Notes:
1. Topography from the 2011 7-County Metro Region Lidar dataset and 6/1/2022 Drone Survey.
2. Parcel Lines from Washington County GIS dataset.
3. 2021 FSA Aerial Photo accessed from Minnesota Geospatial Image Service.

Residence

Existing Larson Mine
Active Mining
Quarry Floor ±640 msl
Project Area ±148 A
Mississippi River
Barge Fleeting and Loading
Settling Pond
Existing Material Stockpile and Processing Area
Approximate Pipeline Location
Existing Site Access
99th St. S
105th St. S
Pioneer Rd S
CR 75
Grey Cloud Channel
Mooers Lake

690 720 740 730 750 760 710 670

N

400 0 400 800
SCALE IN FEET

Sunde Engineering, PLLC.
CONSULTING CIVIL ENGINEERS
10830 NESBITT AVENUE SOUTH
BLOOMINGTON, MINNESOTA 55437
(952) 881-3344 TELEPHONE
(952) 881-1913 FAX
www.sundecivil.com

Holcim - MWR, Inc.

Larson Quarry
EAW

Grey Cloud Island Township,
Washington County, MN

DATE	REVISION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR 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.

Kirsten Pauly
DATE: 9/27/2023 REG. NO.: 21842

INFORMATION:

PROJECT NO.:
DRAWN BY:
CHECKED BY:
APPROVED BY:
SCALE:
DATE:

DESCRIPTION:

Existing Conditions

SHEET NO:

C1

1 of 2

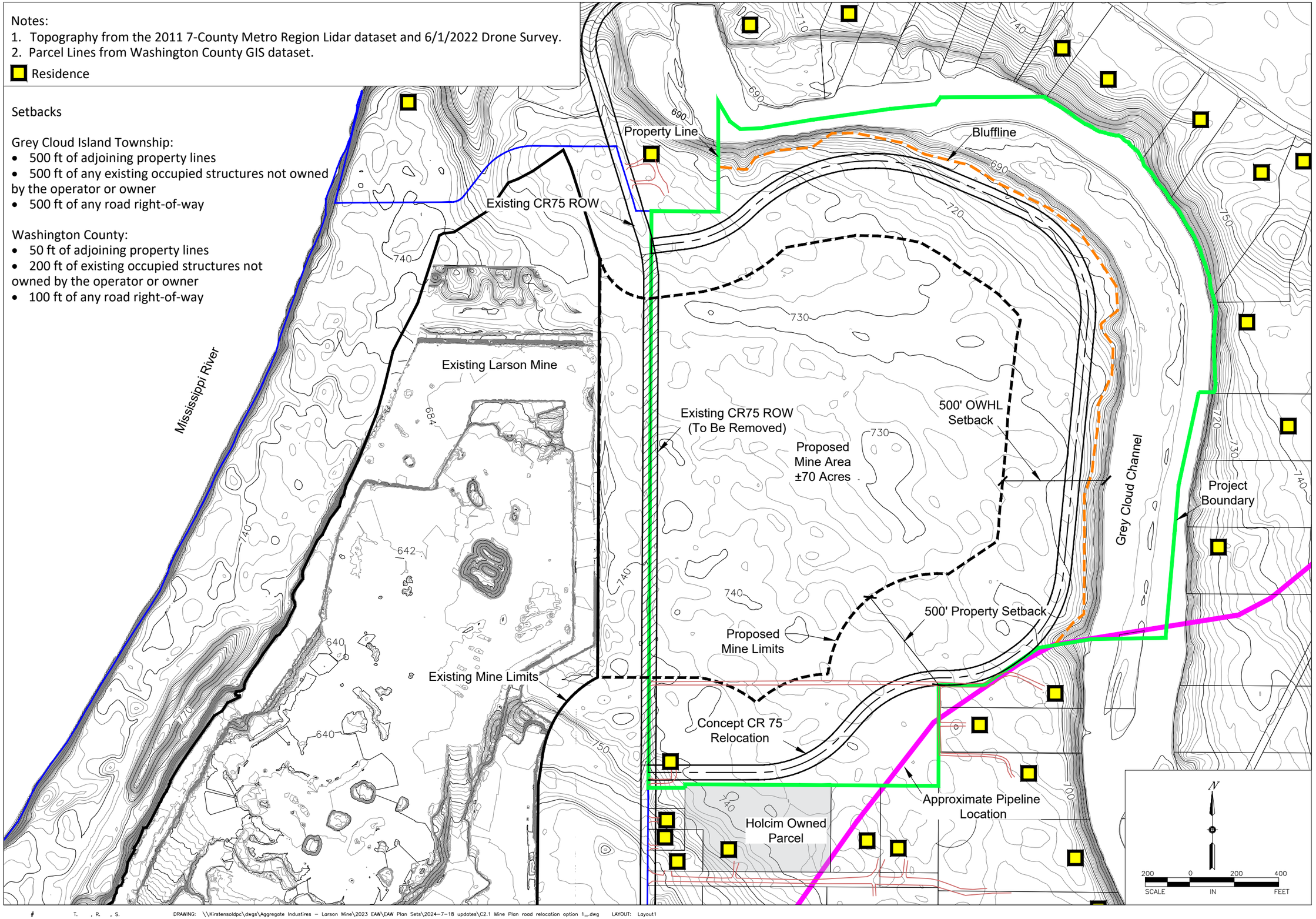
Notes:
1. Topography from the 2011 7-County Metro Region Lidar dataset and 6/1/2022 Drone Survey.
2. Parcel Lines from Washington County GIS dataset.

Residence

Setbacks

Grey Cloud Island Township:
- 500 ft of adjoining property lines
- 500 ft of any existing occupied structures not owned by the operator or owner
- 500 ft of any road right-of-way

Washington County:
- 50 ft of adjoining property lines
- 200 ft of existing occupied structures not owned by the operator or owner
- 100 ft of any road right-of-way



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Holcim - MWR, Inc.

Larson Quarry
EAW

Grey Cloud Island Township,
Washington County, MN

DATE	REVISION
2024-1-31	Revision 1 Add Residences

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR 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.

Kirsten Pauly
DATE: 9/27/2023 REG. NO.: 21842

INFORMATION:

PROJECT NO.:
DRAWN BY:
CHECKED BY:
APPROVED BY:
SCALE:
DATE:

DESCRIPTION:

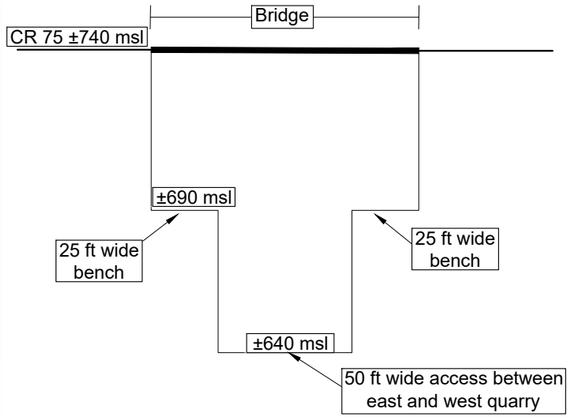
Site Plan
Option 1
Realign CR 75

SHEET NO:

C2.1 of 2

Notes:
1. Topography from the 2011 7-County Metro Region Lidar dataset and 6/1/2022 Drone Survey.
2. Parcel Lines from Washington County GIS dataset.

Residence



Mississippi River

Existing Larson Mine

200' Road ROW Setback

Proposed Bridge

Underpass Corridor

Larson Mine Existing Mine Limits

CR 75 ROW

CR75 ROW

Bluffline

Property Line

Proposed Mine Area Option 2: ±53 Acres

500' OHWL Setback

Concept Temporary Road Alignment (3-5 years)

Proposed Mine Limits

500' Property Setback

Project Boundary

Grey Cloud Channel

Approximate Pipeline Location

Holcim Owned Parcel

N

200 0 200 400
SCALE IN FEET

T. , R. , S.

DRAWING: \\Kirstensoldpc\dwgs\Aggregate Industires - Larson Mine\2023 EAW\EAW Plan Sets\2024-7-18 updates\C2.2 option 2.dwg LAYOUT: Layout1

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Holcim - MWR, Inc.

Larson Quarry
EAW

Grey Cloud Island Township,
Washington County, MN

DATE	REVISION

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Kirsten Pauly

Kirsten Pauly
DATE: 9/27/2023 REG. NO.: 21842

INFORMATION:

PROJECT NO.:
DRAWN BY:
CHECKED BY:
APPROVED BY:
SCALE:
DATE:

DESCRIPTION:

Site Plan Option 2

Bridge/underpass access to east quarry

SHEET NO:

C2.2 of 2

1. Reclamation grading in upland areas will consist of removing product stockpiles and establishing final grade over the existing processing and stockpile area.

2. Maximum 4:1 (H:V) slope in areas to be graded (not applicable for areas of bedrock high walls. Final highwall design by others to be developed as part of quarry operation.

3. Place a minimum of 4 inches of topsoil from on-site stockpiles over graded areas.

4. Seed and mulch to establish vegetation.

5. Establish safe exits at perimeter of area around Lake Larson and Lake Larson East (See Detail 1).

Reclamation of shallow bay area:

6. Grades will be established as fines are placed in shallow a bay areas through course of mining and processing activity.

7. Spread minimum 4" of topsoil from on-site stockpiles over areas above the water table.

8. Seed and mulch with native wetland seed mix to establish vegetation.

Limestone highwall ±0-60 feet

N

300 0 300 600
SCALE IN FEET

Highwall
Top = ±740
Bottom = ±685

Safe Water Exit
(Typical)

Highwall
Top = ±730

Highwall
Top = ±685
Bottom = ±640

Safe Water Exit
(Typical)

Lake Larson
±176 Acres
Water Elev. = ±690 msl
Lake Depth = ±50 ft

Mississippi River ±686 msl

Highwall
Top = ±740
Bottom = ±685

Highwall
Top = ±685
Bottom = ±640

Relocated Grey
Cloud Island Drive S.

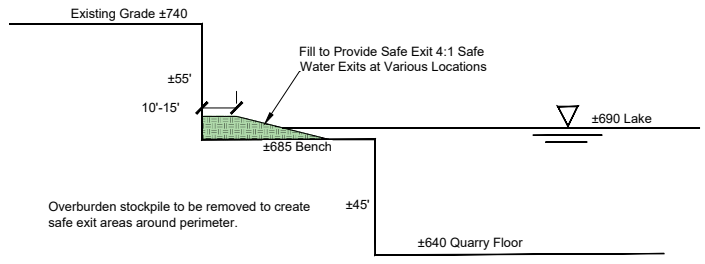
Highwall
Top = ±685
Bottom = ±640

Safe Water Exit

Shallow Bay/
Wetland Area

Grade and Vegetate
Processing and Stockpile
Area

Safe Exit Area Detail



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(952) 881-1913 FAX
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INFORMATION:

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DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____
SCALE: _____
DATE: _____

DATE REVISION

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NAME Kirsten Pauly
DATE: 10/30/2023 REG. NO.: 21842

Larson Quarry
Holcim - MWR, Inc.
Grey Cloud Island Township

Reclamation Plan
Option 1
CR 75 Relocation

C3.1

1. Reclamation grading in upland areas will consist of removing product stockpiles and establishing final grade over the existing processing and stockpile area.

2. Maximum 4:1 (H:V) slope in areas to be graded (not applicable for areas of bedrock high walls. Final highwall design by others to be developed as part of quarry operation.

3. Place a minimum of 4 inches of topsoil from on-site stockpiles over graded areas.

4. Seed and mulch to establish vegetation.

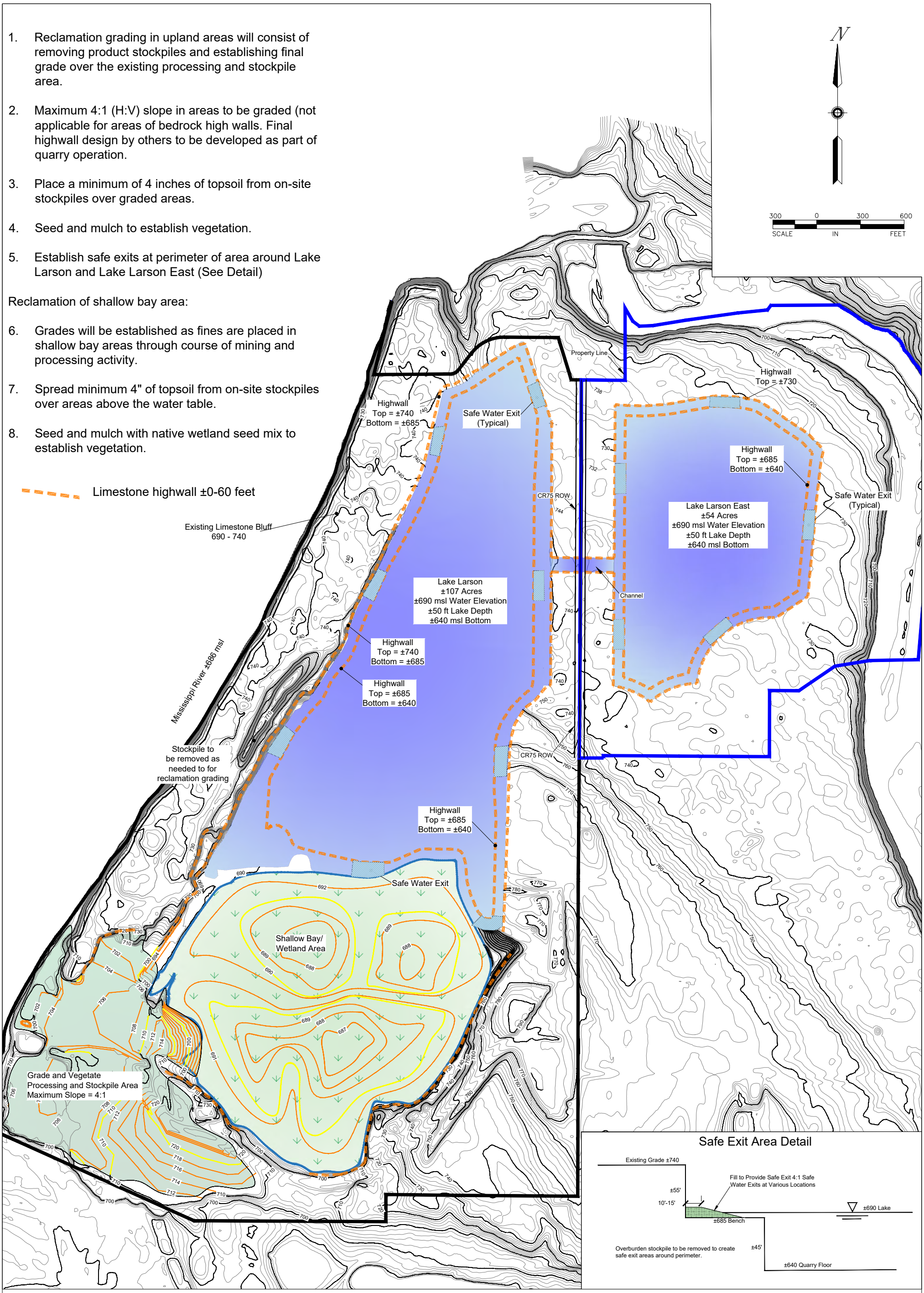
5. Establish safe exits at perimeter of area around Lake Larson and Lake Larson East (See Detail)

Reclamation of shallow bay area:

6. Grades will be established as fines are placed in shallow bay areas through course of mining and processing activity.

7. Spread minimum 4" of topsoil from on-site stockpiles over areas above the water table.

8. Seed and mulch with native wetland seed mix to establish vegetation.



Safe Exit Area Detail

Sunde Engineering, PLLC.
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BLOOMINGTON, MINNESOTA 55437
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INFORMATION:

PROJECT NO.: _____

DRAWN BY: _____

CHECKED BY: _____

APPROVED BY: _____

SCALE: _____

DATE: _____

DATE	REVISION

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NAME Kirsten Pauly

DATE: 10/30/2023 REG. NO.: 21642

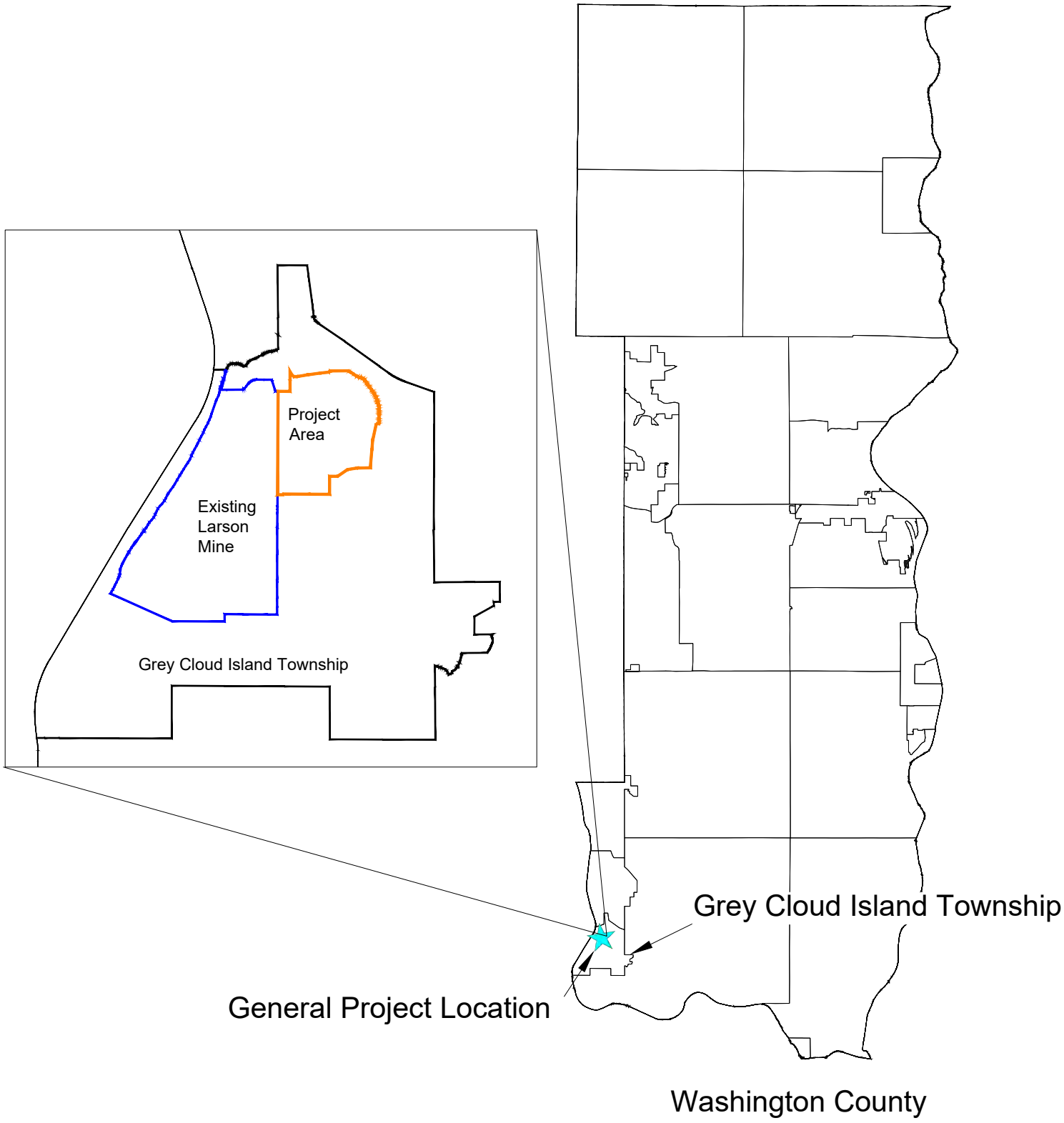
Larson Quarry

Holcim - MWR, Inc.

