C	M	Crse Sndy Lm	FRC
8-24	10YR 4/1	95	10YR 3/4	5	C	M	Fine Sndy Lm	PRC
					· <del></del> -			
					· —— ·		·	-
					· —— ·		•	-
					· <del></del> -		·	
		-	_		· <del></del> ·			
•				-				
/pe: C=Con	centration, D=Depletion	on, RM=Redu	iced Matrix, MS=Mas	ked Sand G	rains.		²Loca	tion: PL=Pore Lining, M=Matrix.
dric Soil Ir	ndicators:						Indicators	for Problematic Hydric Soils³:
Histosol	(A1)		Polyvalue Belov	v Surface (S	8) <b>(LRR R,</b> l	MLRA 149	9B) 2 cm	Muck (A10) (LRR K, L, MLRA 149B)
_ Histic Ep	ipedon (A2)		Thin Dark Surfa	ce (S9) (LF	RR R, MLRA	149B)		Prairie Redox (A16) (LRR K, L, R)
Black His			Loamy Mucky N		(LRR K, L)			Mucky Peat or Peat (S3) (LRR K, L, R)
_	n Sulfide (A4)		Loamy Gleyed I					Surface (S7) (LRR K, L)
_	Layers (A5)	(444)	X Depleted Matrix					alue Below Surface (S8) (LRR K, L)
	Below Dark Surface ( rk Surface (A12)	(A11)	Redox Dark Sur Depleted Dark S					Dark Surface (S9) <b>(LRR K, L)</b> Manganese Masses (F12) <b>(LRR K, L, R</b> )
_	ucky Mineral (S1)		Redox Depress					nont Floodplain Soils (F19) (MLRA 149B)
_	leyed Matrix (S4)		Redox Depress	10113 (1 0)				Spodic (TA6) (MLRA 144A, 145, 149B)
_	edox (S5)							Parent Material (F21)
_	Matrix (S6)							Shallow Dark Surface (TF12)
Dark Sur	face (S7) (LRR R, MI	LRA 149B)					Other	(Explain in Remarks)
ndicators of	hydrophytic vegetatior	n and wetland	I hydrology must be p	resent, unle	ss disturbed	or proble	matic.	
	ayer (if observed):							
estrictive L	ayer (ii observed).							
Type:							Hydric Soil Pi	resent? Yes X No
							,	
Type:	ches):							
Type: Depth (incommerks:			to the proximity to go	If course and	d sewer line.			<u> </u>
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incomparks:	ches):		to the proximity to go	lf course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incomparks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommarks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incomparks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incomparks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommerks:	ches):		to the proximity to go	If course and	d sewer line.			
Type:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (inc	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (inc	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (inc	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (inc	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommerks:	ches):		to the proximity to go	If course and	d sewer line.			
Type: Depth (incommerks:	ches):		to the proximity to go	If course and	d sewer line.			

Project/Site:	MCES Sanitary	Sewer - Forest La	ike	City/County:	Forest Lake/W	ashington	Sampling Date:	10/19/2023
Applicant/Owner:			TKDA		S	tate: MN	Sampling Point:	IA-B
Investigator(s):	Dylan Krı	uzel, Garrett Wee		Section, Townsh	ip, Range:	S2	8, T163, R36W	
Landform (hillslope, te	errace, etc):		Local rel	lief (concave, co	nvex, none):	none	Slope	e (%): 2
Subregion (LRR or MI			Lat:	45.227390	08 Long:	-92.99284	323 Datu	m: WGS 84
Soil Map Unit Name:			123			NWI classifica	tion: P	PEM1A
Are climatic / hydrolog	jic conditions on the	site typical for this	time of year?	Yes	No X (If no	, explain in Rema	rks.)	
Are Vegetation X	, Soil,	or Hydrology	significantly	disturbed?	Are "Normal Ci	rcumstances" pres	sent? Yes	NoX
Are Vegetation	, Soil,	or Hydrology	naturally pro	oblematic?	(If needed, exp	lain any answers i	n Remarks.)	
<b>SUMMARY OF F</b>	INDINGS - Atta	ch site map s	howing sam <sub>l</sub>	pling point l	ocations, transe	cts, important	t features, etc.	
Hydrophytic Vegeta	tion Present?	Yes	No X	Is the	Sampled Area			
Hydric Soil Present		Yes		-	n a Wetland?	Yes	No X	
Wetland Hydrology	Present?	Yes	No X	If yes	, optional Wetland Si			_
Wetlar		Antecedent precip	oitation is above		of year. Sample area ay be leaking hydrolo		f-sod golf course. S	ampled area is
HYDROLOGY								
Wetland Hydrolog	v Indicators:							
, ,	minimum of one req	uirod: chook all th	at apply)			Socondary Indi	oators (minimum of	two required)
Surface Water	`	ulled, check all the	Water-Stained	Leaves (R9)			cators (minimum of oil Cracks (B6)	two required)
High Water Tal	` '		Aquatic Fauna	` '			Patterns (B10)	
Saturation (A3			Marl Deposits	` '			Lines (B16)	
Water Marks (I	•		Hydrogen Sulf				on Water Table (C2)	
Sediment Dep	•			ospheres on Livi	ng Roots (C3)		urrows (C8)	
Drift Deposits			-	educed Iron (C4	• ,		Visible on Aerial Im	nagery (C9)
Algal Mat or C	rust (B4)		Recent Iron Re	eduction in Tilled	Soils (C6)	X Stunted or	Stressed Plants (D	1)
Iron Deposits (	(B5)		Thin Muck Sur	face (C7)		Geomorph	ic Position (D2)	
Inundation Visi	ible on Aerial Image	ry (B7)	Other (Explain	in Remarks)		Shallow A	quitard (D3)	
Sparsely Vege	tated Concave Surfa	ace (B8)				Microtopo	graphic Relief (D4)	
						FAC-Neuti	al Test (D5)	
Field Observations								
Field Observations Surface Water Pres		No X	Donth (incho	c).				
Water Table Presen	•		_ ' '					
Saturation Present?	•		Depth (inches	· —	Wotland Hy	drology Present?	Voc	No X
(includes capillary fi	•	NO	_ Deptil (iliche	5).	vveiianu ny	urology Fresent?	Yes	_ NO
(includes capillary in	ilige)							
Describe Recorded	Data (stream gauge	e, monitoring well,	aerial photos, pr	evious inspectio	ns), if available:			
Remarks:								