Grey Cloud Island Township

Reclamation Plan
Option 2
Bridge

C3.2



N

Not to Scale

Figure 1
County Location Map
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

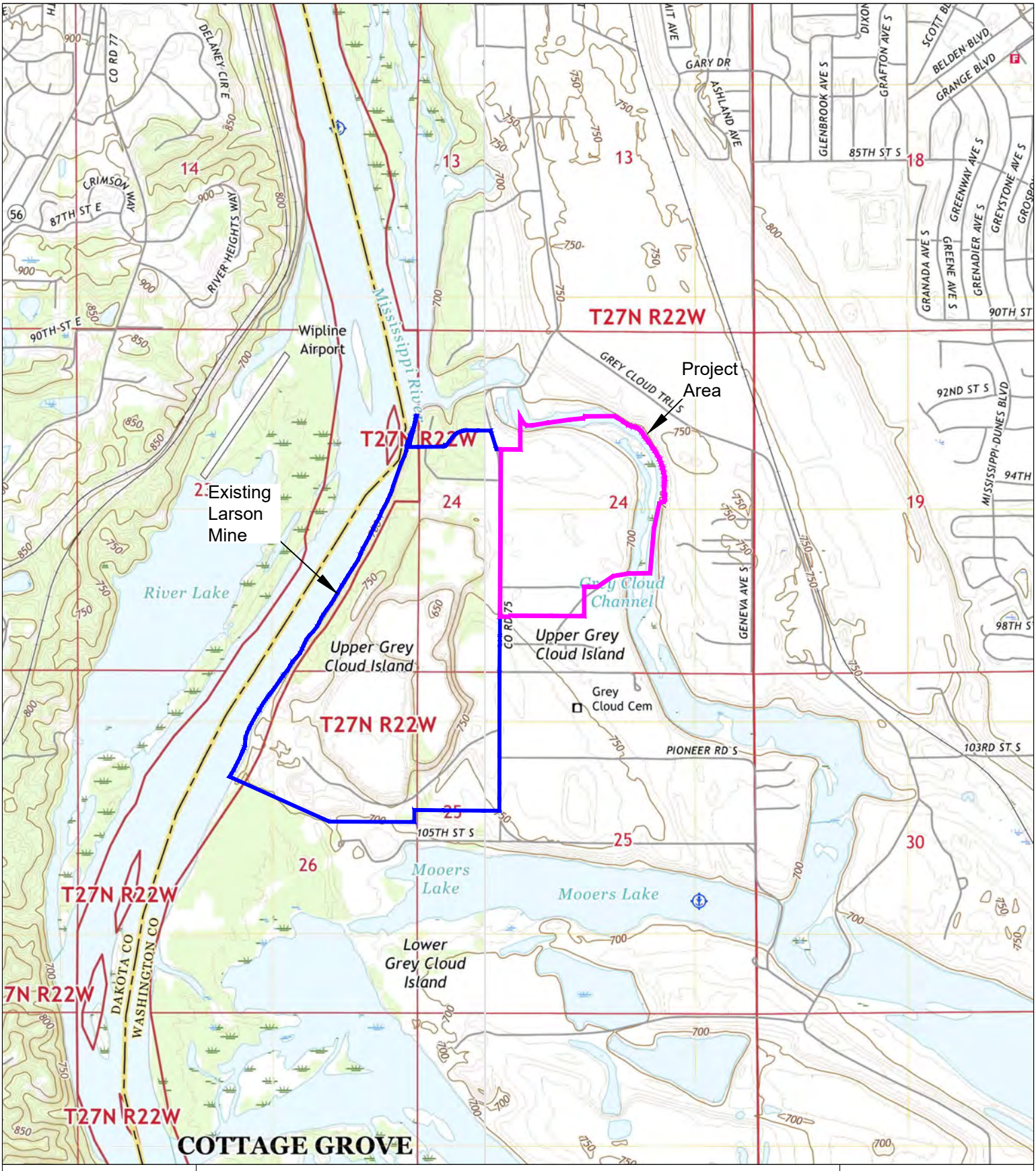
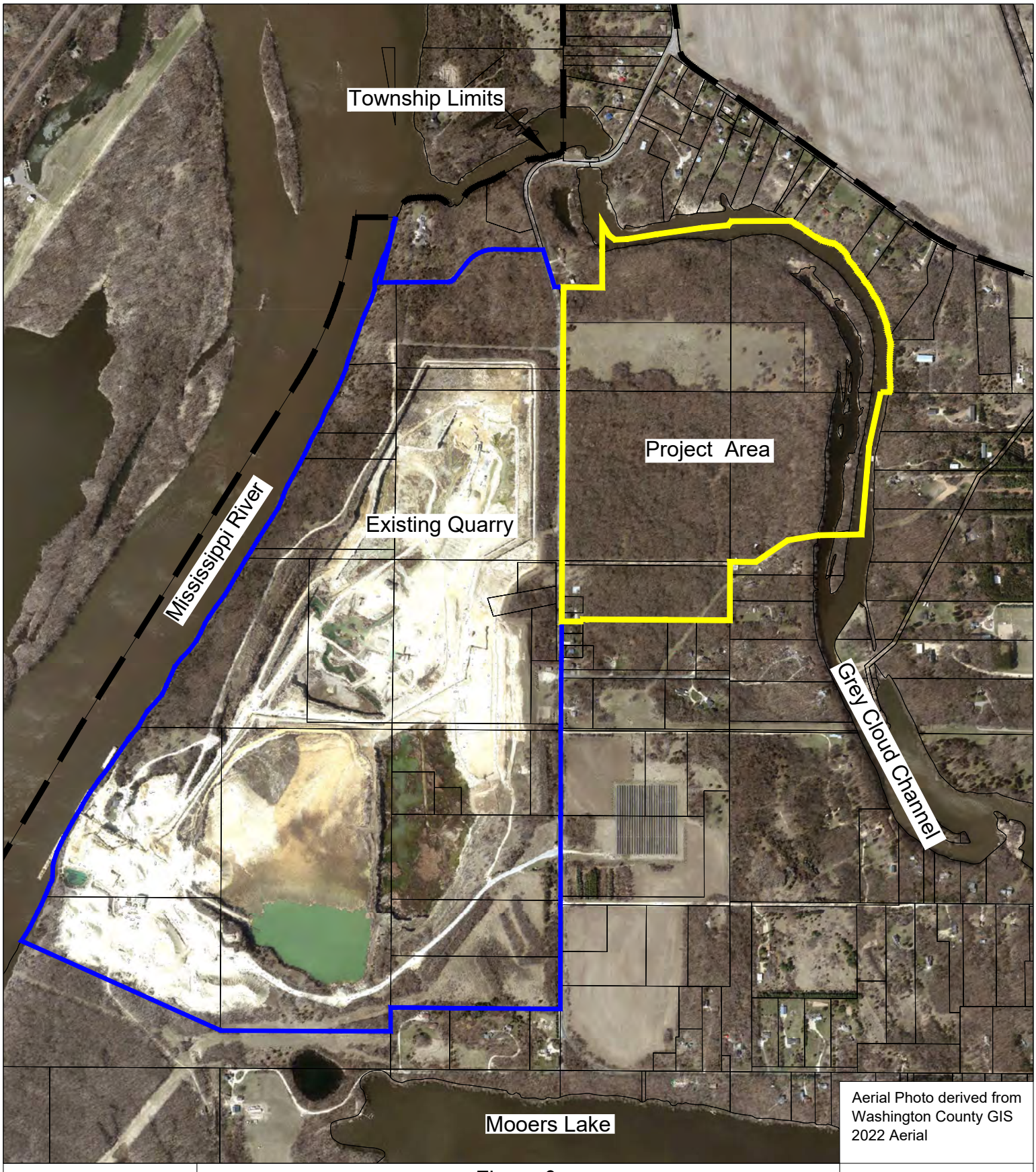


Figure 2
USGS Quad Map Excerpt
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



Aerial Photo derived from Washington County GIS 2022 Aerial

N

0 500 1000
SCALE IN FEET

Figure 3
Aerial Photo
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

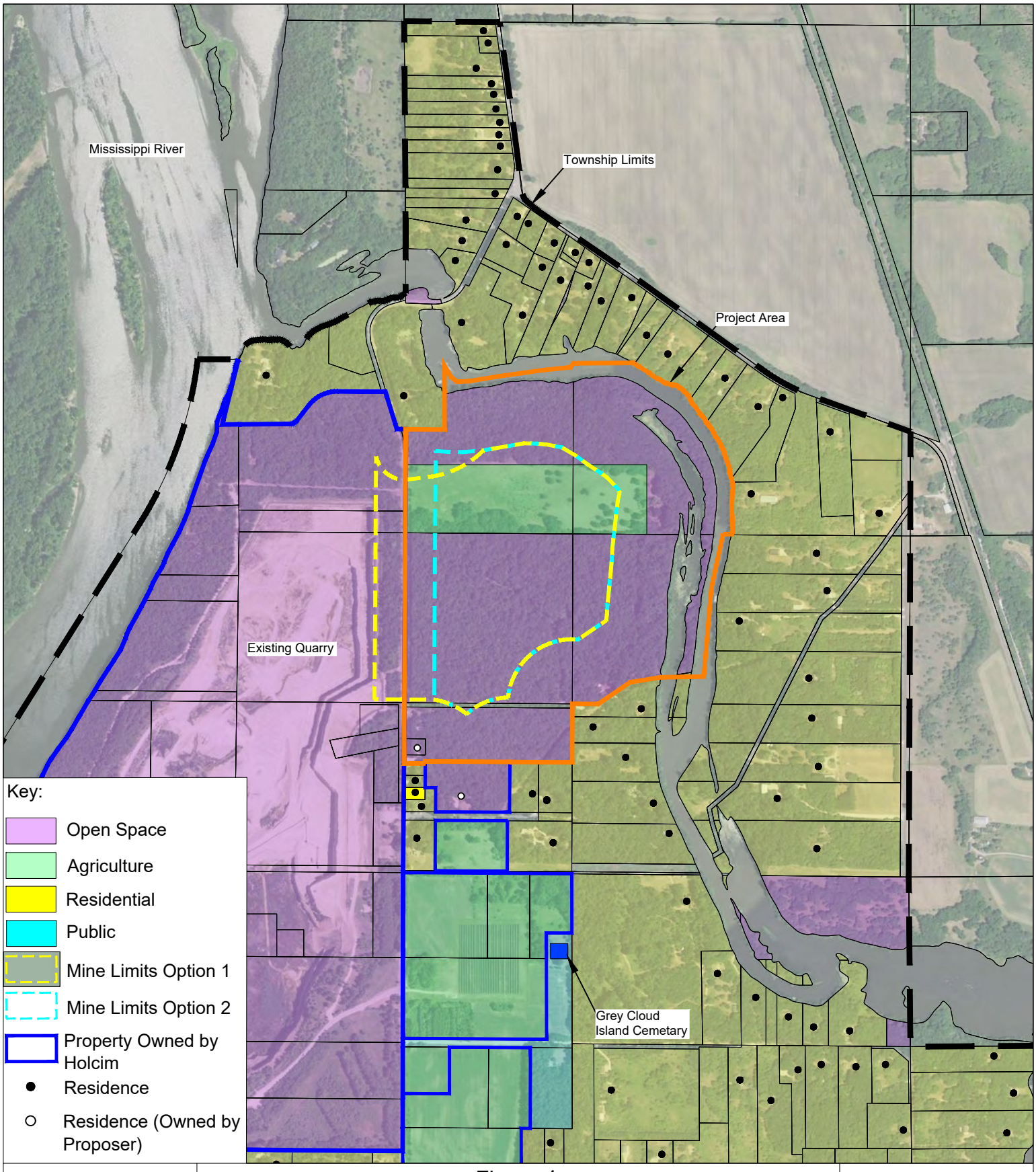
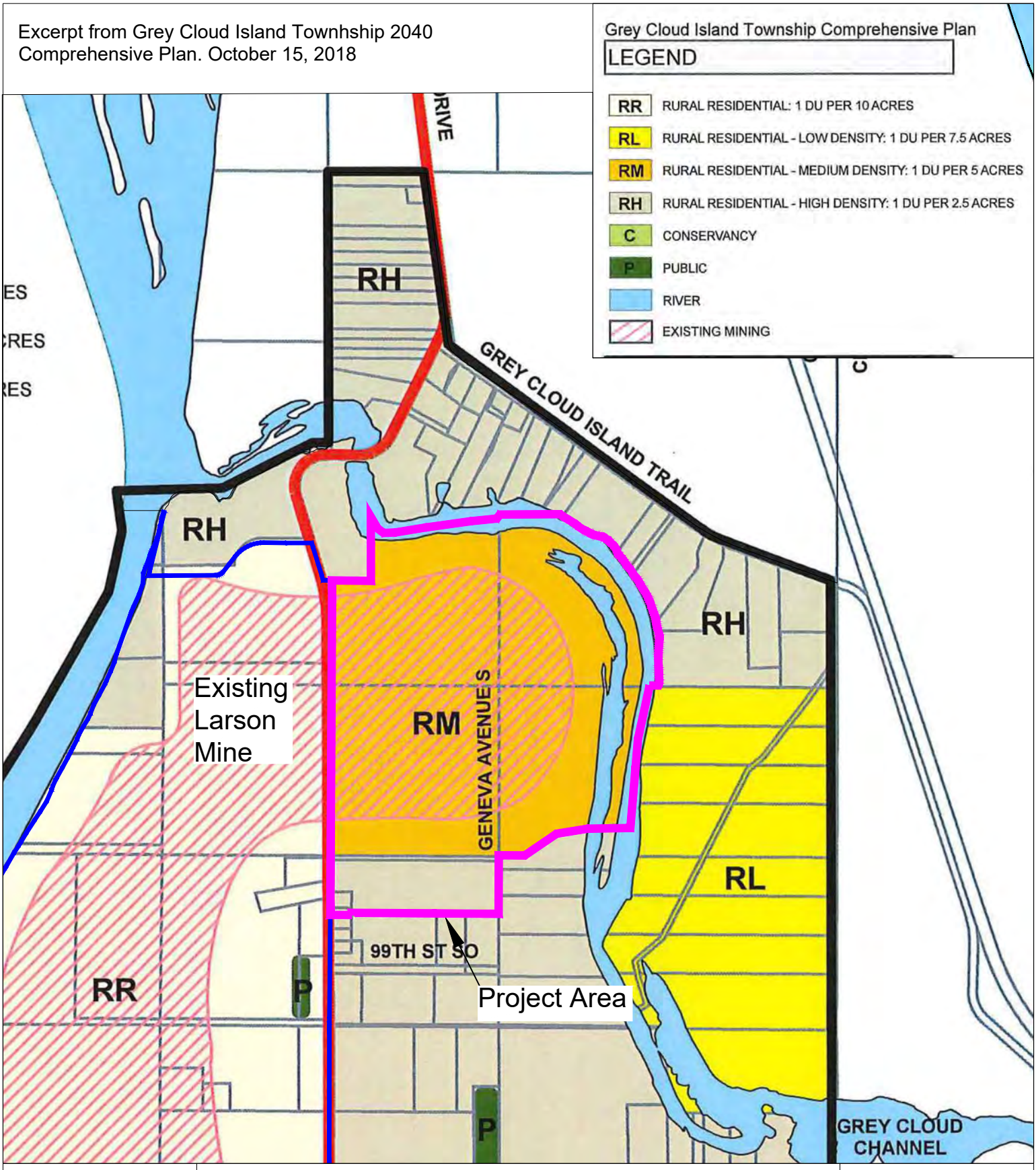


Figure 4
Existing Land Use
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

Excerpt from Grey Cloud Island Townhship 2040
Comprehensive Plan. October 15, 2018



N

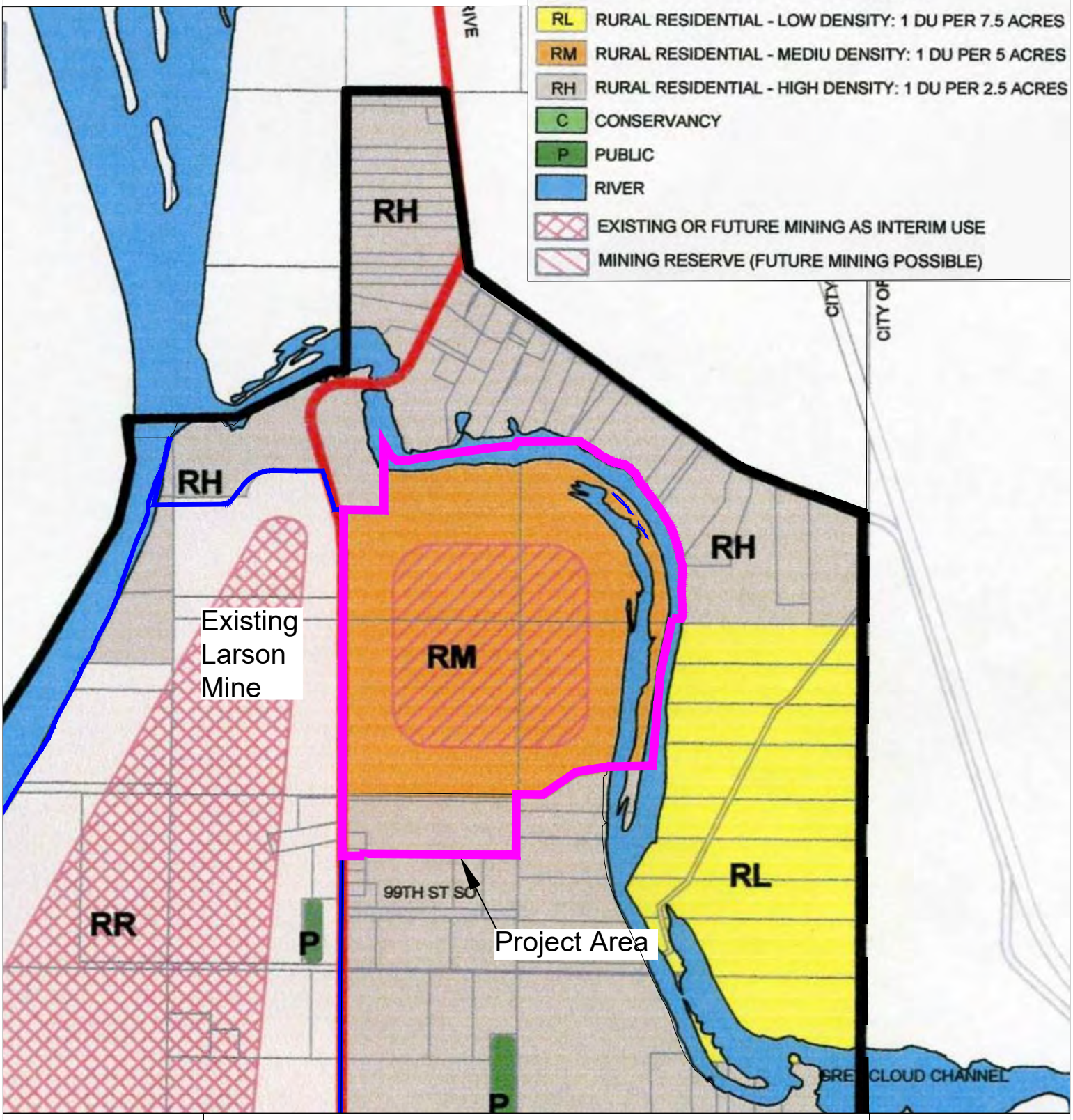
0 500 1000
SCALE IN FEET

Figure 5
Grey Cloud Island Township Planned Land Use
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC

Excerpt from Grey Cloud Island Townhship
Zoning Ordinance #49 March 10, 2021



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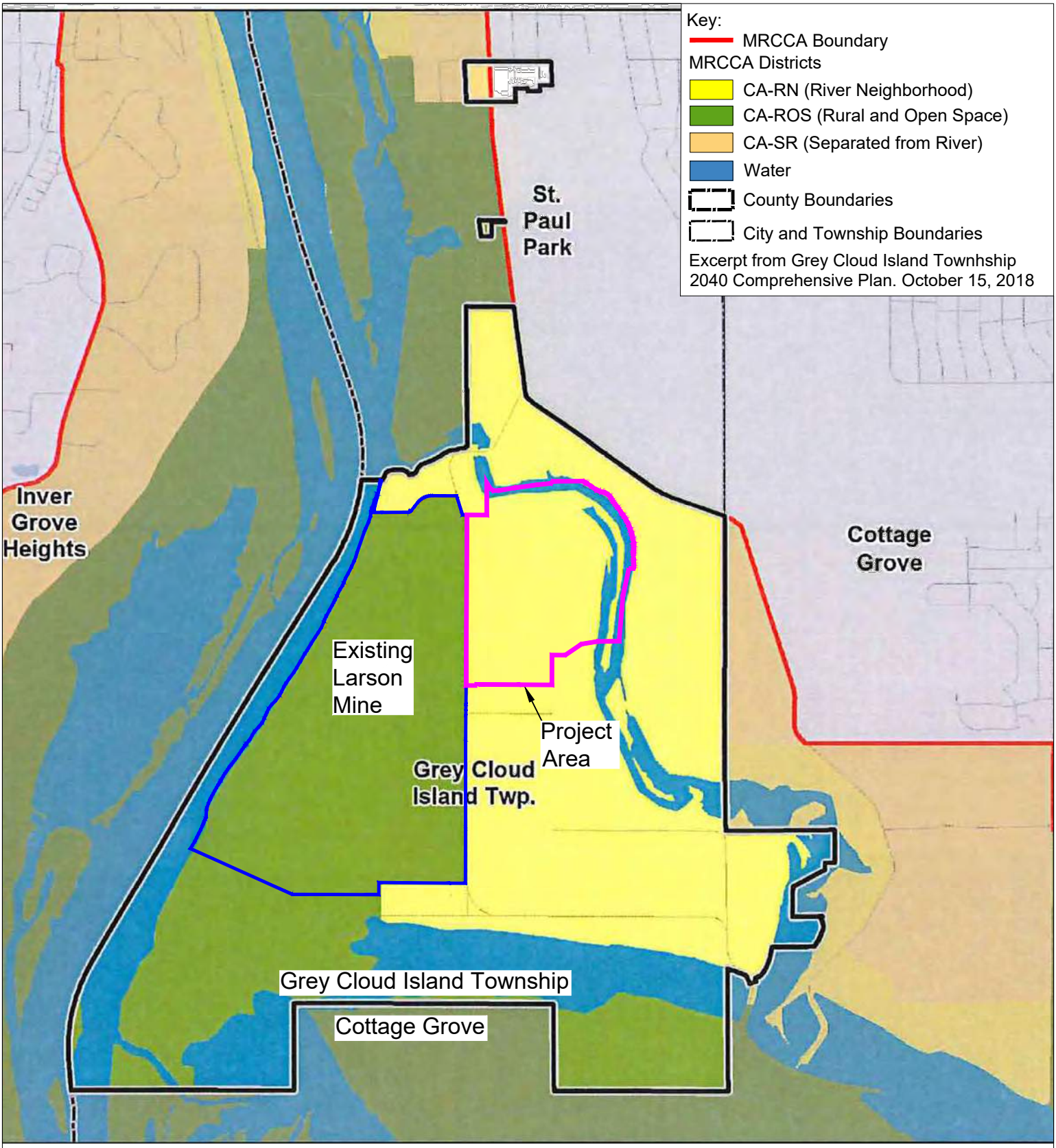
0 500 1000
SCALE IN FEET

Figure 6
Grey Cloud Island Township Zoning Map
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



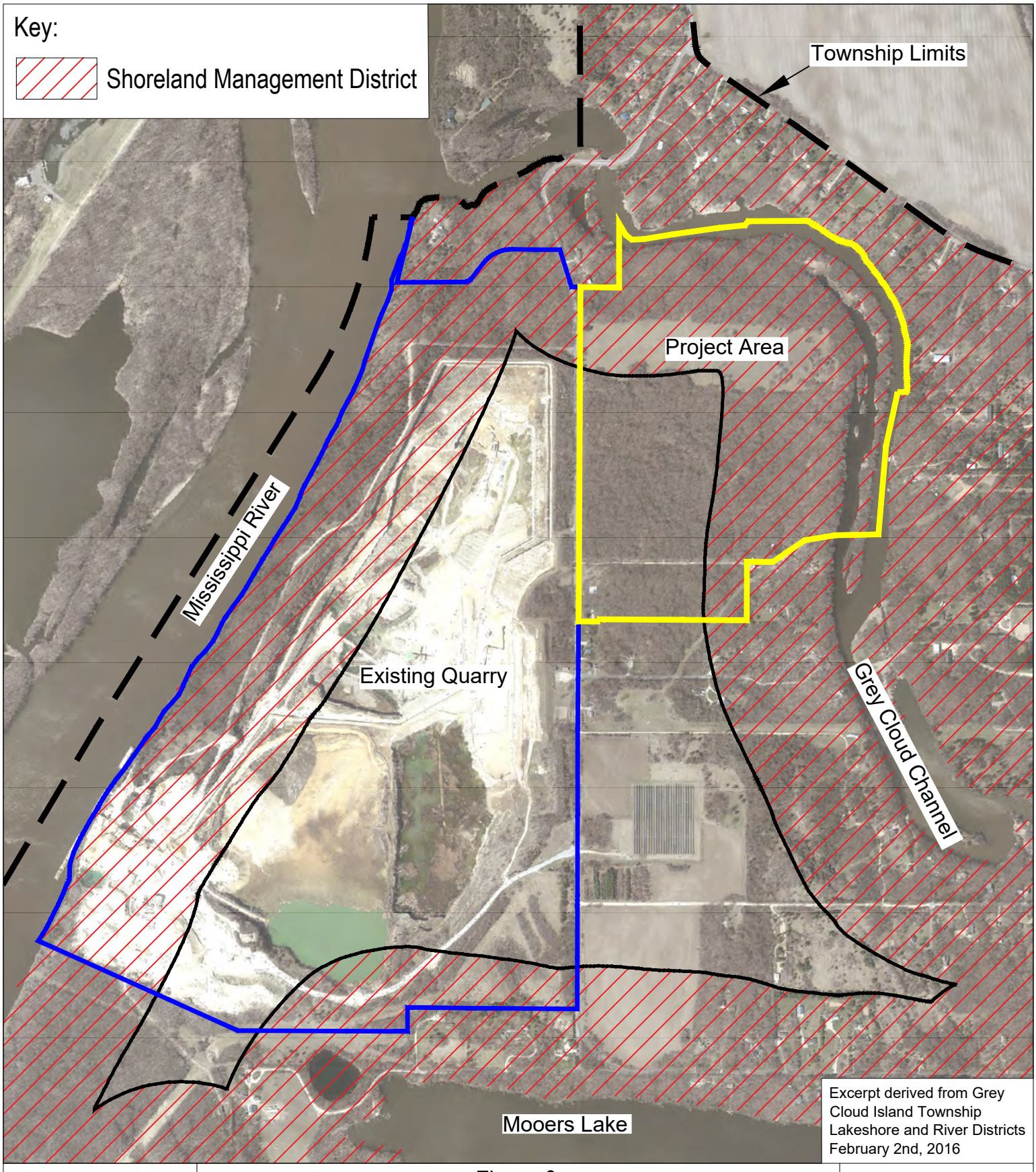
N

0 1000 2000
SCALE IN FEET

Figure 7
MRCCA Districts
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



N

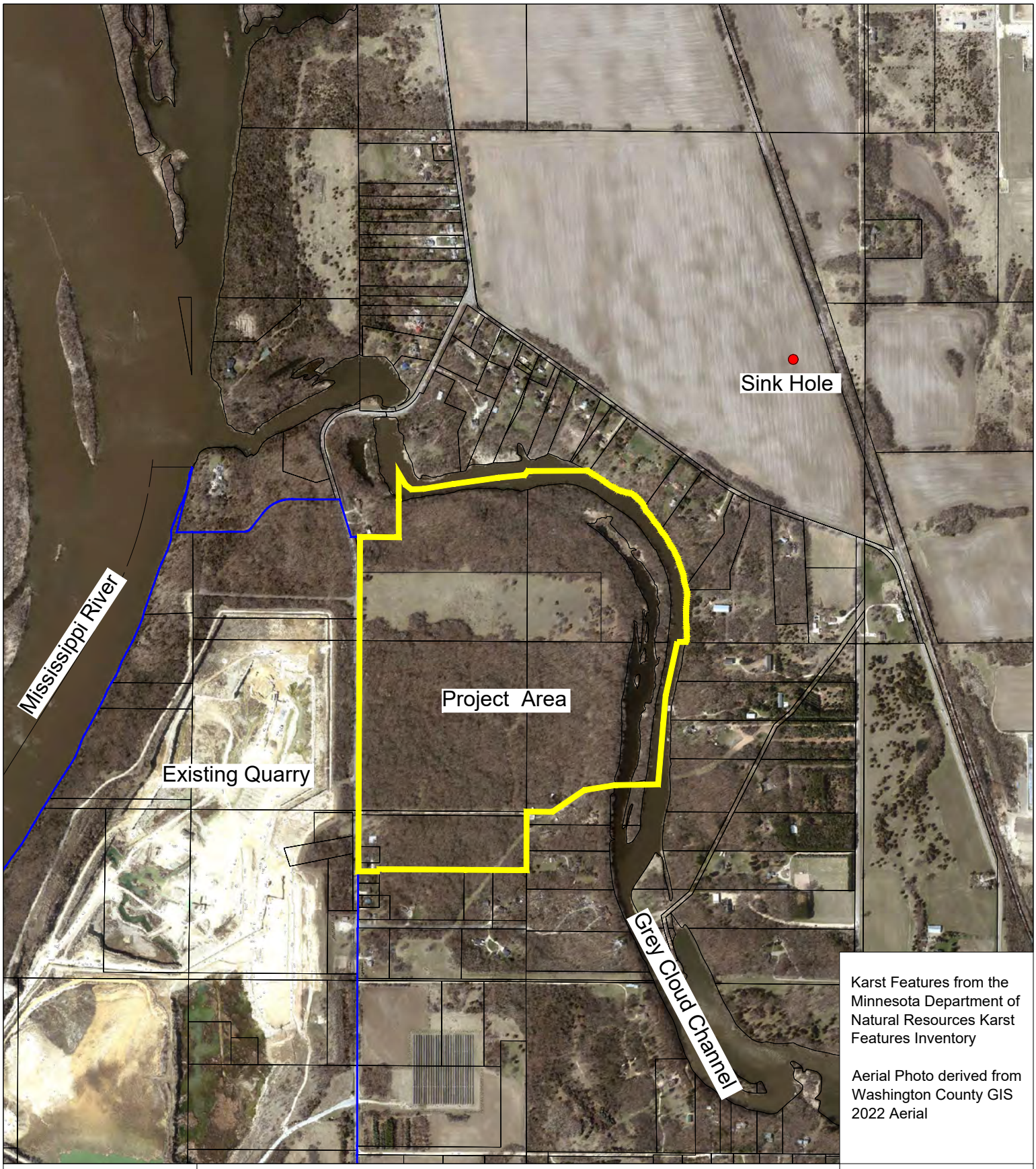
0 500 1000

SCALE IN FEET

Figure 8
Grey Cloud Island Township Shoreland Management District
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



Karst Features from the Minnesota Department of Natural Resources Karst Features Inventory

Aerial Photo derived from Washington County GIS 2022 Aerial

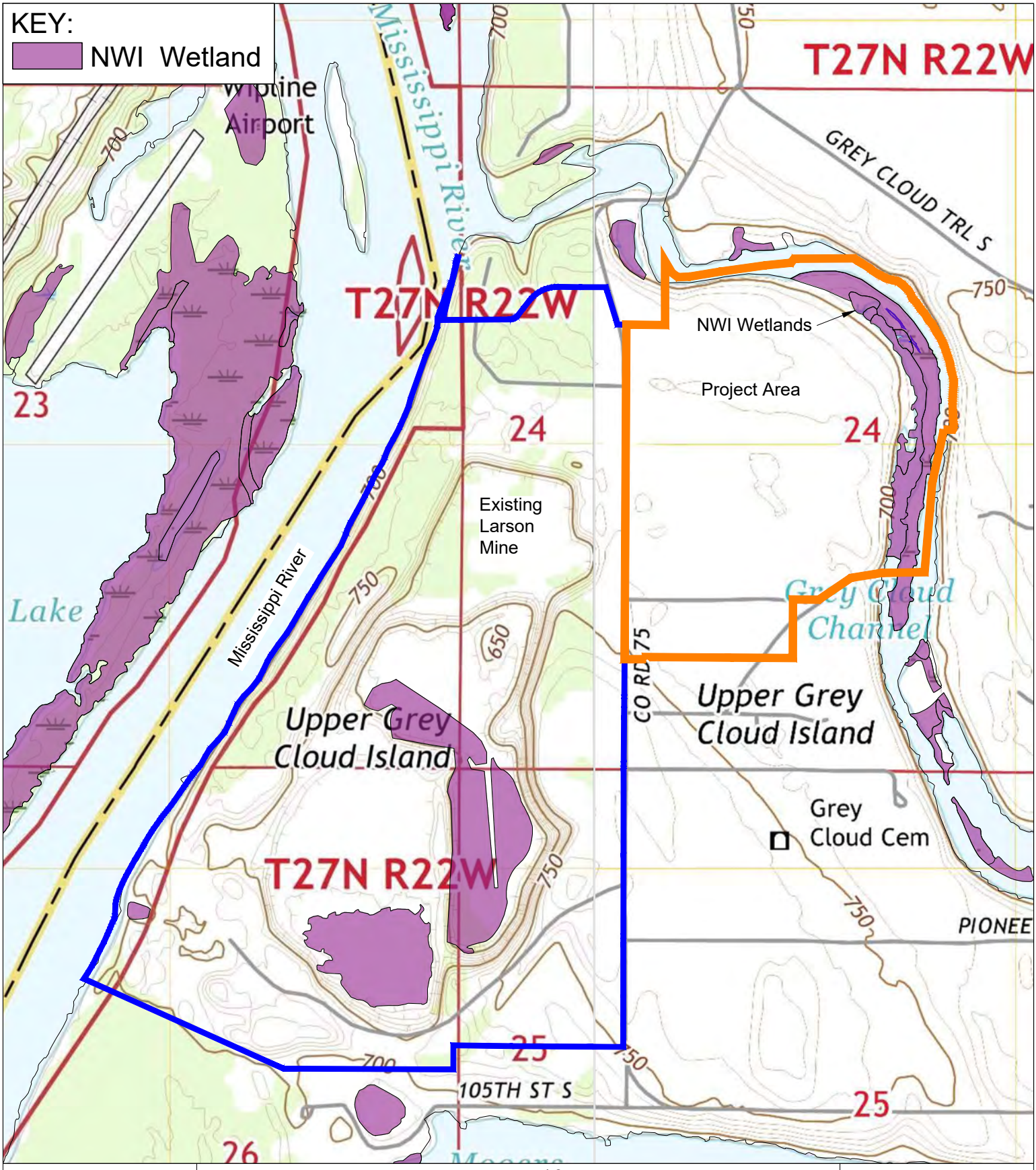
N

0 500 1000
SCALE IN FEET

Figure 9
Karst Features
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



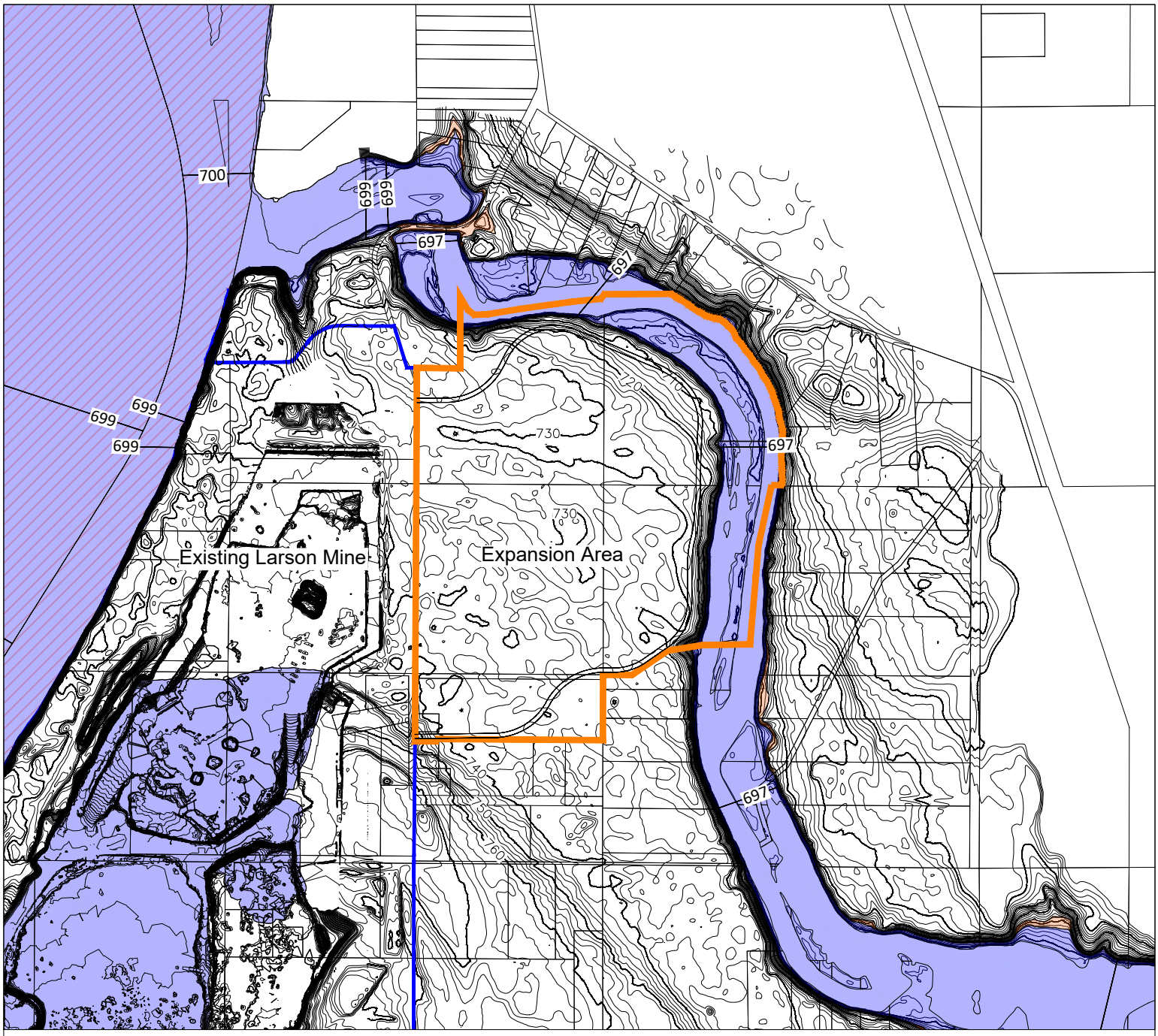
N

0 500 1000
SCALE IN FEET

Figure 10
National Wetland Inventory Wetlands
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



Key:

Floodway

100 - Year Floodplain

500 - Year Floodplain

699 Base Flood Elevation (ft msl)

Floodplain from FEMA DFIRM GIS

N

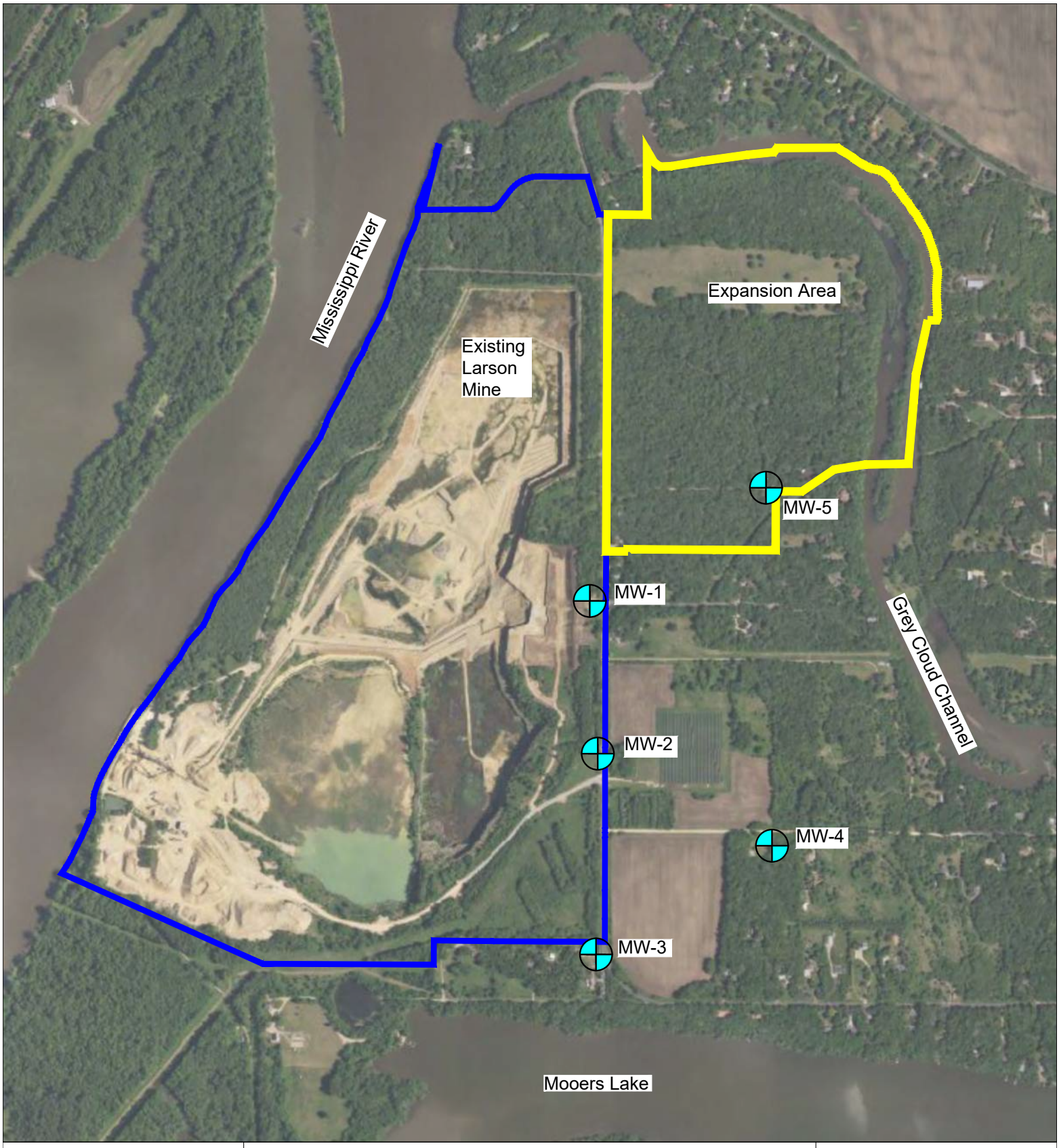
0 500 1000

SCALE IN FEET

Figure 11
FEMA Floodplain Map
Larson Quarry Expansion EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



N

0 500 1000

SCALE IN FEET

Figure 12
Monitoring Well Locations
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