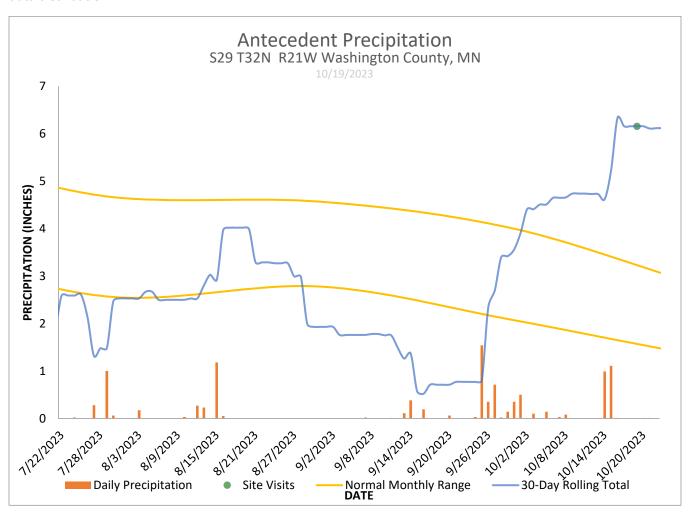
VEGETATION - Use scientific names of plants.				Sampling Point:IA-B
Tree Stratum (Plot size:30-ft) 1 2 3 4	_	_	Indicator Status	Dominance Test worksheet:  Number of Dominant Species That Are OBL, FACW, or FAC:  Total Number of Dominant Species Across All Strata:  1 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)
5	0	= Total Cov		Prevalence Index worksheet:           Total % Cover of:         Multiply by:           OBL species         0         x 1 = 0           FACW species         0         x 2 = 0           FAC species         0         x 3 = 0           FACU species         75         x 4 = 300           UPL species         0         x 5 = 0           Column Totals:         75         (A) 300         (B)
Herb Stratum (Plot size:	75	= Total Cov	FACU	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index ≤3.0¹ 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8				Definitions of Vegetation Strata  Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  Woody vines - All woody vines greater than 3.28 ft in height.
Remarks: (Explain alternative procedures here or in a separate	0 e report.)	= Total Cov	er	Hydrophytic Vegetation Present?  Yes NoX

SOIL Sampling Point: Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Redox Features Loc<sup>2</sup> (inches) Color (moist) Color (moist) Type<sup>1</sup> Texture Remarks <sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils3: \_\_\_ Histosol (A1) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Polyvalue Below Surface (S8) (LRR R,MLRA 149B) Thin Dark Surface (S9) (LRR R, MLRA 149B) Histic Epipedon (A2) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) \_\_\_ Depleted Dark Surface (F7) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR K, L, R) \_\_\_ Redox Depressions (F8) Sandy Mucky Mineral (S1) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (F21) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) <sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Depth (inches): **Hydric Soil Present?** Χ Remarks: Assumed non-hydric based on best professional judgement. Sampled area is located in a mapped non-hydric soil unit with no hydrophytic vegetation.

## **Appendix C**

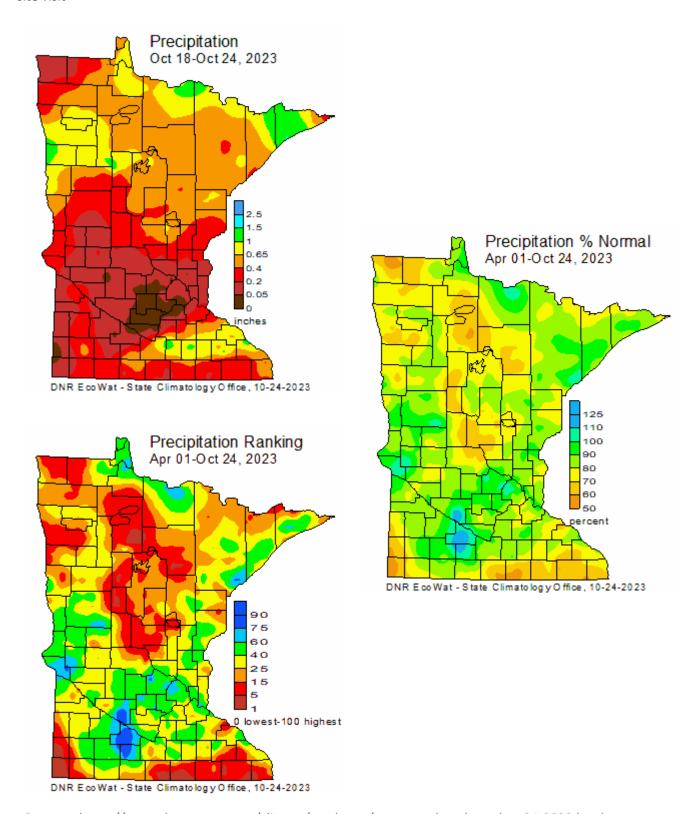
ANTECEDENT PRECIPITATION RECORD

**Appendix C, Figure 1.** Graph of recent precipitation in comparison with the normal range of precipitation in the general site location. Daily precipitation data is plotted independently and as a 30-day rolling total up to the date of the site visit. The normal range is plotted from precipitation data recorded from 1981 to 2010. The normal range is represented in this graph with two lines, the 30<sup>th</sup> percentile and the 70<sup>th</sup> percentile of the period-of-record data distribution.



Source: http://climate.umn.edu/

**Appendix C, Figure 2.** Minnesota State Climatology Office map depicting total precipitation for the week of the site visit



Source: https://www.dnr.state.mn.us/climate/weekmap/maps-produced-october-24-2023.html

## Appendix D

**CREDENTIALS** 

## ANDERSON

## Benjamin Hodapp, PWS

**Environmental Specialist** 

#### **CERTIFICATIONS**

Professional Wetland Scientist #1832
MN Certified Wetland Delineator #1016

#### **EDUCATION**

MS Water Resources Management University of Wisconsin-Madison

BS Biology; Ecology Minnesota State University- Mankato

#### **SPECIALIZED TRAINING**

Wetland Delineation & Management Training Richard Chinn Environmental Training, Inc.

Wetland Plant Identification Biotic Consultants Inc.

Plant Identification for Wetland Delineation University of Wisconsin-La Crosse

Watershed Academy Web Certificate
United States Environmental Protection Agency

#### PROFESSIONAL ASSOCIATIONS

Society of Wetland Scientists
MN Wetland Professionals Association (WPA)
MN WPA President 2010
Wisconsin Wetlands Association
Association of State Wetland Managers
Minnesota Native Plant Society
Ecological Society of America

#### **TOTAL EXPERIENCE**

19 years

#### YEARS WITH CURRENT FIRM

2004 to Present

### **PUBLICATIONS & PRESENTATIONS**

The Future of Rowan Creek Watershed: Connecting Land Use and Management with Water Quality. 2003. Water Resources Management Workshop 2002, Gaylord Nelson Institute for Environmental Studies, University of Wisconsin, Madison.

The Tumultuous World of Drainage Districts: An Analysis of Existing Management Arrangements, with Recommendations. Working Paper Series 2002-1. Water Resources Institutions and Policies, Department of Urban and Regional Planning, University of Wisconsin, Madison.

South Shore Lake Bemidji Remediation & Restoration, Society of American Military Engineers meeting June 22, 2016, St Paul, MN.

#### **SUMMARY OF EXPERIENCE**

Benjamin Hodapp, an Environmental Specialist and Senior Project Manager, brings a broad background of knowledge and experience in the environmental field to the Anderson Engineering team. Benjamin has a unique combination of multi-disciplinary academic training and work experience at various levels of federal, state and local government and private consulting.

Benjamin's project experience includes natural resource inventory and assessment; wetland delineation, mitigation design and monitoring; regulatory permitting; agency and stakeholder coordination; environmental impact assessment, environmental document preparation and public outreach.

#### REPRESENTATIVE PROJECTS

**Southwest Light Rail Transit- Metropolitan Council – Minneapolis, MN:** Project manager for wetland delineation and permitting efforts in support of multidisciplinary consultant team for preparation of Final Environmental Impact Statement for proposed 16 mile light rail alignment. Project tasks included completion of wetland delineations, preparation of all federal, state and local wetland permits and wetland mitigation plans, quality assurance and quality control of all deliverable products.