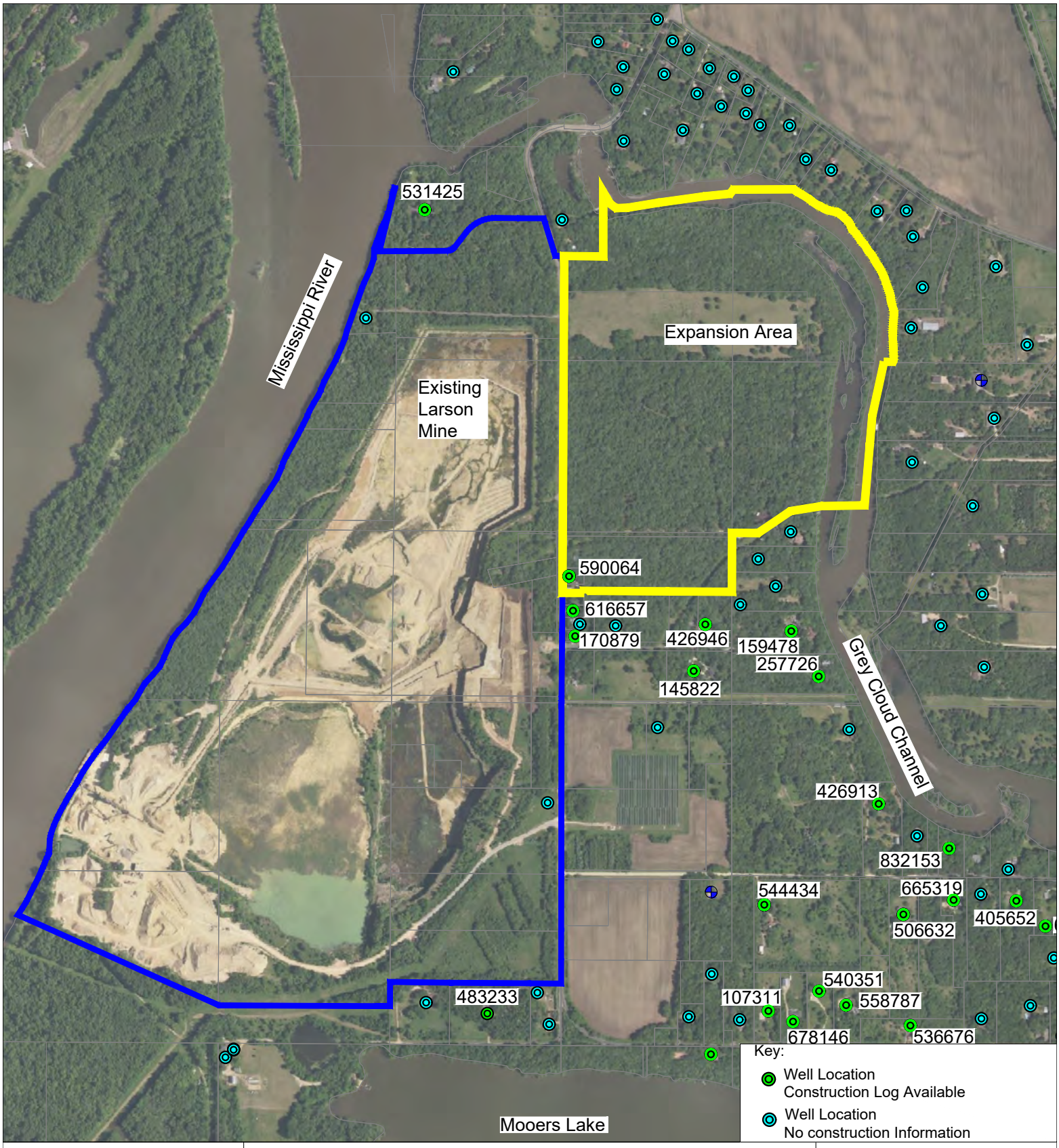


Figure 13
Groundwater Well Locations
Larson Quarry Expansion EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

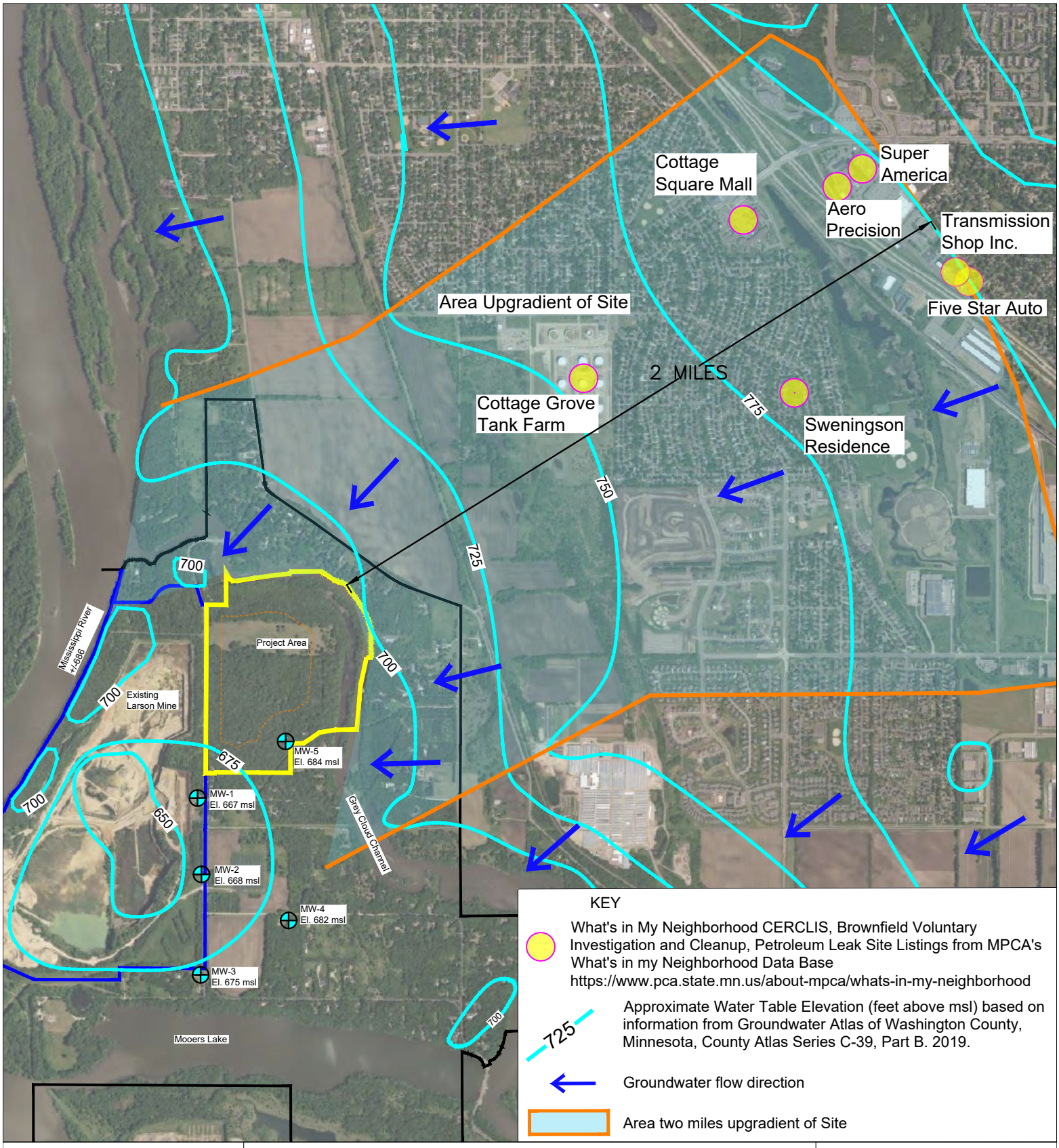
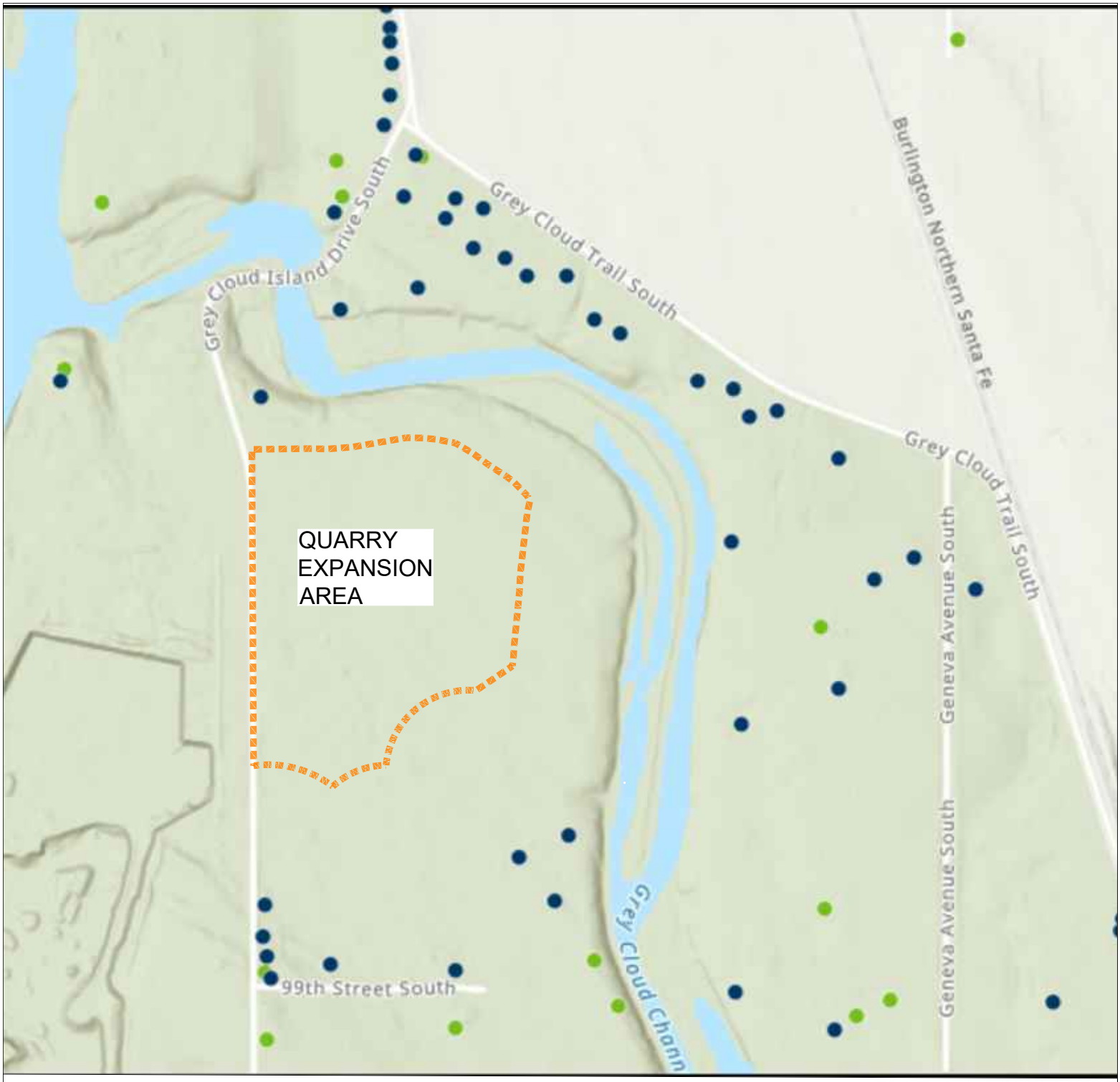


Figure 14
MPCA What's in my Neighborhood Map
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.



KEY

Wells with a drinking water advisory

Wells sampled, no drinking water advisory (no or low PFAS)

Excerpt from MPCA interactive Map
Private Well Sampling East Metro Area

N

0 500 1000
SCALE IN FEET

Figure 15
PFAS Sampling Residential Wells Map
Larson Quarry EAW

Holcim - MWR, Inc.
Grey Cloud Island Township
Washington County, MN

Sunde Engineering, PLLC.

CLIMATE ADAPTATION SOURCES

Climate Explorer Map. *Minnesota Climate explorer* Available at: https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical. (Accessed: 12th June 2023)

Minnesota Climate trends. *Minnesota Department of Natural Resources* Available at: https://arcgis.dnr.state.mn.us/ewr/climatetrends/ (Accessed: 12th June 2023)

U.S. Drought Monitor Minnesota. *U.S. Drought Monitor* Available at: https://droughtmonitor.unl.edu/Maps/MapArchive.aspx (Accessed: 12th June 2023)

United States Department of Agriculture

NRCS

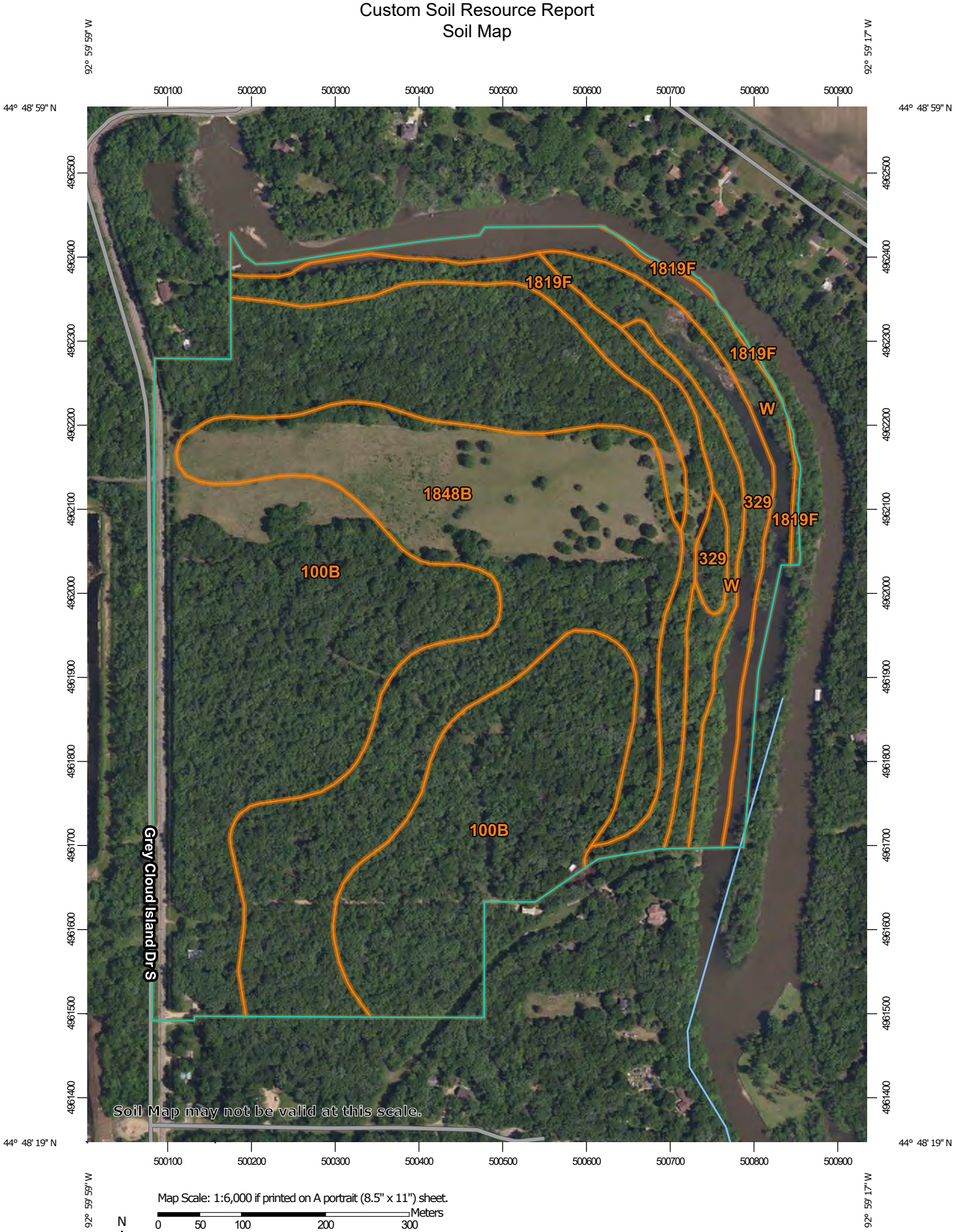
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Washington County, Minnesota

June 21, 2023

Custom Soil Resource Report
Soil Map



Map Scale: 1:6,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	77.0	52.1%
329	Chaska silt loam	8.9	6.0%
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	9.7	6.6%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	40.1	27.1%
W	Water	12.1	8.2%
Totals for Area of Interest		**147.9**	**100.0%**

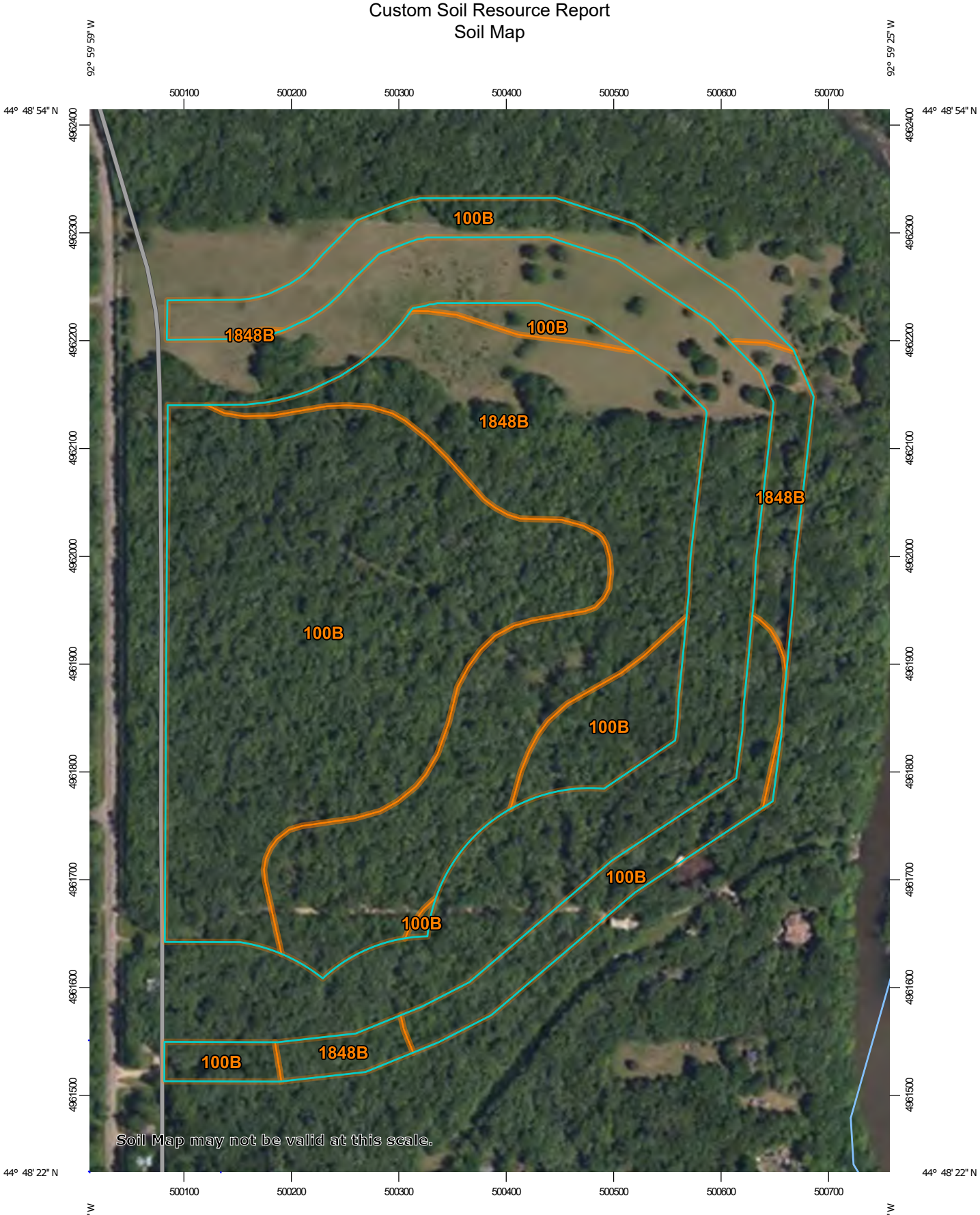
Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	46.6	63.0%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	27.3	37.0%
Totals for Area of Interest		**73.9**	**100.0%**