Harriet Island to South St. Paul Regional Trail – City of St Paul, City of South St. Paul and Dakota County – St Paul, MN: Project manager for wetland delineation, mapping and assessment efforts in support of multi-disciplinary consultant team responsible for preliminary engineering and final design. Project tasks included project management oversight and coordination, supervising field staff in completion of both off-site and on-site wetland determinations, boundary delineations, GPS mapping and functional assessments. Oversaw preparation of and responsible for quality assurance and quality control of all deliverable products.

**Crosstown Blvd. Pedestrian Trail – City of Andover – Andover, MN:** Project Manager for wetland delineation associated with proposed City trail improvements. Services included a wetland delineation, GPS mapping and functional assessment document findings and coordination and approval of findings with federal, state and local regulatory agencies.

**Bennett Family Park Improvements – Minnetonka, MN:** Project Manager for wetland delineation associated with proposed baseball complex improvements. Services included a wetland delineation, GPS mapping and functional assessment document findings and coordination and approval of findings with federal, state and local regulatory agencies.

Section 401/404 Wetland Permitting – Fort McCoy Commemorative Park Expansion – Fort McCoy, WI: Provided project management services for Section 401/404 permitting associated with proposed wetland impacts resulting from the Commemorative Park Expansion Project at the Fort McCoy U.S. Army installation. Project tasks included project management, developing a wetland mitigation strategy in compliance with Section 401/404 and state wetland permitting requirements and oversight and quality control in preparing Section 401/404 permit application.

## ANDERSON

## Dylan J. Kruzel

**Environmental Scientist** 

#### **EDUCATION**

Bachelor of Science: Wildlife Biology Minor: Wetlands Ecology and Biology

Bemidji State University – Bemidji

#### **SPECIALIZED TRAINING**

Certified Minnesota Wetland Professional #1406

Erosion and Stormwater
Construction Site Management
Certification

S-130 Basic Wildland Firefighter

S-190 Introduction to Fire Behavior

L-180 Human Factors in the Wildland Fire Service

Certified Open Water Diver

**OSHA 10 Hour Training** 

#### **PROFESSIONAL ASSOCIATIONS**

MN Wetland Professionals Association

Wisconsin Wetlands Association

The Wildlife Society

#### **TOTAL EXPERIENCE**

4.5 years

#### YEARS WITH CURRENT FIRM

2020 to present

#### **SUMMARY OF EXPERIENCE**

Dylan Kruzel, an Environmental Scientist, brings a broad background of knowledge and experience in the environmental field to the Anderson Engineering team. Prior to his employment with Anderson Engineering of MN, LLC, Dylan worked for the Soil and Water Conservation District (SWCD) of Becker County as a Conservation Technician. He conducted field evaluations for conservation plans, monitored conservation easements, and provided available natural resource program information to landowners with conservation concerns. He has also assisted in the design and installation of various native habitat, shoreline restoration, rain garden, and storm water mitigation projects. The skills that Dylan has developed through his educational background and experience make him proficient in assessing and addressing a range of ecological indications and environmental issues.

Dylan's project and educational experience includes conservation management practices, habitat management evaluations, ecosystem restoration, species identification, regulatory permitting, environmental document preparation and compliance oversight, wetland delineation and classifications, wetland mitigation, and project coordination. Dylan has experience with Collector for ArcGIS, Wildnote, Geographic Information Systems, Global Positioning Systems, and Realtime Landscape Architect.

#### REPRESENTATIVE PROJECTS

**Wetland Delineation/Reporting – Various Locations:** Services included wetland delineation and reporting in support of linear construction projects and real-estate transactions for federal, state, and local agencies, as well as private companies. Project tasks included completion of wetland field delineations following the 1987 Corps of Engineers Wetland Delineation Manual and Regional Supplement: Midwest Region, and Northcentral and Northeast Region, GPS mapping, and preparation of reports to document findings and assess wetland impacts.

**Permitting Specialist – MN:** Services include preparation of permit applications in accordance with the Minnesota Wetland Conservation Act to support the planning, design, and mitigation for residential, commercial, and state land development projects.

**NEPA Documentation – MN:** Services include preparation of Categorical Exclusion Determination documents in accordance with the Minnesota Department of Transportation Highway Project Development Process and the Department of Veteran Affairs (VA) NEPA Interim Guidance for Projects. Tasks include evaluation, coordination, and responding to assist project managers in environmental documentation for Minnesota highways and VA health care facilities.

**Project Book – US Department of Veteran Affairs (VA) – Dallas VA Medical Center, TX:** Project Coordinator to guide a multidisciplinary team in development of a project book for expansion of and upgrades to the Dallas VA Medical Center. The project consists of organizing and collection of pre-design information that will serve as the foundation of all future design work by defining project requirements and refining cost elements. Efforts involve close coordination with members of the design team.

**Land Alterations and Field Monitoring – Becker County SWCD – MN:** Services include performing the following general activities in compliance with federal, state, and local regulations: assisting in site evaluations and installing for various cost share projects like conservation easements, management practices, and shoreland alterations.



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	8:55		500ft south of Fenway park trail
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	48"			through
101		☐ Polymer	8.15	
	24" Clear	☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1
Clock Pos: 6 Depth (Rim to Inv.) 8.8'	Clock Pos: 12 Depth (Rim to Inv.) 8.8'
Pipe ID#:	Pipe ID#
Material/Size: 36" RCP	Material/Size: 36" RCP
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% <mark>50%</mark> 75% 100%
Influent Pipe 2	Influent Pipe 3
militent Pipe 2	illident ripe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Clock Pos: Depth (Rim to Inv.) Pipe ID#:	Clock Pos: Depth (Rim to Inv.) Pipe ID#

Weather	Runoff / Inflow	Infiltration
☑ Dry - Cold		☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
□ Saturated	MH Buried 3-4"	☐ Gushing
□ Damp	At Edge of Wetland	□ Roots
☐ Very Dry		

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric ☐ Eccentric	⊠ No □ Yes	⊠ No □ Yes	⊠ No □ Yes	Estimate 6" Sediment could not recover with sludge Judge
☐ Flat Top☐ Other	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Describe: Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	sludge Judge





Photo 2: MH 101 Surroundings



Photo 3: MH 101 Pipe



Photo 4: MH 101 Steps



444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400

## MH ASSESSMENT FORM

IKDA				
Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	9:10	202 <sup>nd</sup> st /	
			Fenway Pk Trail	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
	27" Riser Section	☐ Brick		
	48" Barrel Section w/ flat			through
102	top	☐ Polymer		
	72" Bottom Section w/ flat	☐ Combination		
	top	☐ Other		
		1	<u> </u>	•
	Outlet Dine		Influent [	Ding 4

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6 Depth (Rim to Inv.) 13.5	Clock Pos: 12 Depth (Rim to Inv.) 12.2		
Pipe ID#: 7029 Interceptor	Pipe ID# Municipal Sewer		
Material/Size: 36" RCP	Material/Size: 22" OD HDPE		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: 3 Depth (Rim to Inv.) 12.7 approx.	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#: 7029 Interceptor	Pipe ID#		
Material/Size: 36" RCP	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry – 16 Deg	⊠ None	None
☐ Heavy Rain	☐ Sheeting	☐ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	□ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments	
☐ Concentric ☐ Eccentric ☑ Flat Top ☐ Other  3 sections	<ul><li>☒ No</li><li>☐ Yes</li><li>Component:</li><li>Chimney Cone</li><li>Wall Bench</li><li>Channel Pipe</li></ul>	□ No ☑ Yes Describe: West side splash on bench Component: Chimney Cone Wall	No     ☐ Yes     Describe:	3 tiers each with its own flat top  No sediment	
2 flat tops  MH Entry Notes	Inlet / Outlet	Bench Channel Pipe Inlet / Outlet	Channel Pipe Inlet / Outlet		
Invert/Channel, Riser in good condition					
6' MH bottom flat top ~ 4' Tall					

4' MH mid flat top ~ 4' Tall, layer of brick supporting lid on 4 foot barrel section is more brittle than the concrete



Photo 1: MH 102 Top



Photo 2: MH 102 Casting



Photo 3: MH 102 Pipes



Photo 4: MH 102 Stairs Brick layer on top section of barrel are less competent than barrel section, but in fair condition.





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	9:45	202 <sup>nd</sup> Street, gravel	
			road	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
104		☐ Polymer	17'	
	24" clear	☐ Combination		
	opening	☐ Other		

Οι	ıtlet Pipe		Influent Pipe 1
Clock Pos: 9 De	pth (Rim to Inv.) 18.75'	Clock Pos: 3	Depth (Rim to Inv.) 18.65'
Pipe ID#:		Pipe ID#	
Material/Size: 36" RCP		Material/Size: 36" F	RCP
Comments:		Comments:	
Flow (% full): 0% 25%	50% 75% 100%	Flow (% full): 0%	25% 50% 75% 100%
Influ	uent Pipe 2		Influent Pipe 3
Clock Pos:	Depth (Rim to Inv.)	Clock Pos:	Depth (Rim to Inv.)
Pipe ID#:		Pipe ID#	
Material/Size:		Material/Size:	
Comments:		Comments:	
Flow (% full): 0% 25%	50% 75% 100%	Flow (% full): 0% 2	25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
☑ Dry – 16 Deg	⊠ None	⊠ None
☐ Heavy Rain	☐ Sheeting	□ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	□ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		□ Roots
☐ Very Dry		

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric ☑ Eccentric ☐ Flat Top ☐ Other	<ul> <li>☒ No</li> <li>☐ Yes</li> <li>Component:</li> <li>Chimney Cone</li> <li>Wall Bench</li> <li>Channel Pipe</li> <li>Inlet / Outlet</li> </ul>	<ul> <li>☑ No</li> <li>☐ Yes</li> <li>Describe:</li> <li>Component:</li> <li>Chimney Cone Wall</li> <li>Bench Channel Pipe</li> <li>Inlet / Outlet</li> </ul>	No     ☐ Yes     Describe:      Component:     Chimney Cone Wall Bench     Channel Pipe Inlet / Outlet	4" of sediment recovered, more likely (6-7" Est)





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	12:52	202 <sup>nd</sup> street, gravel road	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
105	24" Clear	☐ Polymer	21.50	
	Opening	☐ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1
Clock Pos: 9 Depth (Rim to Inv.) 22.35	Clock Pos: 3 Depth (Rim to Inv.) 22.35
Pipe ID#:	Pipe ID#
Material/Size: 36" RCP	Material/Size: 36" RCP
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
⊠ Dry	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	Stain − Possible slow infiltration,
☐ Light Rain	☐ Ponding	see growth
☐ Snow	□ Inundated	☐ Weeping
☐ Saturated		☐ Dripping
□ Damp		☐ Gushing
□ Very Dry		☐ Roots

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric	⊠ No	□ No	⊠ No	Lots of dirt build up on
	☐ Yes	⊠ Yes	☐ Yes	steps, casting might not
☐ Flat Top	Component:	Describe: Dirt buildup	Describe:	be 100% sealed.
☐ Other	Chimney Cone Wall Bench Channel Pipe	on steps Component: Chimney Cone Wall	Component: Chimney Cone Wall Bench	No sediment
	Inlet / Outlet	Bench Channel Pipe Inlet / Outlet	Channel Pipe Inlet / Outlet	Buried MH recently uncovered and raised to gravel road surface





Weeping on joints

Barnacle mid-way up manhole, is solid

#### 444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400 tkda.com

TKDA			1				
Inspector(s):	Da		Time:		Street:		Cross Street/House
BJM, WSF	12/	/18/23	1:17		202 <sup>nd</sup> Street, g	ravel	
MH ID#	MH	l Dia. (ft	) Materia		Rim to Bench	(ft):	Photo's
106		' Clear ening	☐ Brick ☑ Conc ☐ Polyn ☐ Comb	ner oination	18.2		through
				1			n' 4
Clask Door O	Outlet Pip		40.4	Clook E			Pipe 1
Clock Pos: 9	Depth (Rin	1 to iriv. <i>)</i>	19.1	Clock F	<u>'</u>	otn (Kı	m to Inv.) 19.75
Pipe ID#:	_			Pipe ID			
Material/Size: 3	36" RCP			Materia	I/Size: 36" RCP		
measurement	diment prevents	•		Comme			
Flow (% full): 0	% <mark>25%</mark> 50% 7	5% 1009	%	Flow (%	% full): 0% <mark>25%</mark>	50%	75% 100%
	Influent Pip	ent Pipe 2			Influent Pipe 3		
Clock Pos: 12	2 Depth	(Rim to	Inv.) 18.5	Clock F	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#: Later	al from airport?			Pipe ID#			
Material/Size:	12" PVC			Material/Size:			
Comments: Lir under steps	nited visibility fro	m surfac	e, tucked	Comments:			
	<mark>%</mark> 25% 50% 7	5% 1009	%	Flow (%	6 full): 0% 25%	50%	75% 100%
	<b>N</b> eather		Piii	noff / Inflo	NA/		Infiltration
⊠ Dry	veather		None Nui	1011 / 111110		⊠ None	
☐ Heavy Rain			☐ Sheeting			⊒ Nonc ⊒ Stair	
☐ Light Rain			☐ Ponding			□ Wee	ping
☐ Snow			☐ Inundated			☐ Dripp	ping
□ Saturated						☐ Gush	ning
□ Damp						□ Root	S
☐ Very Dry							
МН Туре	Evidence of Surcharge	Debr	is Deposits	Stru	ctural Defects		Comments
☐ Concentric	⊠ No	⊠ No		⊠ No		1	0" of sediment from MH
	☐ Yes	☐ Yes		□ Yes		е	entry
☐ Flat Top	Component:	Describ	Describe:		Describe:		
☐ Other	Chimney Cone					8	Bludge Judge gives 5"
	Wall Bench		mponent:		Component:	.	
	Channel Pipe		ey Cone Wall		y Cone Wall Bend		
	Inlet / Outlet		Channel Pipe et / Outlet	Channe	el Pipe Inlet / Outle	CI	
MH Entry Notes	<u>;                                    </u>						
10" PVC lateral u	under steps (might						