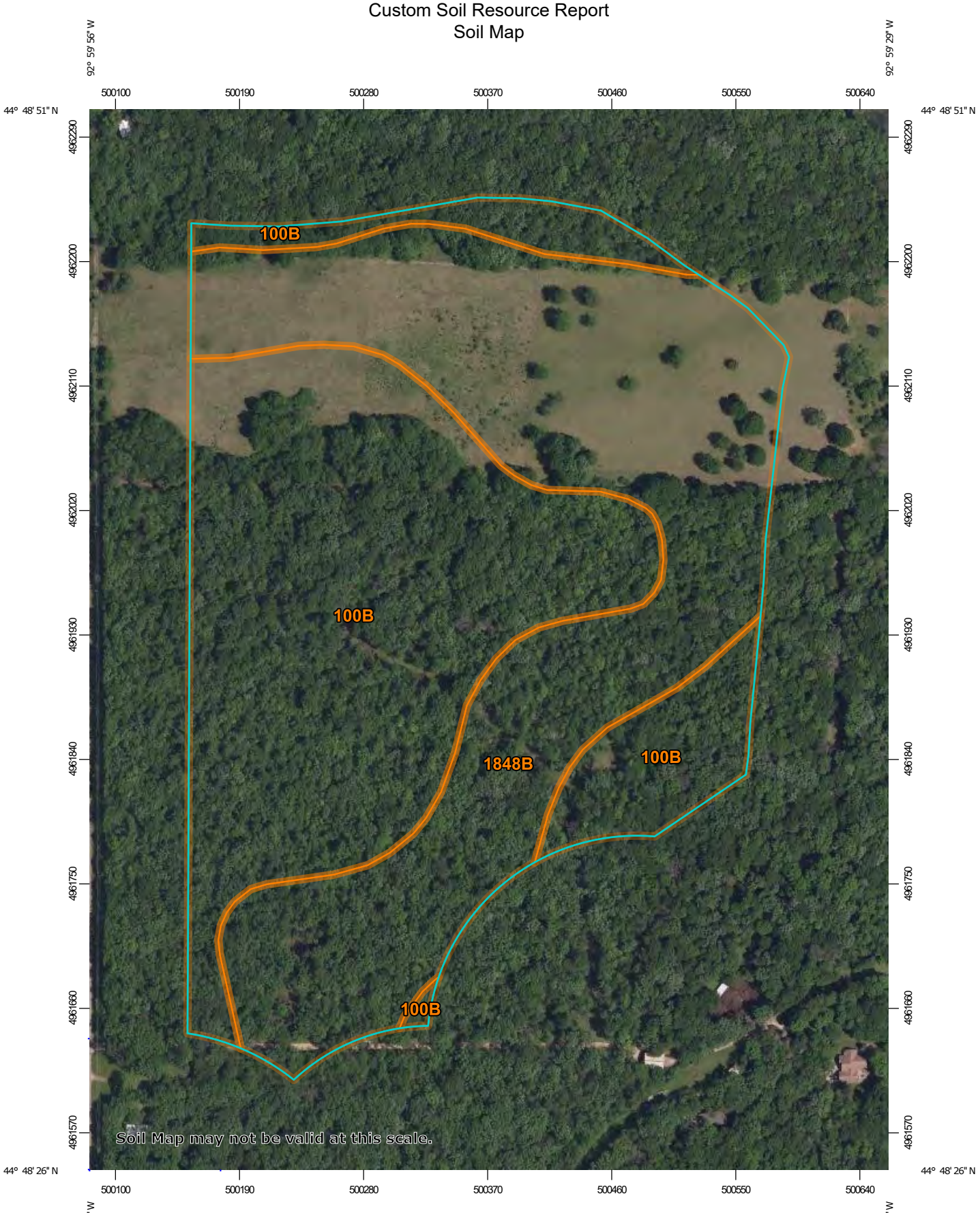
Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the



Map Scale: 1:3,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	27.6	52.2%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	25.3	47.8%
Totals for Area of Interest		**52.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 18, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 3, 2020—Jun 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Washington County, Minnesota

100B—Copaston loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 1t93h
Elevation: 700 to 1,200 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Copaston and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Copaston

Setting

Landform: Hills, terraces
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy sediment over bedrock

Typical profile

A - 0 to 8 inches: loam
Bw1 - 8 to 14 inches: sandy loam
Bw2 - 14 to 18 inches: gravelly sandy loam
2R - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F090AY014WI - Loamy Bedrock Upland
Forage suitability group: Sloping Upland, Low AWC, Acid (G090XN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G090XN008MN)
Hydric soil rating: No

329—Chaska silt loam

Map Unit Setting

National map unit symbol: 1t94z
Elevation: 500 to 1,650 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Chaska and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chaska

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 6 inches: silt loam
C1 - 6 to 36 inches: stratified very fine sandy loam to silt loam
C2 - 36 to 60 inches: stratified very fine sandy loam to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentOccasionalRareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F090AY004WI - Loamy Floodplain
Forage suitability group: Frequently Flooded (G090XN016MN)
Other vegetative classification: Frequently Flooded (G090XN016MN)
Hydric soil rating: Yes

Minor Components

Algansee
Percent of map unit: 10 percent
Hydric soil rating: No

1819F—Dorerton-Rock outcrop complex, 25 to 65 percent slopes

Map Unit Setting
National map unit symbol: 1t972
Elevation: 800 to 1,400 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition
Dorerton and similar soils: 80 percent
Rock outcrop: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dorerton

Setting
Landform: Hills, escarpments on terraces
Landform position (two-dimensional): Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy sediment over limestone bedrock

Typical profile
A,E - 0 to 10 inches: sandy loam
2Bt - 10 to 30 inches: flaggy clay loam
2C - 30 to 45 inches: very flaggy loamy sand
3R - 45 to 60 inches: bedrock

Properties and qualities
Slope: 25 to 65 percent
Depth to restrictive feature: 45 to 70 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F090AY014WI - Loamy Bedrock Upland
Forage suitability group: Not Suited (G090XN024MN)
Other vegetative classification: Not Suited (G090XN024MN)
Hydric soil rating: No

Description of Rock Outcrop

Setting
Landform: Hills, escarpments on terraces
Landform position (two-dimensional): Shoulder
Down-slope shape: Linear
Across-slope shape: Linear

1848B—Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes

Map Unit Setting
National map unit symbol: 1t978
Elevation: 690 to 850 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition
Sparta, bedrock substratum, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sparta, Bedrock Substratum

Setting
Landform: Outwash terraces
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits over bedrock

Typical profile
A - 0 to 5 inches: loamy sand
Bw - 5 to 40 inches: fine sand
2C - 40 to 44 inches: clay loam
3R - 44 to 54 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 6 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F090AY018WI - Dry Sandy Bedrock Uplands
Forage suitability group: Sandy (G090XN022MN)
Other vegetative classification: Sandy (G090XN022MN)
Hydric soil rating: No

Minor Components

Hubbard

Percent of map unit: 5 percent
Hydric soil rating: No

Dickman

Percent of map unit: 5 percent
Hydric soil rating: No

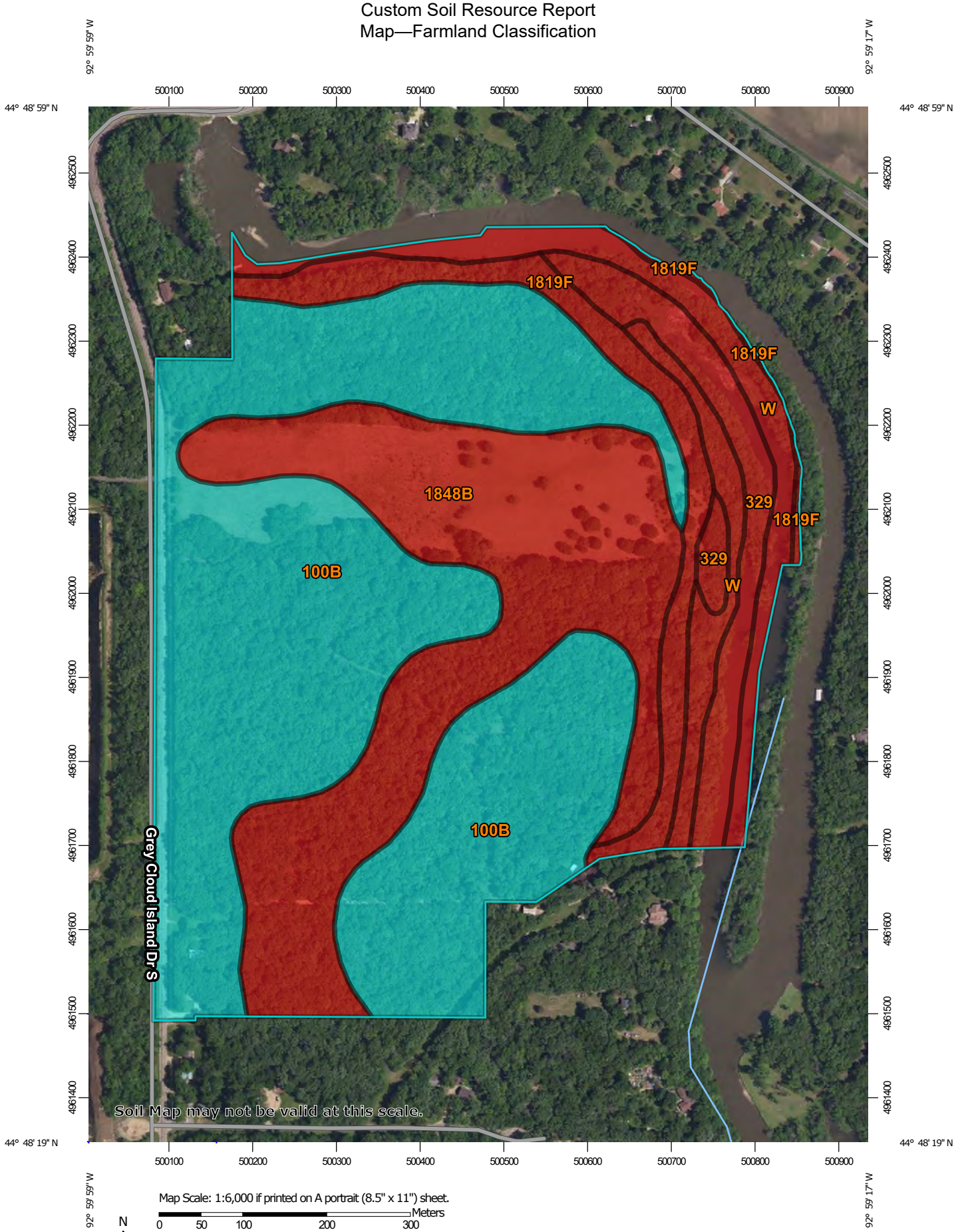
W—Water

Map Unit Setting

National map unit symbol: 1t979
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.



Map Scale: 1:6,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	Farmland of statewide importance	77.0	52.1%
329	Chaska silt loam	Not prime farmland	8.9	6.0%
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	Not prime farmland	9.7	6.6%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	Not prime farmland	40.1	27.1%
W	Water	Not prime farmland	12.1	8.2%
Totals for Area of Interest			**147.9**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

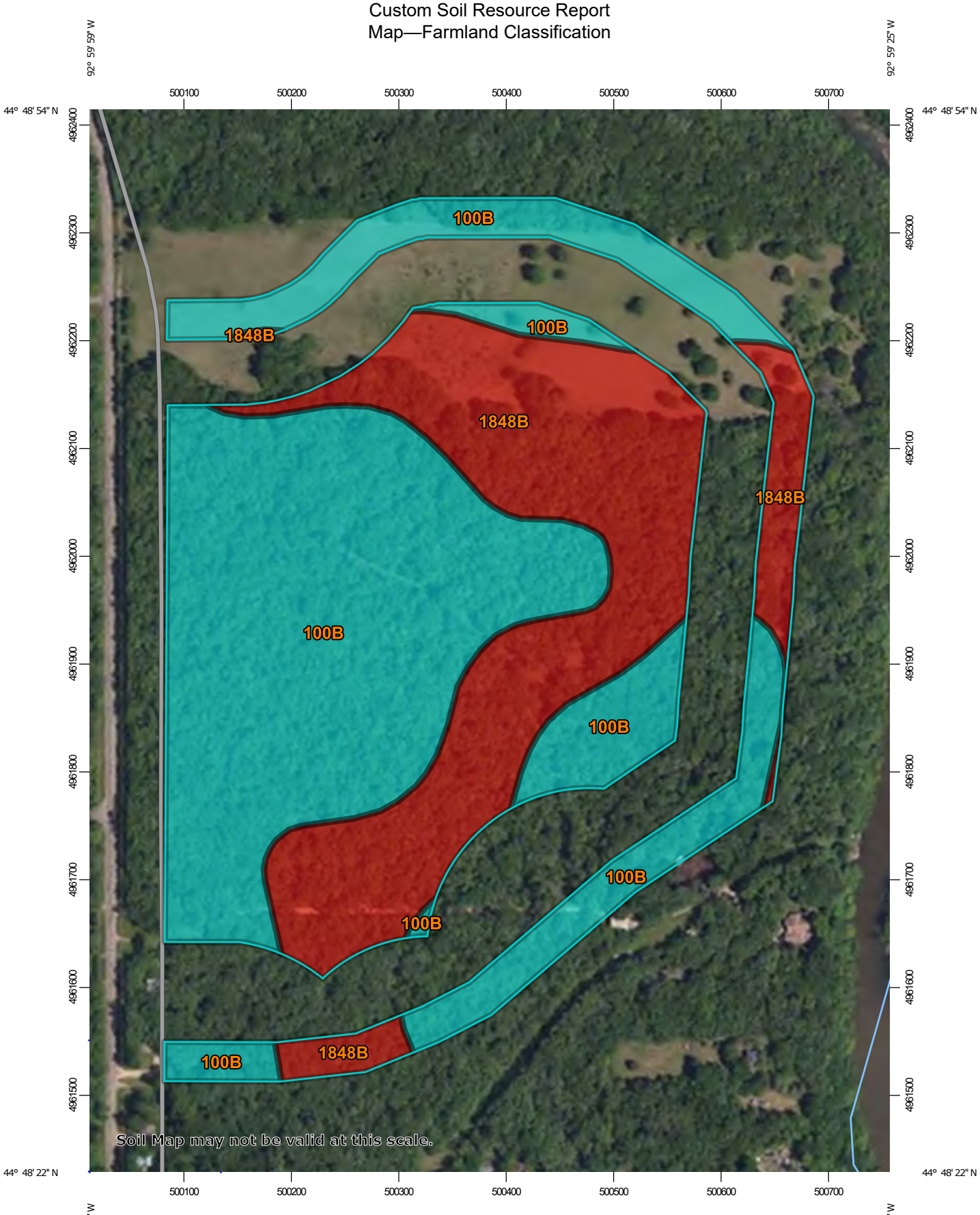
Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.



Map Scale: 1:4,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	Farmland of statewide importance	46.6	63.0%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	Not prime farmland	27.3	37.0%
Totals for Area of Interest			**73.9**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

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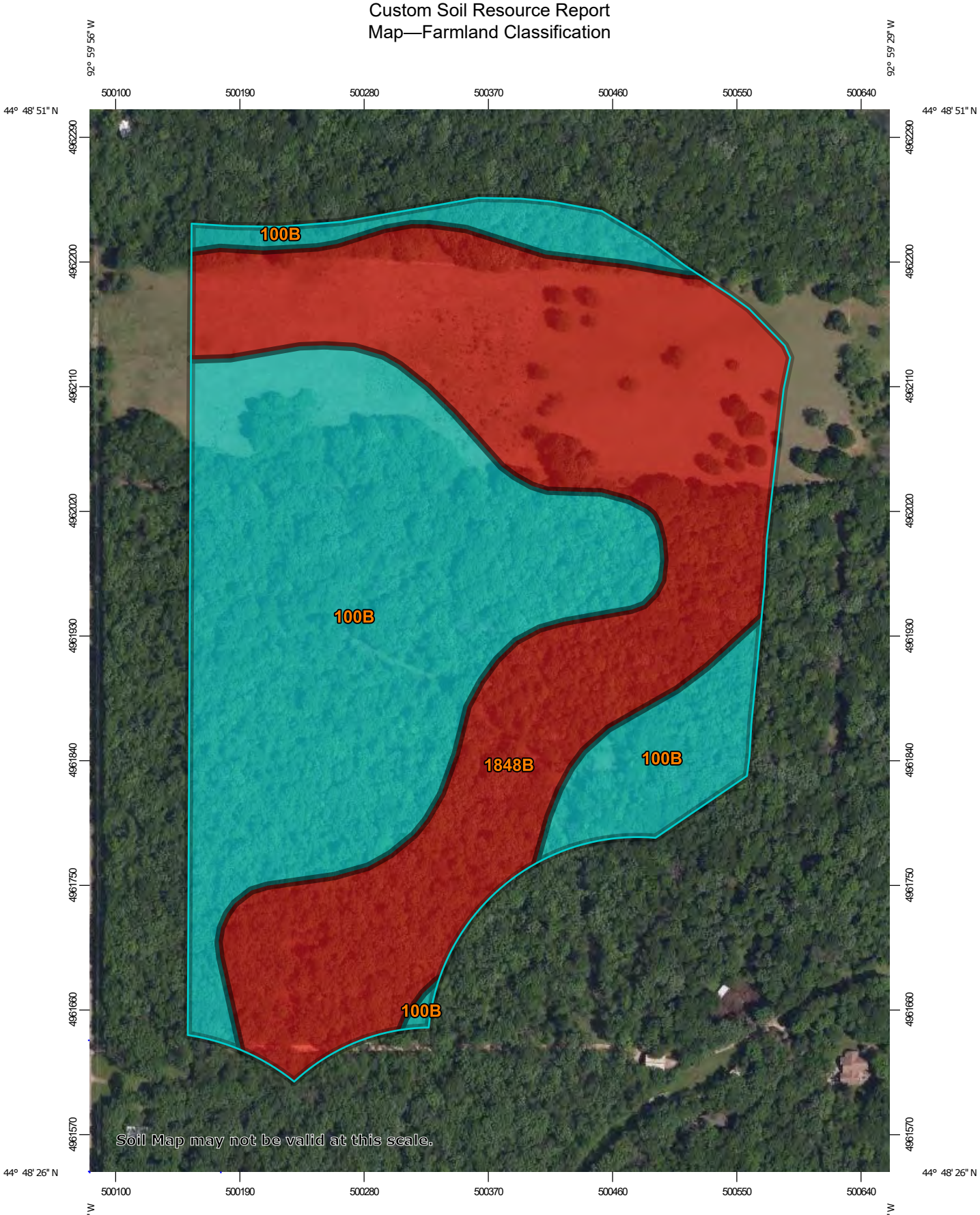
Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated



Map Scale: 1:3,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	Farmland of statewide importance	27.6	52.2%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	Not prime farmland	25.3	47.8%
Totals for Area of Interest			**52.9**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

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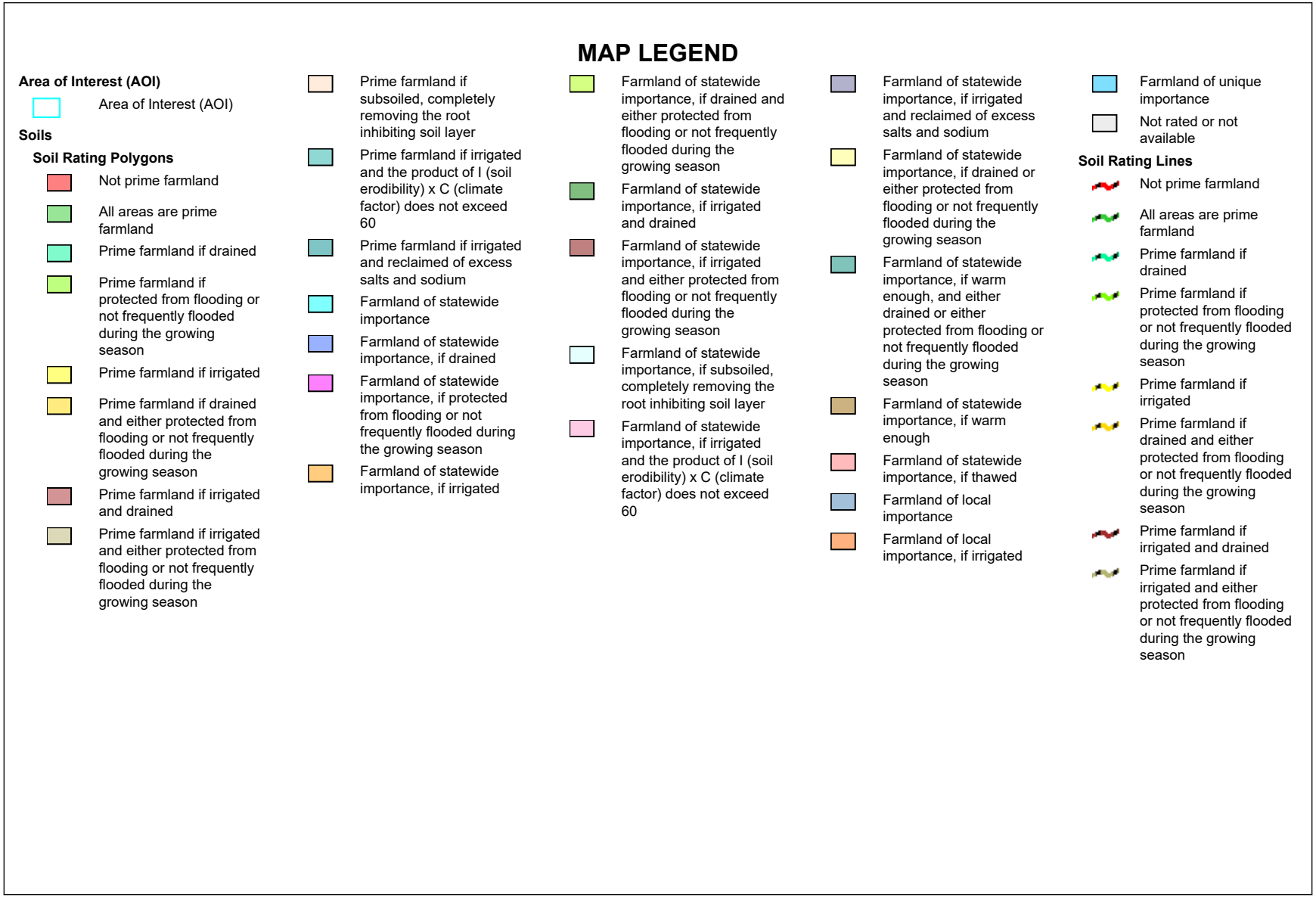
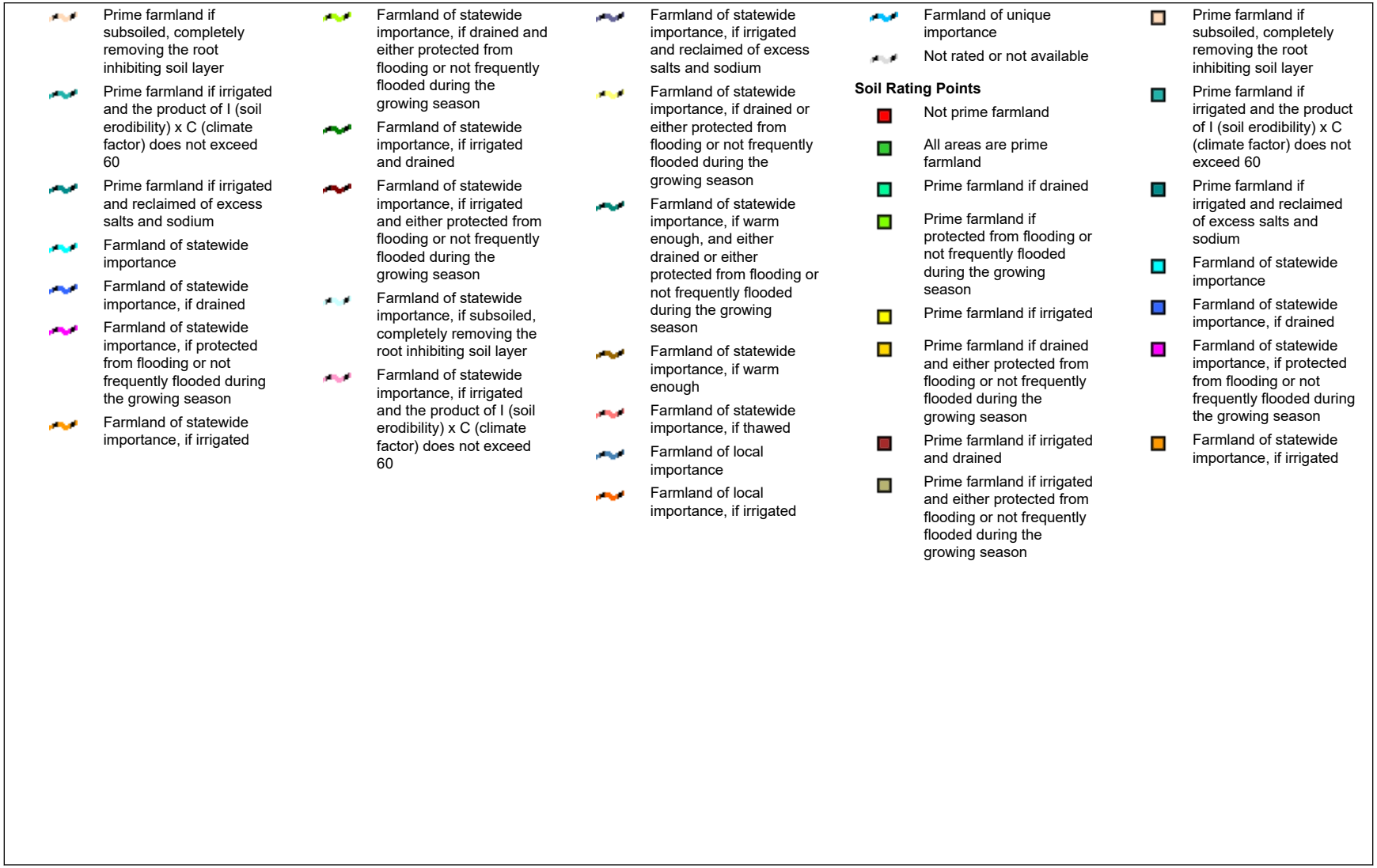