Photo 1: MH 106 Surroundings and Lid



Photo 2: MH 106 Sludge Judge

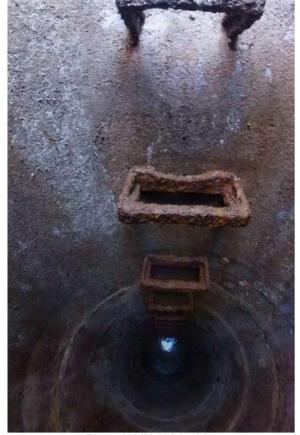


Photo 3: MH 106 Ladder

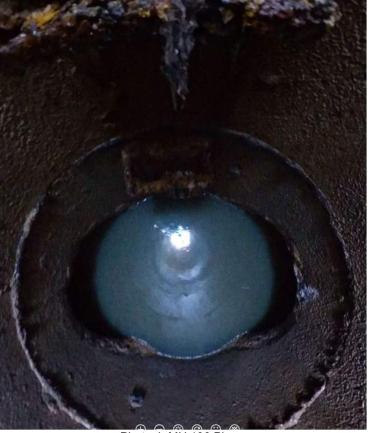


Photo 4: MH 106 Pipes



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Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	1:44	202 <sup>nd</sup> street	Frontage road
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
107	24" Clear Open 27" riser section 48" barrel section w/ flat top 72" bottom section w/ flat	<ul><li>□ Brick</li><li>⋈ Concrete</li><li>□ Polymer</li><li>□ Combination</li><li>□ Other</li></ul>	21.3	through

Outlet Pipe	Influent Pipe 1
Clock Pos: 9 Depth (Rim to Inv.) 23.15'	Clock Pos: 3 Depth (Rim to Inv.) 22.8'
Pipe ID#: 7029 Interceptor	Pipe ID# 7029 Interceptor
Material/Size: 36" RCP	Material/Size: 36" RCP
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: 5 Depth (Rim to Inv.) 22.20'	Clock Pos: Depth (Rim to Inv.)
Pipe ID#: Municipal Connection	Pipe ID#
Material/Size: 24" PVC?	Material/Size:
Comments: ~4" of Sediment	Comments:
Flow (% full): 0% 25% <mark>50%</mark> 75% 100%	Flow (% full): 0% 25% 50% 75% 100%

Weather	Runoff / Inflow	Infiltration
⊠ Dry	⊠ None	None
☐ Heavy Rain	☐ Sheeting	☐ Stain
□ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	□ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	□ No	□ No	⊠ No	Bench has debris buildup
	⊠ Yes	⊠ Yes	☐ Yes	27" Riser
	Component:	Describe: Stairs	Describe:	
☐ Other	Chimney Cone			
	Wall Bench	Component:	Component:	
6' bottom	Channel Pipe	Chimney Cone Wall	Chimney Cone Wall Bench	
section has flat	Inlet / Outlet	Bench Channel Pipe	Channel Pipe Inlet / Outlet	
top		Inlet / Outlet		
4' barrel				
section is				
eccentric cone				

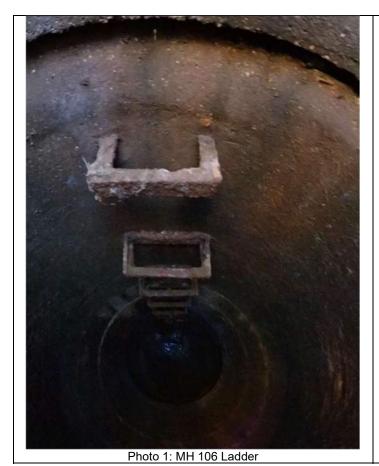




Photo 2: MH 106 Pipes, Inlet 1 (right), Inlet 2 (left), Outlet (top)



## MH ASSESSMENT FORM

Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	11:15	Forest Road North	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
108		☐ Polymer	18.6"	
	24" Clear	☐ Combination		
	Open	☐ Other		

	) 2	4" Clear		Combination	10.0			
		pen		Other			<del></del>	
		γροπ		Outer				
	Outlet P	ine				Influer	nt Pipe 1	
Clock Pos: 6	Depth (R		20 15	Cloc	( Pos: 12		n (Rim to Inv.) 19.90	
			., 20.10					
Pipe ID#:				Pipe	ID#			
Material/Size: 3	36" RCP			Mate	rial/Size: 36"	RCP		
Comments:				Com	ments:			
Flow (% full): 0	% <mark>25%</mark> 50%	75% 100	0%	Flow	(% full): 0%	<b>25%</b> 50	% 75% 100%	
	Influent Pi	ipe 2				Influer	nt Pipe 3	
Clock Pos:	Depth	(Rim to I	nv.)	Cloc	Pos:	D	epth (Rim to Inv.)	
Pipe ID#:				Pipe	ID#			
Material/Size:				Mate	rial/Size:			
Comments:				Com	Comments:			
Flow (% full): 0	% 25% 50%	75% 100	0%	Flow	(% full): 0%	25% 50	% 75% 100%	
V	Veather			Runoff / In	off / Inflow Infiltration			
⊠ Dry			⊠ None			□N		
☐ Heavy Rain			☐ Sheetin	•		☐ St		
☐ Light Rain			☐ Ponding	•			eeping – AT JOINTS	
☐ Snow			☐ Inundat	ed		$\Box$ D	ripping	
□ Saturated						□G	ushing	
□ Damp						□R	oots	
☐ Very Dry								
MH Type	Evidence of	Deb	oris Depos	its St	ructural Def	fects	Comments	
	Surcharge							
□ Concentric	⊠ No	⊠ No		⊠ No			New 27" Rings	
	☐ Yes	☐ Yes	S	☐ Ye	3		8" Sediment from MH	
□ Flot Top	Component:	Doggr	operibe:		ho:		entry	

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments				
☐ Concentric ☑ Eccentric ☐ Flat Top ☐ Other	<ul><li>☒ No</li><li>☐ Yes</li><li>Component:</li><li>Chimney Cone</li><li>Wall Bench</li></ul>	⊠ No □ Yes Describe: Component:	⊠ No □ Yes Describe: Component:	New 27" Rings 8" Sediment from MH entry 5" Sediment measured on sludge Judge				
Channel Pipe Chimney Cone Wall Chimney Cone Wall Bench Inlet / Outlet Bench Channel Pipe Channel Pipe Inlet / Outlet								
MH Entry Notes								
Soft sediment fel	Soft sediment felt under water surface, large object also felt, possibly brick under surface?							

~1/4" Thick slime on walls

Weeping seen Concrete has black coating

Concrete is solid overall





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	2:32	Forest Road North	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
109		☐ Polymer	17.80	
	24" Clear	☐ Combination		
	Open	☐ Other		

	Outlet Pipe		Influent Pipe 1	
Clock Pos: 6	Depth (Rim to Inv.) 19.80	Clock Pos: 12	Depth (Rim to Inv.) 19.80	
Pipe ID#:		Pipe ID#		
Material/Size: 36"	RCP	Material/Size: 36" RCP		
Comments:		Comments:		
Flow (% full): 0%	<mark>25% 50%</mark> 75% 100%	Flow (% full): 0%	<mark>25% 50%</mark> 75% 100%	
	Influent Pipe 2		Influent Pipe 3	
Clock Pos:	Depth (Rim to Inv.)	Clock Pos:	Depth (Rim to Inv.)	
Pipe ID#:		Pipe ID#		
Material/Size:		Material/Size:		
Comments:		Comments:		
Flow (% full): 0%	25% 50% 75% 100%	Flow (% full): 0% 2	25% 50% 75% 100%	

Weather	Runoff / Inflow	Infiltration
		☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
□ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
□ Concentric	⊠ No	⊠ No	⊠ No	New 27' Riser Rings
⊠ Eccentric	☐ Yes	☐ Yes	☐ Yes	~12" Sediment (3" in
☐ Flat Top	Component:	Describe:	Describe:	sludge judge)
☐ Other	Chimney Cone			
	Wall Bench	Component:	Component:	
	Channel Pipe	Chimney Cone Wall	Chimney Cone Wall Bench	
	Inlet / Outlet	Bench Channel Pipe	Channel Pipe Inlet / Outlet	
		Inlet / Outlet		



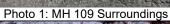




Photo 2: MH 109 Sludge Judge



Photo 3: MH 109 Ladder



Photo 4: MH 109 Pipes



Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	2:53 PM	Forest Road North	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
110		☐ Polymer	Bench Not seen	
	24" Clear	□ Combination		
	Open	☐ Other		

Outlet Pipe	Influent Pipe 1
Clock Pos: 6 Depth (Rim to Inv.) 1	
Pipe ID#:	Pipe ID#
Material/Size: 36" RCP	Material/Size: 36" RCP
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%
Influent Pipe 2	Influent Pipe 3
Clock Pos: Depth (Rim to Inv.	Clock Pos: Depth (Rim to Inv.)
Pipe ID#:	Pipe ID#
Material/Size:	Material/Size:
Comments:	Comments:
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%
Weather	Punoff / Inflow Infiltration

Weather	Runoff / Inflow	Infiltration
	⊠ None	☐ None
☐ Heavy Rain	☐ Sheeting	⊠ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		□ Roots
☐ Very Dry		

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
☐ Concentric ☑ Eccentric ☐ Flat Top ☐ Other	<ul> <li>☒ No</li> <li>☐ Yes</li> <li>Component:</li> <li>Chimney Cone</li> <li>Wall Bench</li> <li>Channel Pipe</li> <li>Inlet / Outlet</li> </ul>	⊠ No     □ Yes     Describe:      Component:     Chimney Cone Wall     Bench Channel Pipe     Inlet / Outlet	□ No □ Yes Describe: Potential erosion of bench, west side Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	New rings & casting ~8" Sediment



Photo 1: MH 110 Surroundings



Photo 2: 110 Ladder



43





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	3:15 pm	Forest BLVD N	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'			through
111		☐ Polymer	14.80'	
	24" clear	□ Combination		
		□ Other		

	•							_
	Outlet Pip	е		Influent Pipe 1				
Clock Pos: 6	Depth (Rim to Inv.) 16.55'		Clock P	os: 12   1	Depth	(Rim to Inv.) 16.35'		
Pipe ID#:				Pipe ID#	<b>‡</b>			
Material/Size: 3	B6" RCP			Material	/Size: 36" RC	P		
Comments: 6"	Sediment			Comme	nts: 12" Sedir	nent		
Flow (% full): 0	% 25% <mark>50% 75</mark>	<mark>%</mark> 100	0%	Flow (%	full): 0% 25°	% <mark>50</mark>	<mark>% 75%</mark> 100%	
	Influent Pip	e 2			Ir	ıfluen	t Pipe 3	
Clock Pos:	Depth (F	Rim to I	nv.)	Clock P	os:	De	epth (Rim to Inv.)	
Pipe ID#:				Pipe ID#	<del>‡</del>			
Material/Size:			Material/Size:					
Comments:			Comments:			_		
Flow (% full): 0	% 25% 50% 75	5% 100	0%	Flow (% full): 0% 25% 50% 75% 100%				
				I				
	Neather			off / Inflo	W		Infiltration	
□ Dry			None			$\boxtimes$ No	one	
☐ Heavy Rain			□ Sheeting			☐ St	ain	
☐ Light Rain			□ Ponding			$\square$ W	eeping	
☐ Snow			□ Inundated			$\square$ Dr	ipping	
□ Saturated						☐ Gu	ıshing	
□ Damp						$\square$ Ro	oots	
☐ Very Dry								
	1	•						
MH Type	Evidence of Surcharge	Deb	ris Deposits	Struc	ctural Defects	S	Comments	
☐ Concentric	⊠ No	□ No		⊠ No			Noticeable water waves	
	□ Yes	⊠ Yes	8	□ Yes			when lift station turned on	
☐ Flat Top	Component:	Descri	ibe: Debris	Describe:				

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments	
☐ Concentric	⊠ No	□ No	⊠ No	Noticeable water waves	
	☐ Yes	⊠ Yes	☐ Yes	when lift station turned on	
□ Flat Top	Component:	Describe: Debris	Describe:	40" ( ) ( )	
□ Other	Chimney Cone	caught on edge of	· <u></u>	~12" total sediment	
	Wall Bench	<u>outlet</u>	Component:	measured during MH	
	Channel Pipe	Component:	Chimney Cone Wall Bench	entry	
	Inlet / Outlet	Chimney Cone Wall	Channel Pipe Inlet / Outlet		
		Bench Channel Pipe Inlet / Outlet			
MH Entry Notes		Inlet / Outlet			
Wet at 1 <sup>st</sup> barrel					
Debris ball in inv	•				
Worm holes in wall near bottom					
Concrete walls in					



Photo 1: MH 111 Surroundings



Photo 2: MH 111 Ladder



Photo 3: MH 111 Debris caught on edge of pipe



Photo 4: MH 111 Worm holes in concrete wall, but competent concrete





Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	3:20 pm	Forest BLVD N	
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
		☐ Brick		
	4'	□ Concrete		through
112		□ Polymer	11.7'	
	24" Clear	□ Combination		
		☐ Other		

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6 Depth (Rim to Inv.) 12.45'	Clock Pos: 12 Depth (Rim to Inv.) 12.35'		
Pipe ID#:	Pipe ID#		
Material/Size: 36" RCP	Material/Size: 36" RCP		
Comments: 6" Sediment	Comments: 6" Sediment		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments:		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
☑ Dry – 16 Deg	⊠ None	⊠ None
☐ Heavy Rain	☐ Sheeting	□ Stain
☐ Light Rain	☐ Ponding	☐ Weeping
□ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		☐ Roots
☐ Very Dry		

МН Туре	Evidence of Surcharge	Debris Deposits	Structural Defects	Comments
□ Concentric	⊠ No	⊠ No	⊠ No	New ring and casting
<ul><li>☑ Eccentric</li><li>☐ Flat Top</li><li>☐ Other</li></ul>	☐ Yes Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	☐ Yes Describe:  Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	☐ Yes Describe:  Component: Chimney Cone Wall Bench Channel Pipe Inlet / Outlet	Sludge Judge unable to get good sample 6" sediment by feel



Photo 1: MH 112 Surroundings



Photo 2: MH 112 Sludge Judge Sample



Photo 3: MH 112 Ladder



Photo 4: MH 112 Pipe





## MH ASSESSMENT FORM

TKDA				
Inspector(s):	Date:	Time:	Street:	Cross Street/House #
BJM, WSF	12/18/23	3:50 pm	Forest BLVD N	Interstate Companies LLC Driveway
MH ID#	MH Dia. (ft)	Material	Rim to Bench (ft):	Photo's
113	4' 24" clear opening	☐ Brick ☑ Concrete ☐ Polymer ☐ Combination ☐ Other	N/A	through
·	Outlet Pipe		Influent F	Pipe 1