MAP LEGEND
Area of Interest (AOI)
Area of Interest (AOI)
Soils
Soil Rating Polygons
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Lines
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

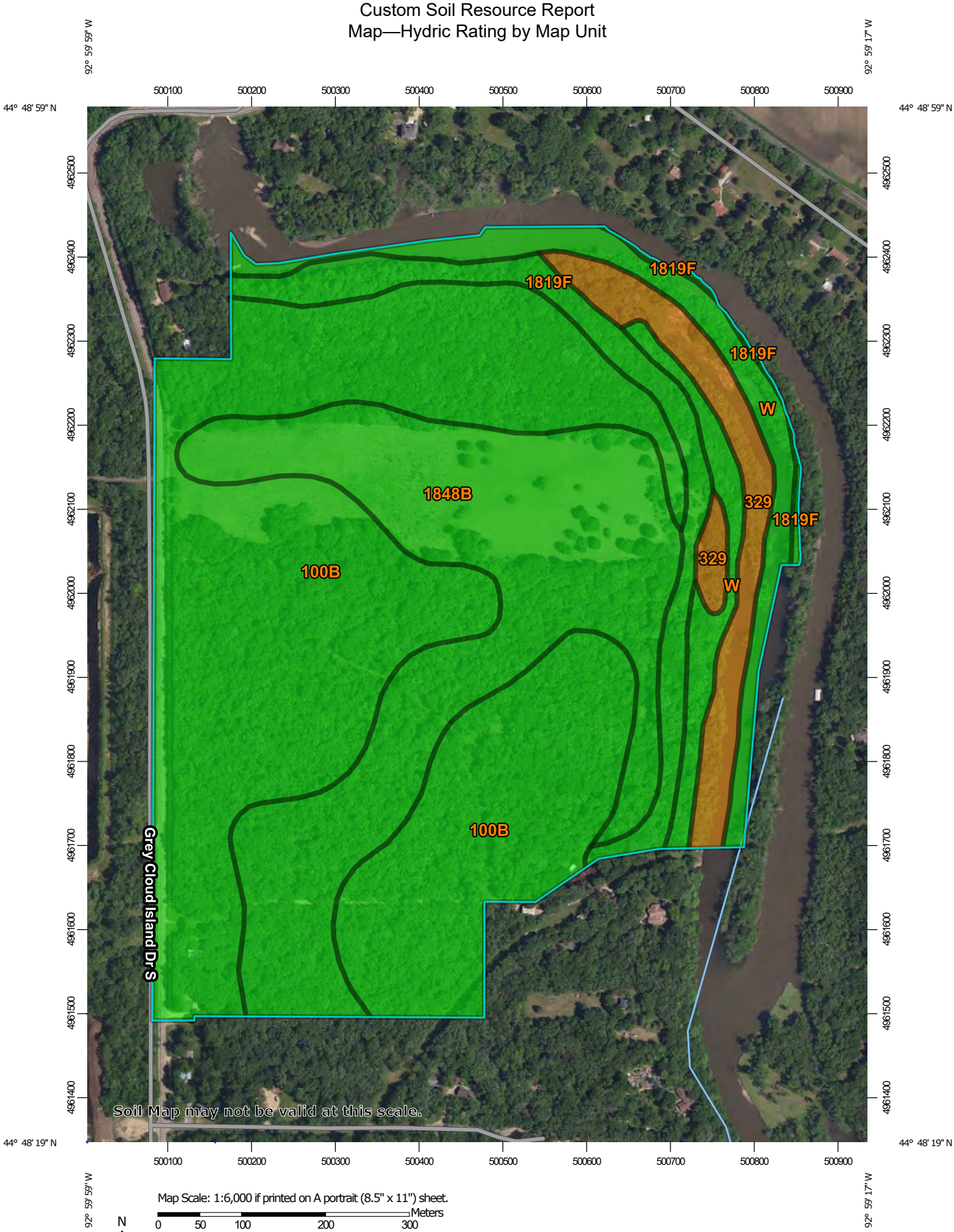
Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 18, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 3, 2020—Jun 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:6,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	0	77.0	52.1%
329	Chaska silt loam	90	8.9	6.0%
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	0	9.7	6.6%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	0	40.1	27.1%
W	Water	0	12.1	8.2%
Totals for Area of Interest			**147.9**	**100.0%**

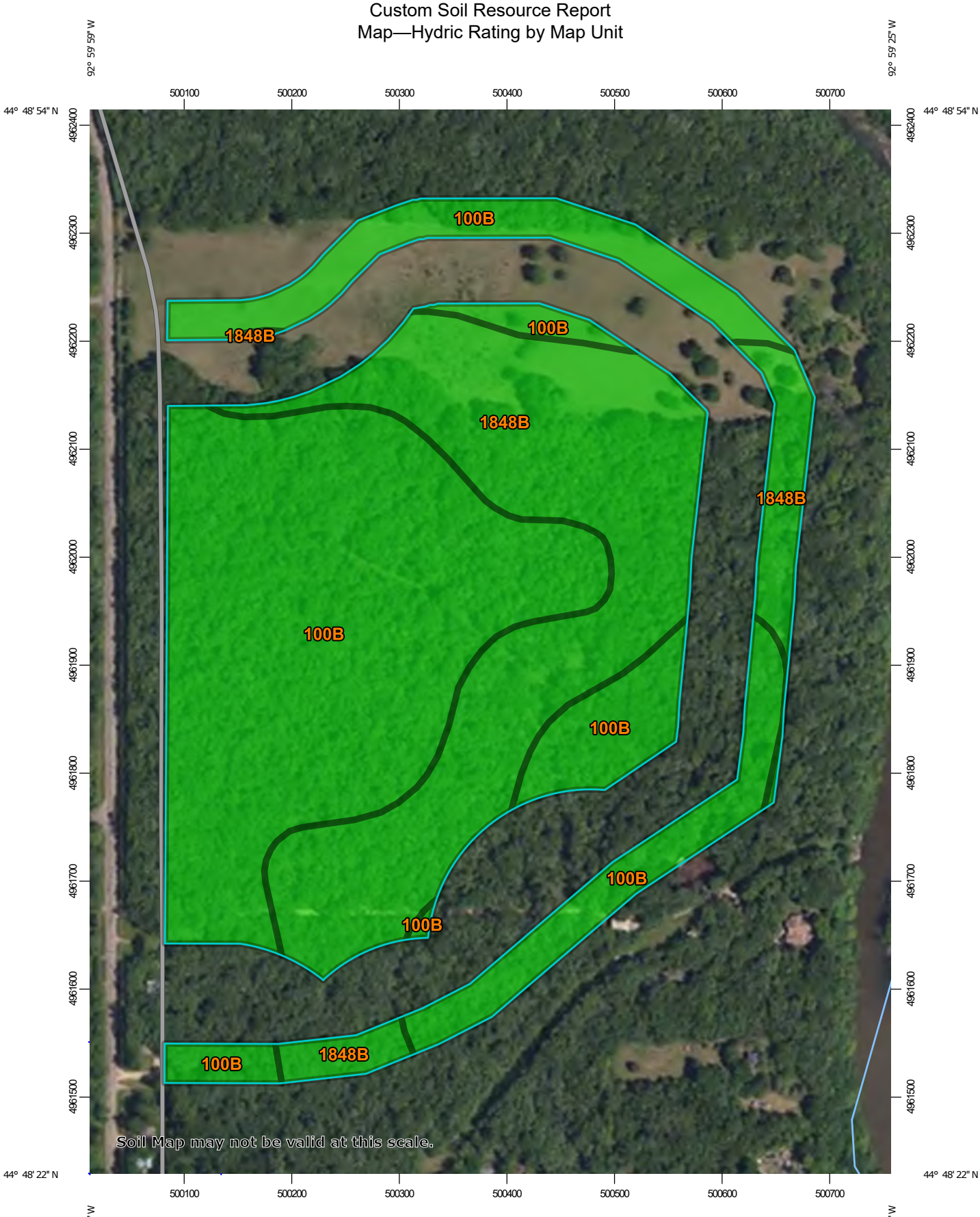
Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:4,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	0	46.6	63.0%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	0	27.3	37.0%
Totals for Area of Interest			**73.9**	**100.0%**

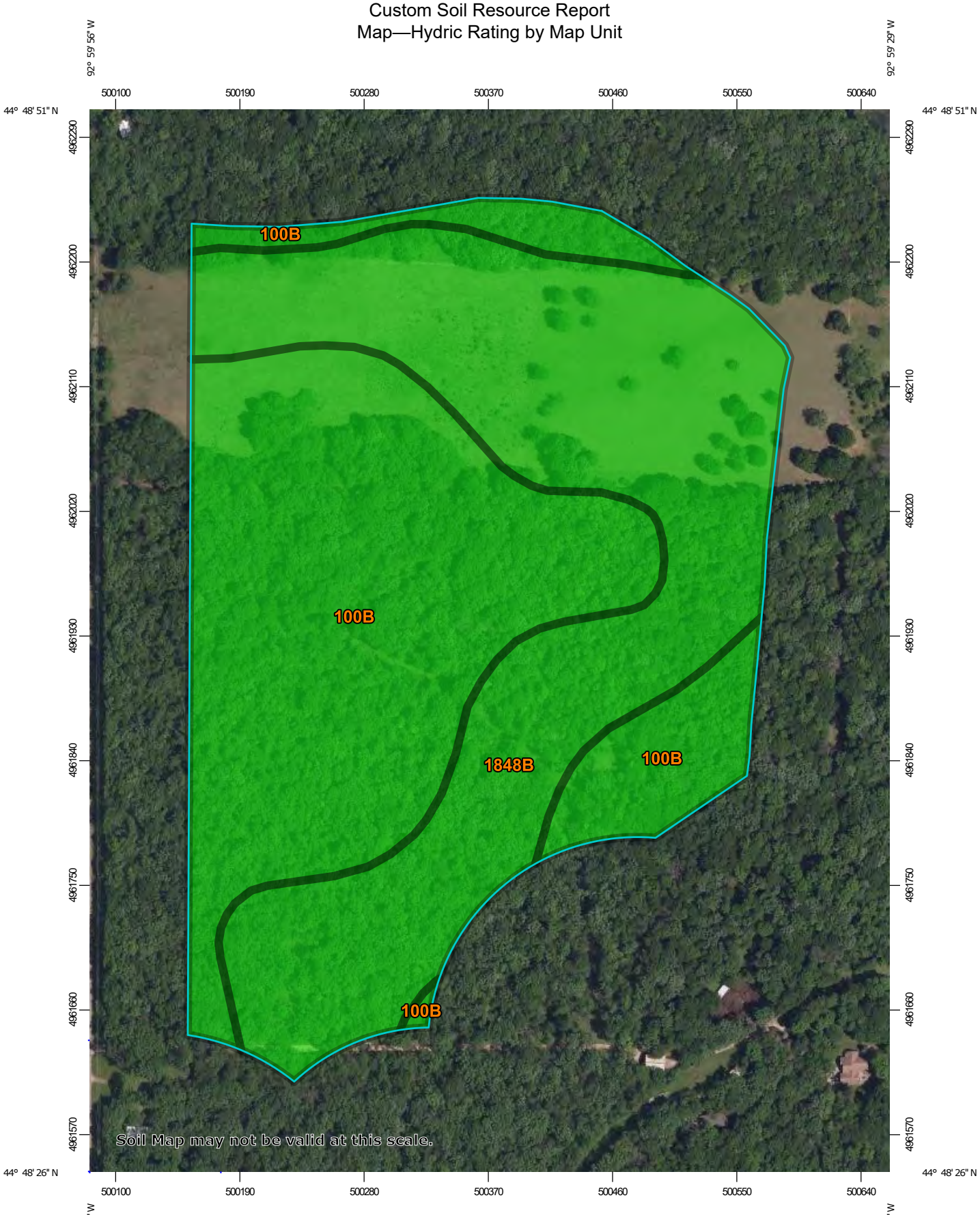
Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:3,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	0	27.6	52.2%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	0	25.3	47.8%
Totals for Area of Interest			**52.9**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 18, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 3, 2020—Jun 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

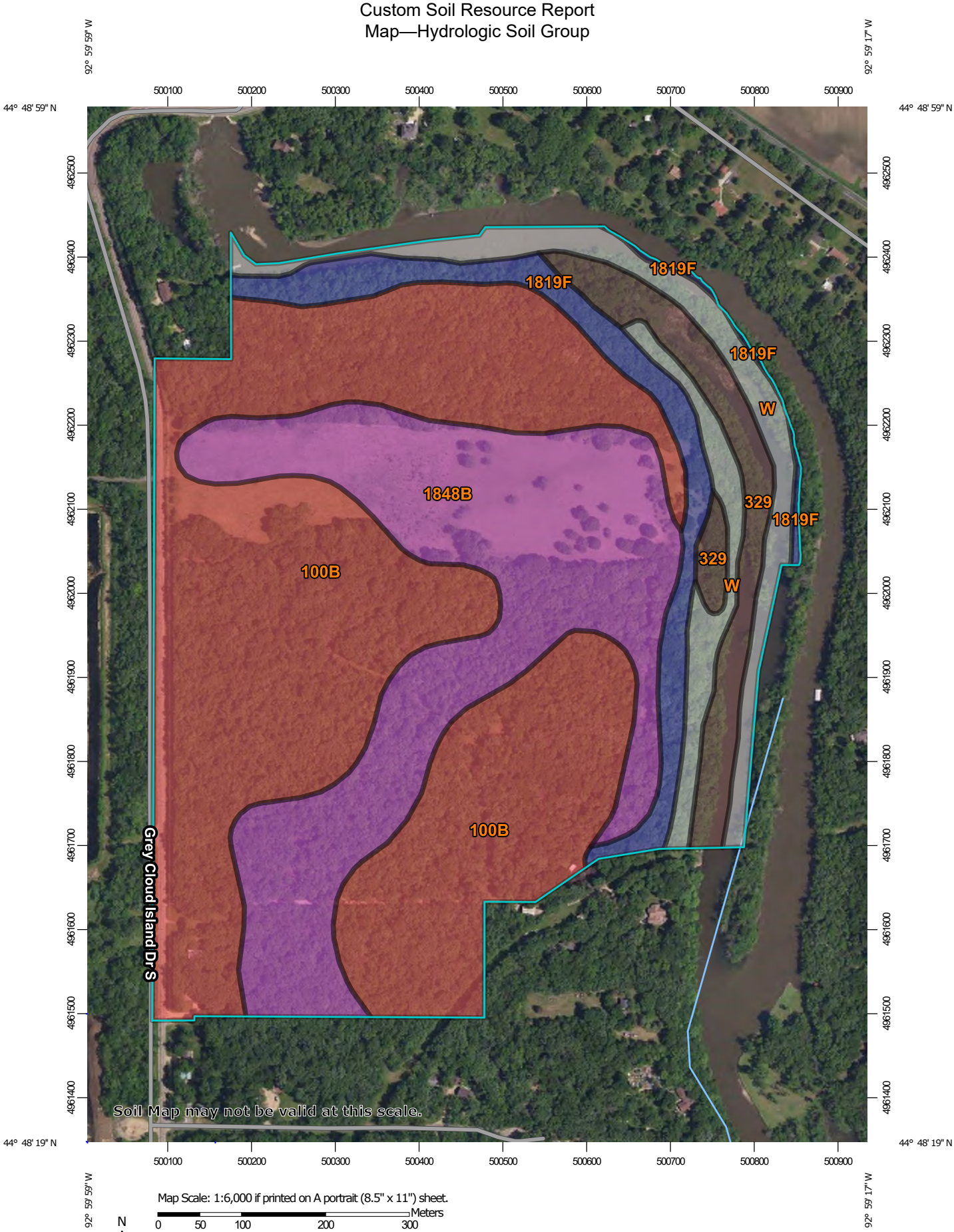
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at

or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:6,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Hydrologic Soil Group

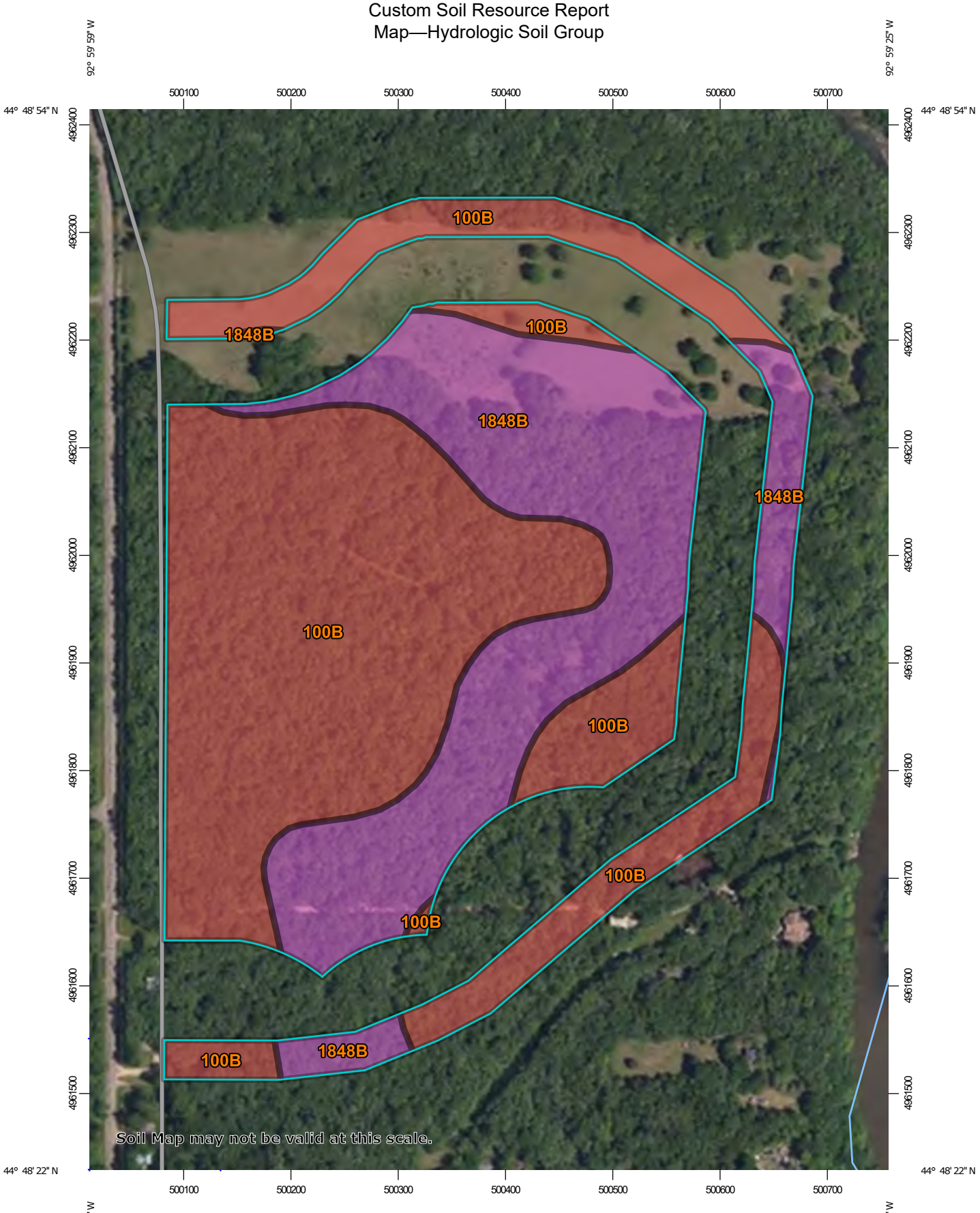
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	D	77.0	52.1%
329	Chaska silt loam	B/D	8.9	6.0%
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	B	9.7	6.6%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	A	40.1	27.1%
W	Water		12.1	8.2%
Totals for Area of Interest			**147.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