Outlet Pipe	Influent Pipe 1		
Clock Pos: 6 Depth (Rim to Inv.) 9.7'	Clock Pos: 12 Depth (Rim to Inv.) 9.7'		
Pipe ID#:	Pipe ID#		
Material/Size: 36" RCP	Material/Size: 36" RCP		
Comments:	Comments: Forcemain		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): <del>0% 25% 50% 75% 100%</del>		
Influent Pipe 2	Influent Pipe 3		
Clock Pos: Depth (Rim to Inv.)	Clock Pos: 3 Depth (Rim to Inv.)		
Pipe ID#:	Pipe ID#		
Material/Size:	Material/Size:		
Comments:	Comments: Abandoned former connection to dump station and Bulkheaded		
Flow (% full): 0% 25% 50% 75% 100%	Flow (% full): 0% 25% 50% 75% 100%		

Weather	Runoff / Inflow	Infiltration
⊠ Dry	⊠ None	⊠ None
☐ Heavy Rain	☐ Sheeting	□ Stain
□ Light Rain	☐ Ponding	☐ Weeping
☐ Snow	☐ Inundated	☐ Dripping
☐ Saturated		☐ Gushing
□ Damp		□ Roots
☐ Very Dry		

MH Type	Evidence of	Debris Deposits	Structural Defects	Comments
	Surcharge			
☐ Concentric	⊠ No	⊠ No	□ No	Bulkhead and force main
⊠ Eccentric	☐ Yes	☐ Yes	⊠ Yes	
☐ Flat Top	Component:	Describe:	Describe: Erosion around	No sediment
☐ Other	Chimney Cone		bulkhead & force main	
	Wall Bench	Component:	Component:	
	Channel Pipe	Chimney Cone Wall	Chimney Cone Wall Bench	
	Inlet / Outlet	Bench Channel Pipe	Channel Pipe Inlet / Outlet	
		Inlet / Outlet		
MH Entry Notes				

FM Discharge

~9" gap from MH to concrete bulkhead, behind force main, concrete bulkhead feels solid

Top slab rests on brick, motor on top of brick is starting to fail



Photo 1: MH 113 Surroundings



Photo 2: MH 113 Ladder and pipes



Photo 3: MH 113 Force main (Left) Bulkhead (Right) top view.



Photo 4: MH 113 Force main (Left) and Bulkhead (Right)



# Appendix B MCES Capacity Analysis



## INTERNAL MEMORANDUM

**DATE:** February 14, 2023 **TO:** Amanda Mondor

FROM: Emily Steinweg, Principal Engineer, Wastewater Planning & Community Programs

**SUBJECT:** Forest Lake Interceptor 7029 Evaluation

## **Project Background**

The Metropolitan Council Environmental Services (ES) owns and operates the Forest Lake Interceptor from Lift Station L01 to L78 in White Bear Lake. A 2018 condition assessment revealed approximately 1,000 linear feet (LF) upstream of L02 to be condition 4.5 and the remaining 7,000 LF between Manhole 94 and L02 to be condition rating 4.

The 36-inch, single barrel, reinforced concrete pipe (RCP) was installed in 1970. A 35 LF permanent easement exists over the corridor; however, Tanner's Brook golf course was constructed over the interceptor and the City of Forest Lake (City) has approached ES about developing the parcel to the north of the golf course. The City has suggested rerouting the pipe down Fenway Ave and 180th Street North between MH 99 and L02.

Meter Station 043 is located just downstream from L02. Flows at this station were consistent with those recorded at L01. The 10-year average dry weather flow (ADWF) was 1.5 million gallons per day (MGD) and 10-year peak wet weather flow (PWWF) was 2.9 MGD.

A capacity analysis for this stretch of 7029 has been requested for project 802xxx to fulfill the Consultant's request for future capacity evaluation to inform alternatives for future rehabilitation and/or relocation of the existing interceptor.

## Comprehensive Plan Growth Forecasts and Flow Projections

2020, 2030, and 2040 flows from Forest Lake and Columbus were determined using each community's 2040 Comprehensive Plan growth forecasts and average flow rates for households and employees, for the sewershed that contributes to 7029 at the south border of Forest Lake (Figure 1).

From those calculations (see associated spreadsheet), flows are summarized in Table 1:

Table 1: Comprehensive Plan Flow Projections

	ADF MGD	ES Std PF	Peak Flow MGD
2020 Flow Projection	1.3	3.0	4.0
2030 Flow Projection	1.6	2.9	4.8
2040 Flow Projection	1.9	2.8	5.4

Assumptions for these flow projections:

- 150 gpd/household; 20 gpd/employee
- Flow amounts include entire contributing sewersheds to the 7029 interceptor at the south border of Forest Lake. No incremental flows along the interceptor were calculated.

Calculations and supporting documents are saved here: N:\TechServ\Engr\_Services\_Info\25 Programs\System Planning\Service Area Analyses\Metro SA Analyses\7029 - Forest Lake

## **Ultimate Flow Projections**

To estimate the Ultimate Flow, a previous study of the capacity of the NEI (Northeast Interceptor) was used as a starting point. That study was last updated in 2019 and files are saved here: N:\TechServ\Engr\_Services\_Info\25 Programs\System Planning\Service Area Analyses\Metro SA Analyses\NEI\Flow vs Cap Analysis\Aug 2019 Update

Flow areas to the same input locations as in the 2019 study were updated per the Long-Term Service Area (LTSA) shapefile (as of July 2022) and the Comprehensive Plans of the served communities. Three flow areas pertain to this analysis: MH 125, MH 114 near L01, and MH 77A near L02.

The Very Long-Term developable land area from February 2023 was used in this analysis (N:\ESGM\ESGIS\Public\\_Public\rojects\Developable Land Analysis Resources). That layer shows developable land for 25+ years into the future. Areas removed from development in this layer include some golf courses (depending on how counties report golf course land), Metro Collaborative Parks, wetlands (NWI), wildlife management zones, and cemeteries.

The Erase tool was used to subtract the nondevelopable land, for the very long-term scenario, from the contributing areas to the study area. Those acres are used in the calculation for ultimate flow projections (GIS output saved here: N:\TechServ\Engr\_Services\_Info\25 Programs\System Planning\Service Area Analyses\Metro SA Analyses\7029 - Forest Lake\GIS\ForestLakeCapacity.gdb).

VeryLongTerm\_Erase1

Ultimate flow projections for each location were calculated with areal generation rates of both 600 gallon/acre/day and 800 gallon/acre/day (gpad) for the ultimate service area delineated using the Very Long-Term developable acres (Table 2). Peak flows were calculated using the ES standard peaking factor. Note – this calculation assumes that all areas are fully developed at 600 and 800 gpad.

Table 2: Ultimate Flow Scenario (MGD)

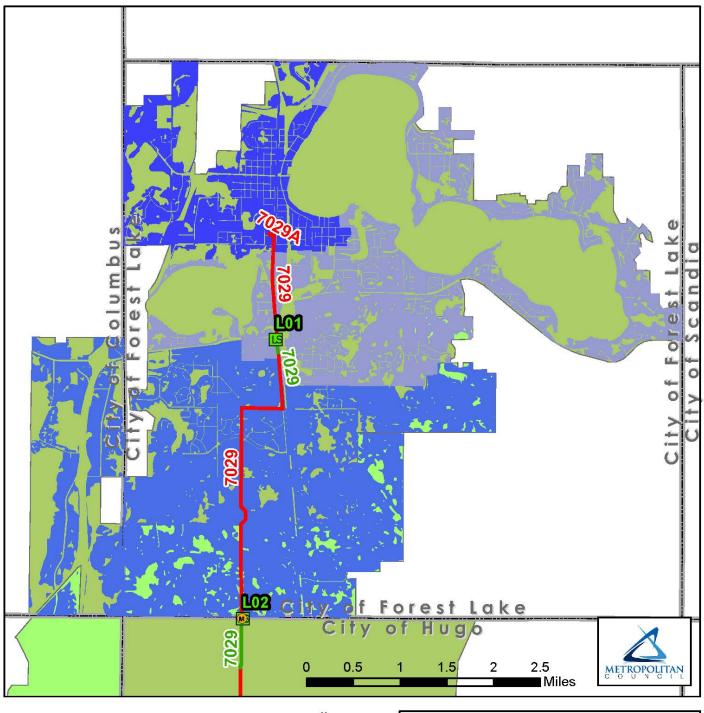
_	Areal Rate – 600 gpad		Areal Rate	– 800 gpad
Location	Cumulative Flow	Peak Flow	Cumulative Flow	Peak Flow
MH 125	0.7	2.4	1.0	3.1
MH 114 near L01	2.3	6.3	3.1	8.0
MH 77A near L02	5.3	12.3	7.1	15.7

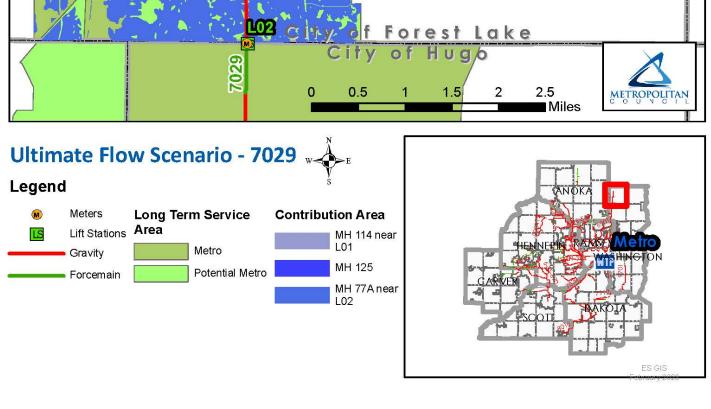
Step graphs for that section of 7029 and comparison of step graph capacity and projected peak flows are shown in Table 3. Note the large difference in projected capacity between the 2040 Comprehensive Plan estimate and the fully developed with areal rates for the long-term service area. The large difference is reflective of the different calculation methods.

Table 3: Step Graph Capacity Comparison Flow (MGD)

	MH 125	MH 114 near L01	MH 77A near L02
Step Graph Est. Capacity	5	5	12
2040 Comp Plan Est. Flow			5.4
% Capacity Utilized			45%
Peak Flow, cumulative 600 gpad	2.4	6.3	12.3
% Capacity Utilized	47%	125%	102%
Peak Flow, cumulative 800 gpad	3.1	8.0	15.7
% Capacity Utilized	61%	161%	131%

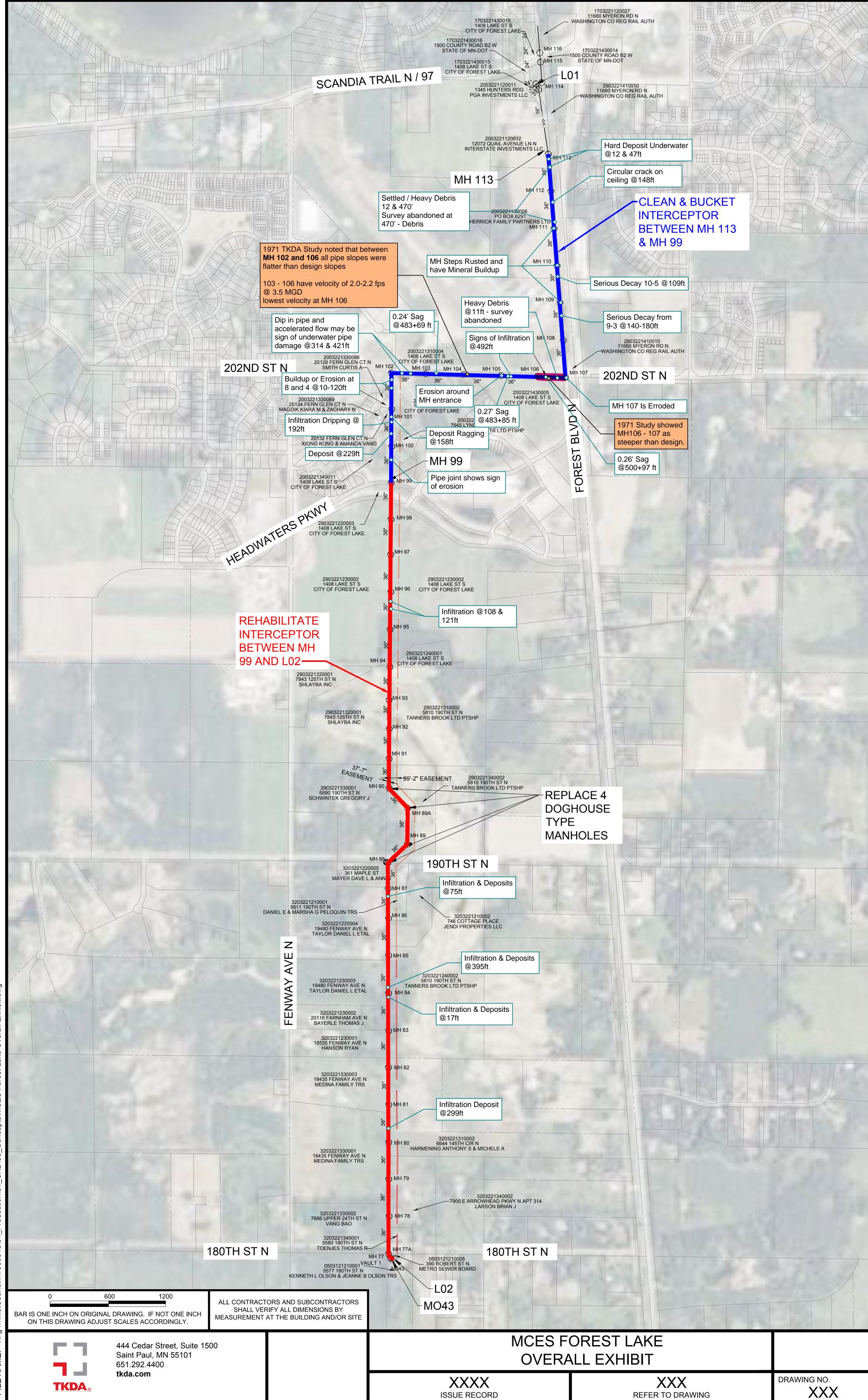
Figure 1







# Appendix C Location Drawing



PLOT DATE: Sep 22, 2023 - 8:56am FILE NAME: K:\g-m\MetCouncil\17060013\04\_Production\01\_CAD\03\_Concepts\MCES Forest Lake Overall E