Map Scale: 1:4,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Table—Hydrologic Soil Group

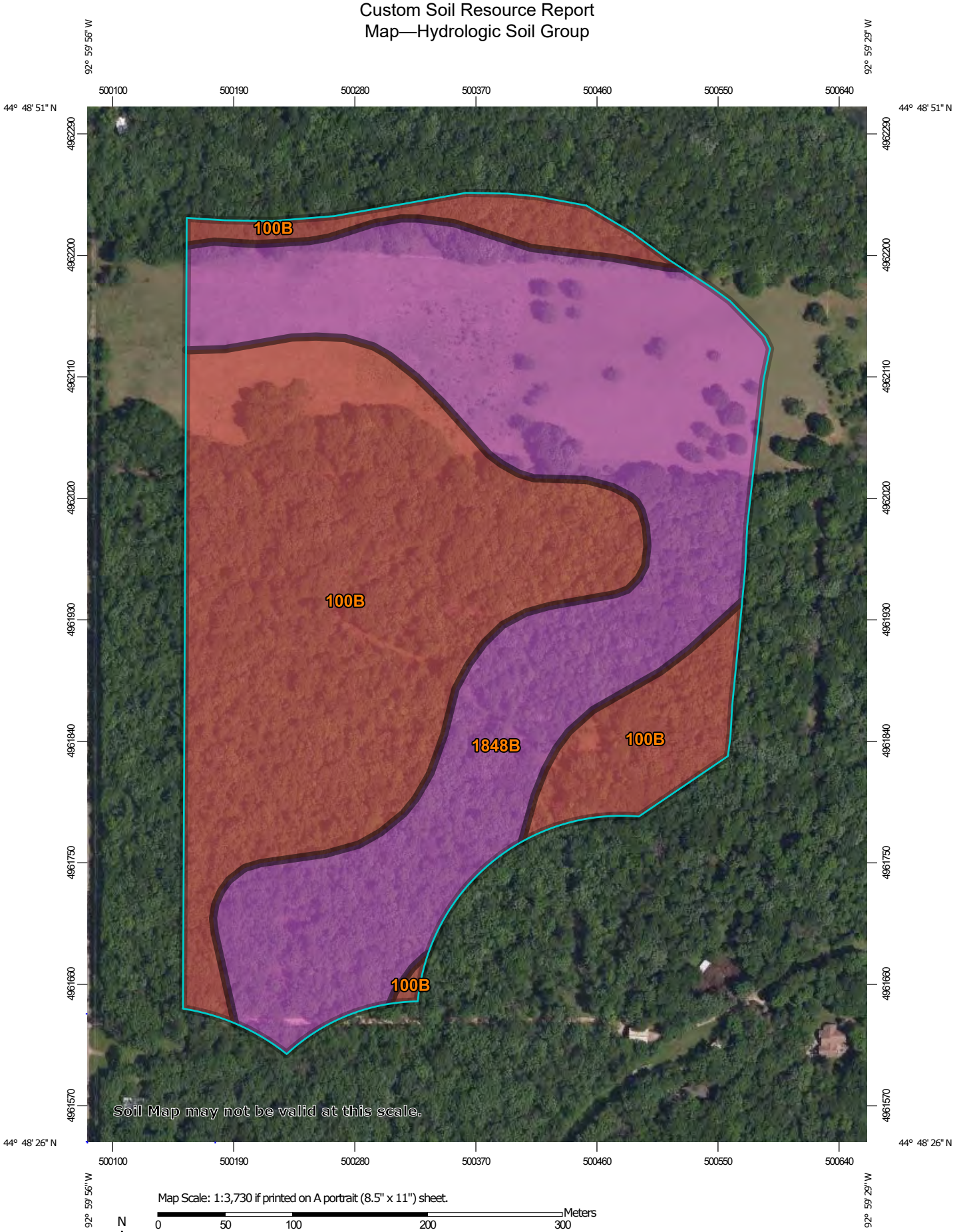
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100B	Copaston loam, 0 to 6 percent slopes	D	46.6	63.0%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	A	27.3	37.0%
Totals for Area of Interest			**73.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


92° 59' 56" W
92° 59' 29" W
500100
500190
500280
500370
500460
500550
500640
44° 48' 51" N
44° 48' 26" N
4962290
4962200
4962110
4962020
4961930
4961840
4961750
4961660
4961570
100B
100B
1848B
100B
100B
Soil Map may not be valid at this scale.
Map Scale: 1:3,730 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 50 100 200 300
Feet
0 150 300 600 900
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

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Totals for Area of Interest			**52.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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References

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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Westwood

12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343

Main (952) 937-5150
Fax (952) 937-5822

westwoodps.com
(888) 937-5150

MEMORANDUM

Date: August 2, 2023

Re: Wetland Delineation Report
Grey Cloud Island Township Parcels, Grey Cloud Island Township, Washington County
Westwood File R0044854.01

To: Matt Moore, South Washington Watershed District
USACE PM for Washington County

Cc: Patty Bestler, Holcim-MRW, Inc.

From: Audrey McTaggart

Please find enclosed the Joint Application form for Activities Affecting Water Resources in Minnesota and the updated Wetland Delineation Report for the Grey Cloud Island Township Parcels located in Grey Cloud Island Township, Washington County, Minnesota. With this submittal the Applicant is requesting written concurrence that extent of aquatic resources have been accurately identified.

Please review the enclosed report and feel free to contact me with questions at (763) 353-1383.

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: Patty Bestler, Holcim-MRW, Inc.
Mailing Address: 2815 Dodd Road Suite 102
Eagan, Minnesota 55121
Phone: (651) 683-8133
E-mail Address: patty.bestler@aggregate-us.com

Authorized Contact (do not complete if same as above):
Mailing Address:
Phone:
E-mail Address:

Agent Name: Audrey McTaggart, Westwood Professional Services
Mailing Address: 12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
Phone: 763-353-1383
E-mail Address: Audrey.McTaggart@westwoodps.com

PART TWO: Site Location Information

County: Washington County **City/Township:** Grey Cloud Island Township
Parcel ID and/or Address: PIN# 2402722240001, 2402722130001, 2402722310001, & 2402722420001
Legal Description (Section, Township, Range): Section 24, T27N, R22W
Lat/Long (decimal degrees): 44.812266, -92.99068
Attach a map showing the location of the site in relation to local streets, roads, highways. See Exhibit 1
Approximate size of site (acres) or if a linear project, length (feet): ~130.6 acres

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted ***prior to*** this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

PART FOUR: Aquatic Resource Impact[1] Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	**Aquatic Resource Type** (wetland, lake, tributary etc.)	**Type of Impact** (fill, excavate, drain, or remove vegetation)	**Duration of Impact** Permanent (P) or Temporary (T)[1]	**Size of Impact**[2]	**Overall Size of Aquatic Resource** [3]	**Existing Plant Community Type(s)** in Impact Area[4]	**County, Major Watershed #, and Bank Service Area #** of Impact Area[5]

[1]If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".
[2]Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).
[3]This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".
[4]Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.
[5]Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: _____ Date:

I hereby authorize Westwood Professional Services to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

[1] **The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.**

Attachment A
Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☒ **Wetland Type Confirmation**

☒ **Delineation Concurrence**. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☐ **Preliminary Jurisdictional Determination**. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☐ **Approved Jurisdictional Determination**. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).
http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx

WETLAND DELINEATION REPORT

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

AUGUST 2, 2023

PREPARED FOR:

HOLCIM

PREPARED BY:

Westwood

Westwood

Wetland Delineation Report

Grey Cloud Island Township Parcels

Prepared for:
Holcim-MRW, Inc.
2815 Dodd Road Suite 102
Eagan, Minnesota 55121

Prepared by:
Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: 0044854.01
Date: August 2, 2023

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Tables

Exhibits

Appendices

1.0 Purpose

This report with the attached exhibits and appendices constitutes the wetland delineation report for the Grey Cloud Island Township Parcels (Project Area), an approximately 130.6-acre area in Grey Cloud Island Township, Washington County, Minnesota (PIN #'s 2402722240001, 2402722130001, 2402722310001, and 2402722420001). South Washington Watershed District (SWWD) is the Local Governmental Unit (LGU) that administers the Minnesota Wetland Conservation Act (WCA) in this area. This report provides the required documentation for wetland boundary determinations in conformance with the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory, Waterways Experiment Station, 1987) and the Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region (U.S. Army Corps of Engineers, 2010). The Joint Application Form for Activities Affecting Water Resources in Minnesota is included with the cover memo to this report.

2.0 Site Location and Description

The Project Area is located in Section 24, T27N, R22W, Grey Cloud Island Township, Washington County, Minnesota (**Exhibit 1**). It is mainly comprised of deciduous forest with a cattle pasture near the center of the Project Area. It is bordered to the east by Grey Cloud Channel and to the west by Grey Cloud Island Drive South. Surrounding land use is mostly residential housing and forest, with a large quarry just west of the site. Topography undulates throughout the main portion of Project Area and steep, rocky slopes occur along the Grey Cloud Channel boundary. Elevations range from 688 feet to 740 feet above mean sea level (msl).

3.0 Field Delineation Methodology

3.1 Mapping

Prior to delineating wetland boundaries in the field, the National Wetlands Inventory (NWI) mapping (**Exhibit 2**), the National Hydrography Dataset (NHD) (**Exhibit 2**), the Minnesota Department of Natural Resources (MN DNR) Public Waters and Wetlands Inventory (PWI) (**Exhibit 2**), and the Natural Resource Conservation Service (NRCS) Soil Survey Geographic database (SSURGO2) for Washington County (**Exhibit 3**) were reviewed. Elevation mapping was completed using LiDAR contours from MnTOPO (**Exhibit 4**).

3.2 Wetland Delineation Methodology

The field delineation was conducted on July 19th and 20th, 2023 by wetland scientists from Westwood using a level two routine determination method set forth in the USACE Wetlands Delineation Manual and the supplemental methods set forth in the Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region. Wetland data forms are included in **Appendix A** and photographs are included in **Appendix B**. Data forms and photographs for areas determined to be non-wetland are included in **Appendix C**.

Wetlands, if present, were classified according to Wetlands of the United States (U.S. Fish and Wildlife Service Circular 39; Shaw and Fredine; 1971) and Wetlands and Deepwater Habitats of the United States (FWS/OBS Publication 79/31; Cowardin et. al. 1979). Common and scientific

names for vegetation identified in this report and on the attached data forms generally correspond with the nomenclature used in the 2020 National Wetland Plant List (USACE 2021). Wetland boundaries were located using an Arrow 100 sub-meter accuracy global positioning unit (GPS).

3.3 Watercourse Delineation Methodology

Drainages within the Project Area were considered non-wetland Waters of the U.S. (WOTUS), as they may not exhibit all parameters required for wetlands (i.e., predominance of hydrophytes, hydric soils, and jurisdictional hydrology). Accordingly, their boundaries were delineated in the field by documenting their Ordinary High-Water Marks (OHWMs), as determined according to the USACE Regulatory Guidance Letter No. 05-05 (U.S. Army Corps of Engineers 2005). USACE regulations set forth at 33 CFR 328.3(e) defines the OHWM for purposes of Clean Water Act lateral jurisdiction which means that line on the shore established by the fluctuations of water and indicated by physical characteristics including:

- Natural line impressed on the bank
- Changes in the character of soil
- Presence of litter and debris
- Vegetation matted down, bent, or absent
- Leaf litter disturbed or washed away
- Deposition
- Bed and banks
- Change in plant community
- Shelving
- Destruction of terrestrial vegetation
- Wracking
- Sediment sorting
- Scour
- Multiple observed flow events
- Water staining

Delineated watercourse boundaries were mapped in the field using GPS units capable of sub-meter accuracy. Datasheets and photographs documenting watercourse characteristics are included in **Appendix D**.

4.0 Results

4.1 Mapping

Seven (7) NWI wetlands are mapped within the Project Area and are classified as riverine, freshwater forested/shrub, freshwater pond, and freshwater emergent wetland types (**Exhibit 2**). One PWI waterbody, Grey Cloud Channel, is also mapped within the boundary and corresponds with the majority of mapped NWI features. Areas of 100-year floodplain occur along the eastern and northern boundaries of the Project Area. No NHD flowlines or NHD waterbodies are mapped within the Project Area.

The NRCS SSURGO2 for Washington County indicates that the soils listed in **Table 4.1** are mapped within the Project Area (Exhibit 3). Based on the NRCS Web Soil Survey Hydric Rating, there is one soil unit classified as predominantly hydric and four soil units classified as non-hydric within the Project Area.

Table 4.1. Soil Summary Table

Map Symbol[1]	Map Unit Name[2]	Rating[2]	Percent Hydric Soil[3]
100B	Copaston loam, 0 to 6 percent slopes	Non-Hydric	0
329	Chaska silt loam	Predominantly Hydric	90
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	Non-Hydric	0
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	Non-Hydric	0
W	Water	Non-Hydric	0

[1] – Soils determined using GIS geospatial query clipping the NRCS Soil Survey Geographic (SSURGO2) spatial data by Project boundaries.
[2] – As indicated in the SSURGO2 database
[3] – Where percentages are small (e.g. < 15 %) the hydric soil is likely an inclusion that is not recognized in the map unit name. The absence of a value does not necessarily indicate the absence of hydric soils, but that the relative percentages of included minor soils have not been determined.

4.2 Antecedent Precipitation

Antecedent precipitation data was evaluated for the 90 days prior to the site visit using the *Antecedent Precipitation Tool* (APT) developed by the USACE. Results from this data indicate antecedent precipitation was drier than normal prior to the field review. **Figure 4.2** constitutes the APT Tool results used to determine antecedent precipitation for 90 days prior to the delineation.

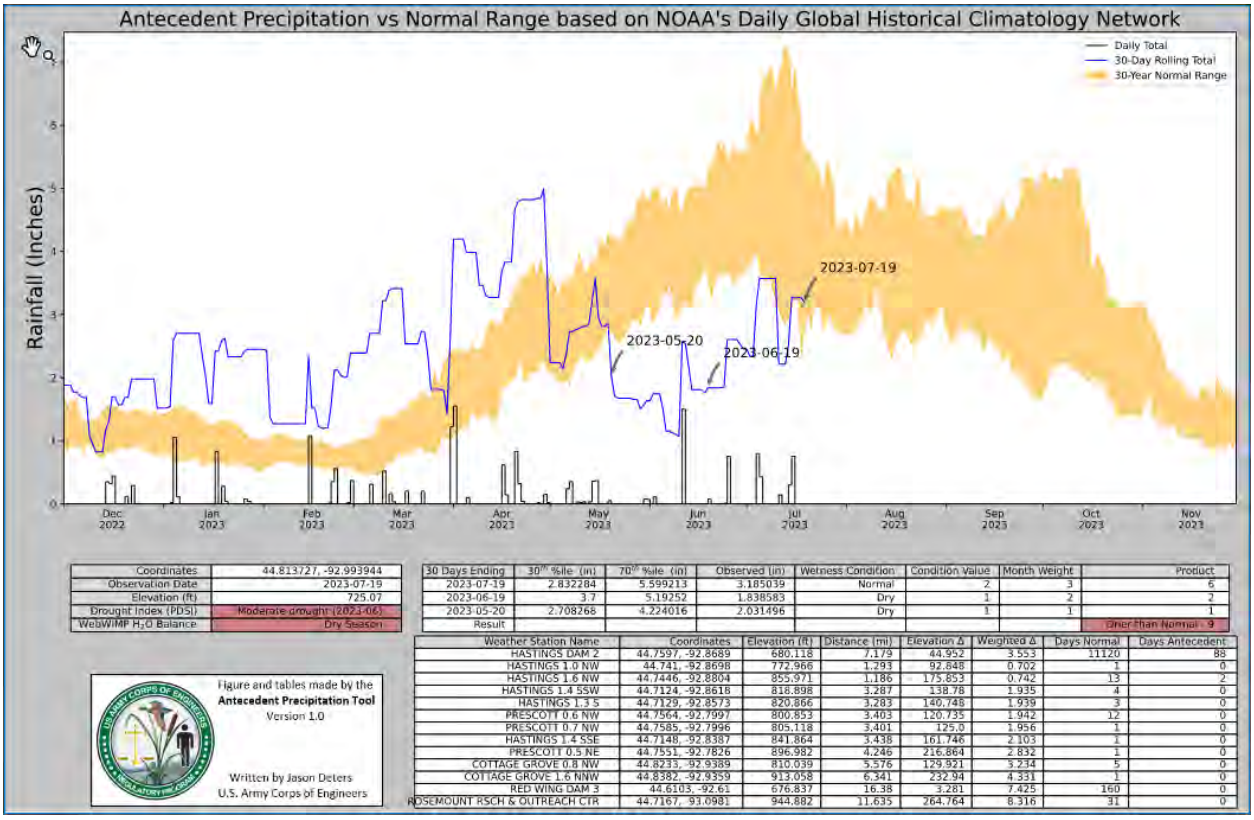


Figure 4.2: Antecedent Precipitation Tool V1.0 Graph

4.3 On-Site Wetland Delineation Results

From July 19-20, 2023, Westwood delineated seven wetlands, totaling 3.28 acres, and one watercourse totaling 12.83 acres within the Project Area. Watercourse WC-01 and non-wetland point NWB-01 are described below, while **Table 4.2** summarizes the field delineated wetlands. Delineated wetland and watercourse boundaries are shown in **Exhibit 4**. Data forms documenting wetland and upland characteristics are in **Appendix A**. Photos of delineated wetlands are included in **Appendix B**.

Wetlands

Table 4.2 – Project Area Wetland Summary Table

Wetland ID	Mapped on NWI	Mapped on NHD	Cowardin Classification	Eggers & Reed Classification	Circular 39 Classification	Acres within Delineation Area	Latitude	Longitude
WB-01	PFO1A, PUBHh	No	PFO1A, PEM1B, PEM1C	Floodplain forest, fresh wet meadow, shallow marsh	Type 1, Type 2, Type 3	0.73	44.810251	-92.990277
WB-02	No	No	PEM1C	Shallow marsh	Type 3	0.03	44.812266	-92.99068
WB-03	PUBHh	No	PEM1C	Shallow marsh	Type 3	0.12	44.812452	-92.990437
WB-04	PEM1C, PFO1A, PABHh	No	PFO1A, PEM1B, PEM1C	Floodplain forest, fresh wet meadow, shallow marsh	Type 1, Type 2, Type 3	2.18	44.813675	-92.990806
Wetland Island 1	PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.08	44.811916	-92.990388
Wetland Island 2	PABHh, PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.09	44.811382	-92.990475
Wetland Island 3	PABHh, PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.05	44.810887	-92.990666

Watercourses

WC-01 (12.83 acres) is a perennial stream named Grey Cloud Channel that flows along the northern and western boundaries of the Project Area. A peninsula divides the channel within the Project Area, creating a low-flow backwater along which all of the site's wetlands are mapped. This channel is part of the larger, braided Mississippi River system. Data forms and photographs documenting WC-01 can be found in **Appendix D**.

Other Areas

NWB-01 was taken in a closed depression in the central portion of the Project Area. This is area is representative of other forested depressions surveyed within the main portion of the site. Vegetation consisted of American basswood (*Tilia americana*; FACU) and bur oak (*Quercus macrocarpa*; FAC) in the overstory, and graceful sedge (*Carex gracillima*, FACU) in the herbaceous layer. Common buckthorn (*Rhamnus cathartica*; FAC) was also present at NWB-01 and throughout most of the forest on-site. No hydrology indicators, other than geomorphic

position, were detected and no hydric soil indicators were met. Data forms and photographs documenting NWB-01 can be found in **Appendix C**.

5.0 Conclusions

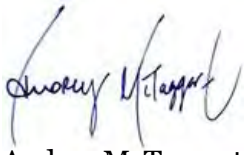
Westwood delineated seven wetlands totaling 3.28 acres and one watercourse totaling 12.83 acres within the Grey Cloud Island Township Parcels site. Westwood requests that the LGU and the USACE review and process this report with the provided Joint Application Form and provide written concurrence that the extent of potentially jurisdictional water resources have been accurately identified. Please consider this report a formal Wetland Boundary request pursuant to Minn. Rules 8420.0405 and the CWA.

6.0 Certification

I certify that, to the best of my knowledge and belief, the wetland delineation completed for this Project Area is consistent with current wetland delineation practices and guidelines. I have the specific qualifications, education, training, and experience to complete wetland delineations and determinations in accordance with federal and state requirements.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES, INC.



Audrey McTaggart
Wetland Scientist
Professional Wetland Scientist No. 3670
MN Certified Wetland Professional No. 1383

Malia Stone,
Environmental Scientist

7.0 Literature Cited

Cowardin, L.M. , V.M. Carter , F.C. Golet , and E.T. LaRoe . 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Biological Services Program, Washington, DC, USA. FWS/OBS-79/31. 103pp.

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Exhibits

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

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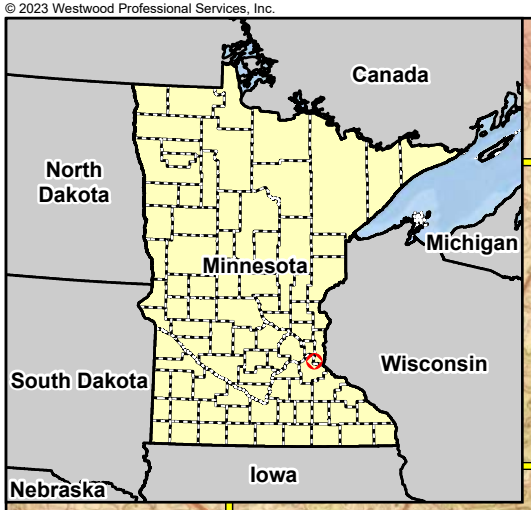

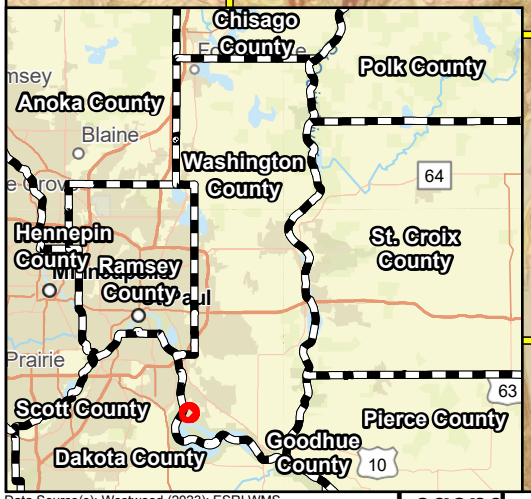

Data Source(s): Westwood (2023); ESRI WMS USA Topo & World Streets Basemaps (Accessed 2023); PLSS (2022); U.S. Census Bureau (2020 & 2021).

Legend

- Project Area
- State Boundary
- County Boundary
- PLSS Township
- PLSS Section
- Municipal Boundary
- Township Boundary
- Major Road
- Road

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

N

Feet
0 1,000

Project Location & USGS Topography

EXHIBIT 1

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

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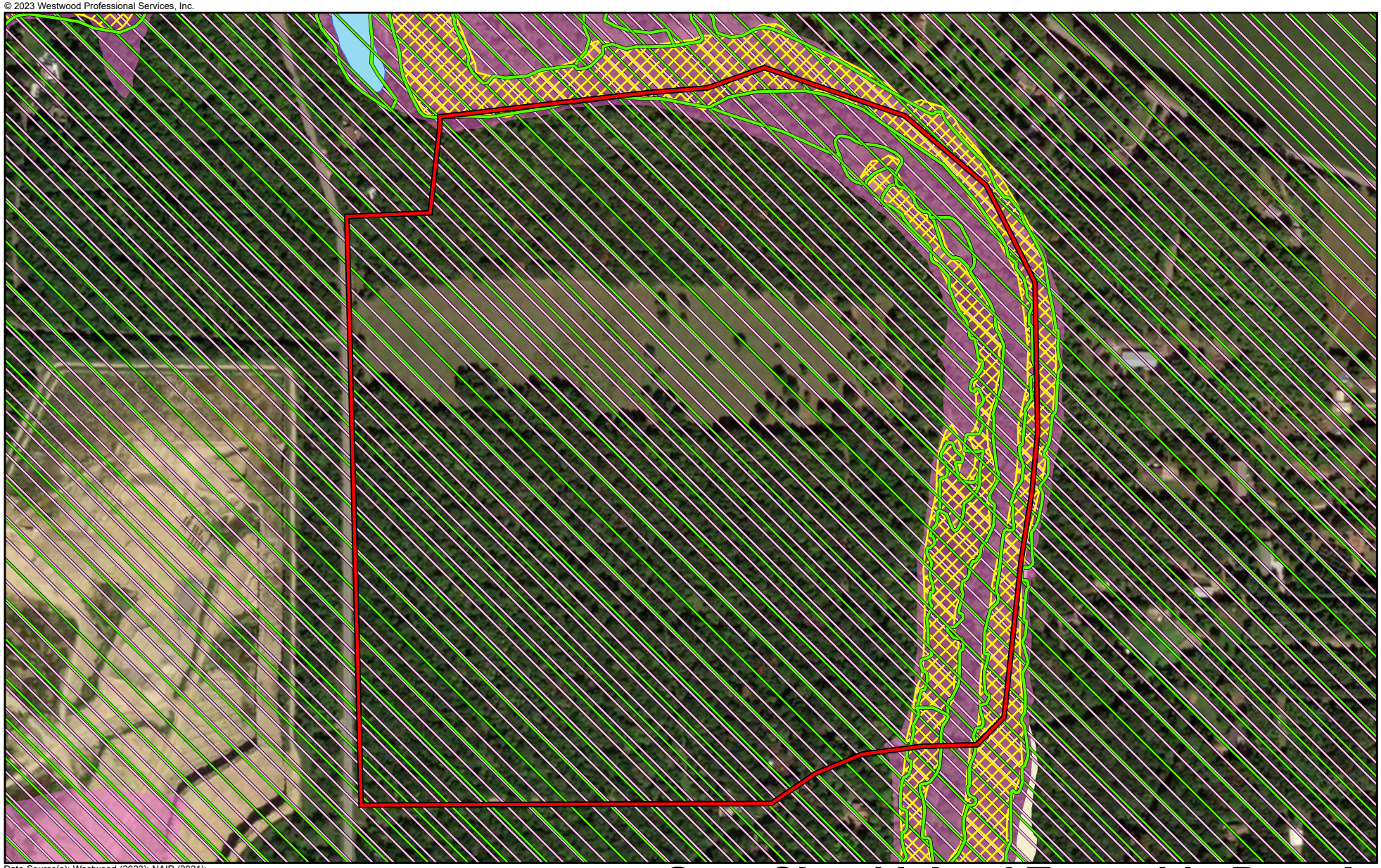

Data Source(s): Westwood (2023); NAIP (2021); NWI (2022); PWI (2022); NHD (2023); FEMA (2022).

Legend

- Project Area
- NWI Wetland
- PWI Water Basin
- NHD Waterbody
- 100 Year Floodplain
- 500 Year Floodplain

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

N

0 300 Feet

Water Resources

EXHIBIT 2

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

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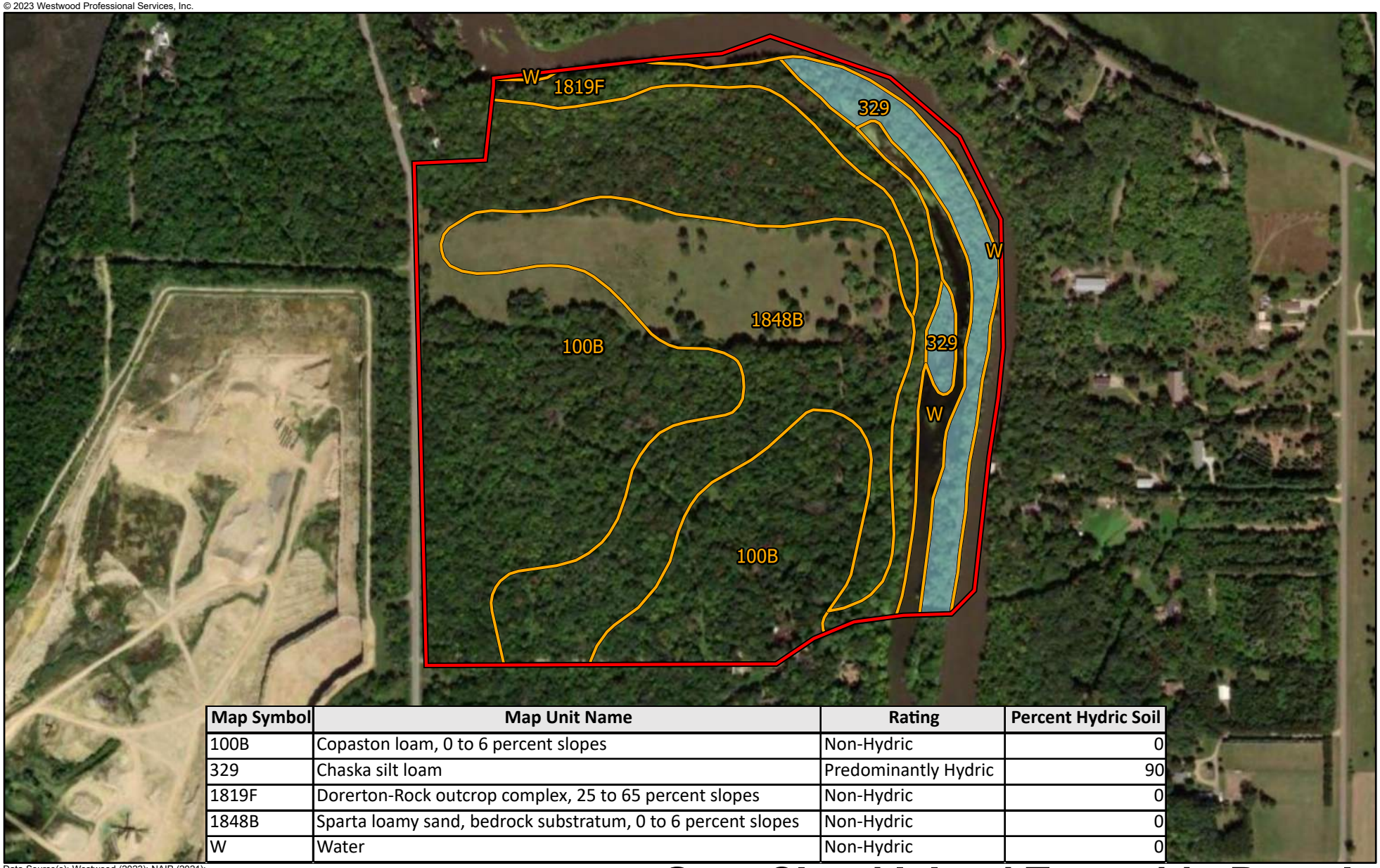

Map Symbol	Map Unit Name	Rating	Percent Hydric Soil
100B	Copaston loam, 0 to 6 percent slopes	Non-Hydric	0
329	Chaska silt loam	Predominantly Hydric	90
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	Non-Hydric	0
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	Non-Hydric	0
W	Water	Non-Hydric	0

Data Source(s): Westwood (2023); NAIP (2021); NRCS Web Soil Survey (Accessed 2023); U.S. Census Bureau (2020).

Legend

- Project Area
- Non-Hydric Soil
- Predominantly Hydric Soil

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

N

0 300 Feet

Soils

EXHIBIT 3

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

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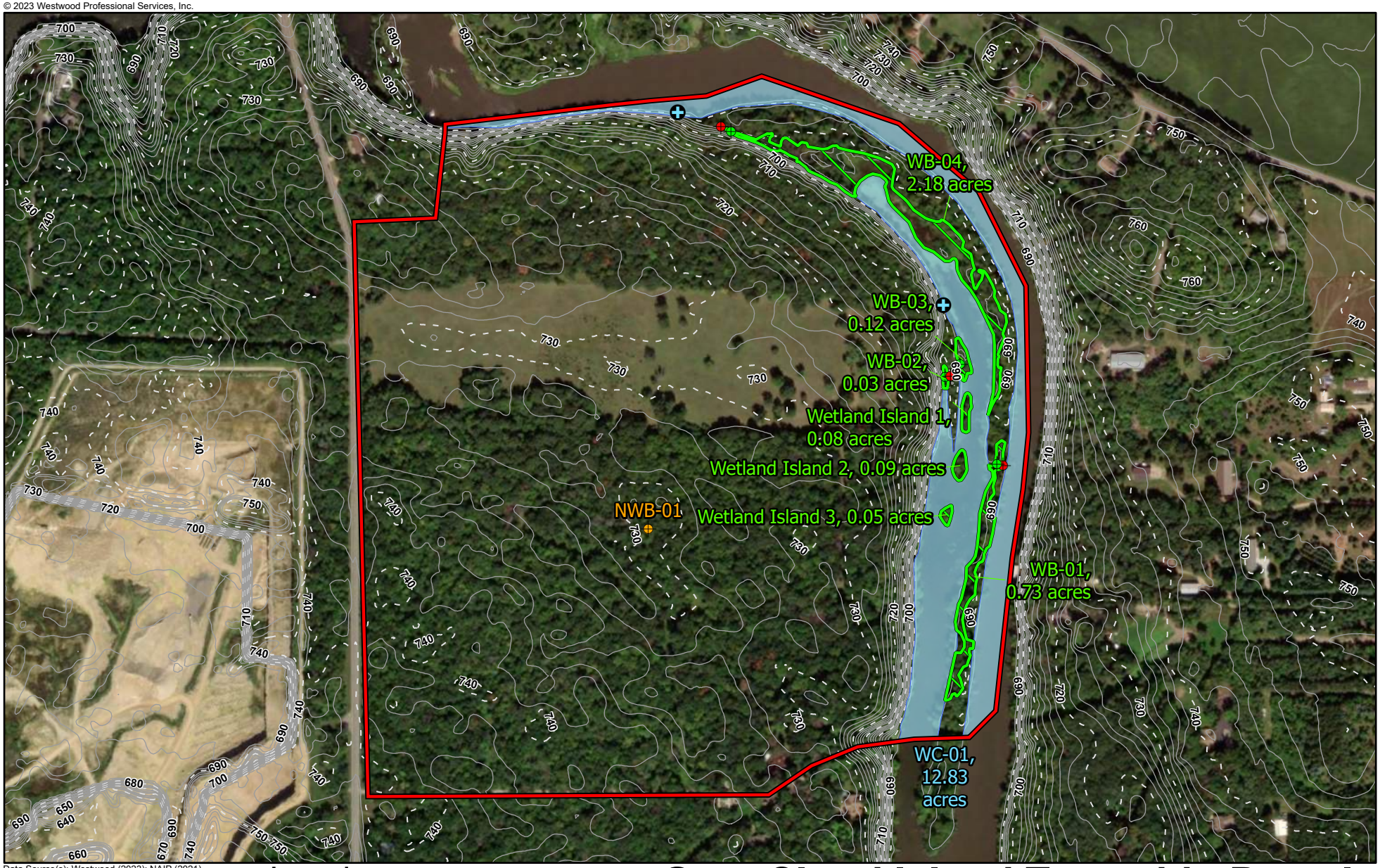


Data Source(s): Westwood (2023); NAIP (2021).

Legend

- Project Area
- Delineated Watercourse
- Delineated Wetland
- Wetland Data Point
- Upland Data Point
- Non-Wetland Data Point
- Watercourse Data Point
- 10 ft Contour
- 2 ft Contour

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

N

0 300 Feet

Delineated Features & LiDAR Contours

EXHIBIT 4

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Appendix A

Wetland Delineation Data Forms

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-01-up

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Convex

Slope (%): 3-7 Lat: 44.811399 Long: -92.989900 Datum: WGS84

Soil Map Unit Name: Chaska silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
drier than normal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	40	Y	FACU
2. *Acer negundo*	20	Y	FAC
3.			
4.			
5.			
	60.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	20	Y	FAC
2.			
3.			
4.			
5.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Parthenocissus quinquefolia*	15	Y	FACU
2. *Anemone quinquefolia*	10	Y	FAC
3. *Carex gracillima*	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	50.00	x 3 =	150.00
FACU species	60.00	x 4 =	240.00
UPL species	0.00	x 5 =	0.00
Column Totals:	110.00 (A)		390.00 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-01-up

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					FSL	
7-18	10YR 4/2	100					FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-01-wet

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.811418 Long: -92.989957 Datum: WGS84

Soil Map Unit Name: Chaska silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:
drier than normal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	5	Y	FAC
2. *Viburnum dentatum*	5	Y	FAC
3.			
4.			
5.			
	10.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Leersia oryzoides*	80	Y	OBL
2. *Boehmeria cylindrica*	15	N	OBL
3. *Iris virginica*	5	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100.00	x 1 =	100.00
FACW species	0.00	x 2 =	0.00
FAC species	10.00	x 3 =	30.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	110.00 (A)		130.00 (B)

Prevalence Index = B/A = 1.18

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✔ No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-01-wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR 2/1	100					MMI	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ✓ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-02/03-Up

Investigator(s): M. Stone Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Other Local relief (concave, convex, none): Convex

Slope (%): 3-7 Lat: 44.812263 Long: -92.990590 Datum: WGS84

Soil Map Unit Name: Dorerton-Rock outcrop complex, 25 to 65 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
Upland peninsula between streams, dry conditions

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	15	Y	FACU
2. *Picea glauca*	2	N	FACU
3.			
4.			
5.			
	17.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	2	N	FAC
2.			
3.			
4.			
5.			
	2.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rhamnus cathartica*	85	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	87.00	x 3 =	261.00
FACU species	17.00	x 4 =	68.00
UPL species	0.00	x 5 =	0.00
Column Totals:	104.00 (A)		329.00 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-02/03-Up

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	100					LS	
14-24	2.5Y 5/4	100					S	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-02-Wet

Investigator(s): M.Stone Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.812270 Long: -92.990670 Datum: WGS84

Soil Map Unit Name: Dorerton-Rock outcrop complex, 25 to 65 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:
Adjacent to stream, dry conditions

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Leersia oryzoides*	10	Y	OBL
2. *Bidens frondosa*	2	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	12.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	2.00	x 2 =	4.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	12.00 (A)		14.00 (B)

Prevalence Index = B/A = 1.17

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-02-Wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					MMI	
6-24	2.5Y 4/1	100					S	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ✔ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 ✔ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✔ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ___ Depth (inches): 2

Water Table Present? Yes ✔ No ___ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 1

Wetland Hydrology Present? Yes ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-03-wet

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.812397 Long: -92.990516 Datum: WGS84

Soil Map Unit Name: Chaska silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:
drier than normal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	25	Y	FAC
2. *Populus deltoides*	20	Y	FAC
3.			
4.			
5.			
	45.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Leersia oryzoides*	60	Y	OBL
2. *Carex lacustris*	15	N	OBL
3. *Phalaris arundinacea*	15	N	FACW
4. *Boehmeria cylindrica*	5	N	OBL
5. *Iris virginica*	5	N	OBL
6.			
7.			
8.			
9.			
10.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85.00	x 1 =	85.00
FACW species	15.00	x 2 =	30.00
FAC species	45.00	x 3 =	135.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	145.00 (A)		250.00 (B)

Prevalence Index = B/A = 1.72

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✔ No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-03-wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR 2/1	100					MMI	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ✓ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 3

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-04-up

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.814778 Long: -92.993643 Datum: WGS84

Soil Map Unit Name: Dorerton-Rock outcrop complex, 25 to 65 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
drier than normal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ostrya virginiana*	35	Y	FACU
2. *Tilia americana*	15	Y	FACU
3. *Juglans nigra*	5	N	FACU
4.			
5.			
	55.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	15	Y	FAC
2. *Tilia americana*	5	Y	FACU
3.			
4.			
5.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rhamnus cathartica*	10	Y	FAC
2. *Teucrium canadense*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	25.00	x 3 =	75.00
FACU species	60.00	x 4 =	240.00
UPL species	0.00	x 5 =	0.00
Column Totals:	90.00 (A)		325.00 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB-04-up

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100					LS	
10-24	10YR 3/3	100					SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: WB-04-wet

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.814798 Long: -92.993641 Datum: WGS84

Soil Map Unit Name: Dorerton-Rock outcrop complex, 25 to 65 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:
drier than normal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	40	Y	FAC
2. *Ulmus americana*	20	Y	FACW
3.			
4.			
5.			
	60.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	15	Y	FAC
2.			
3.			
4.			
5.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex sp.*	15	Y	FACW
2. *Smilax rotundifolia*	5	Y	FAC
3. *Scutellaria lateriflora*	5	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	35.00	x 2 =	70.00
FAC species	60.00	x 3 =	180.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		255.00 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
Carex without ID characteristics

SOIL

Sampling Point: WB-04-wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2	100					LS	
7-24	10YR 2/2	90	10YR 4/4	10	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 ✔ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✔ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B

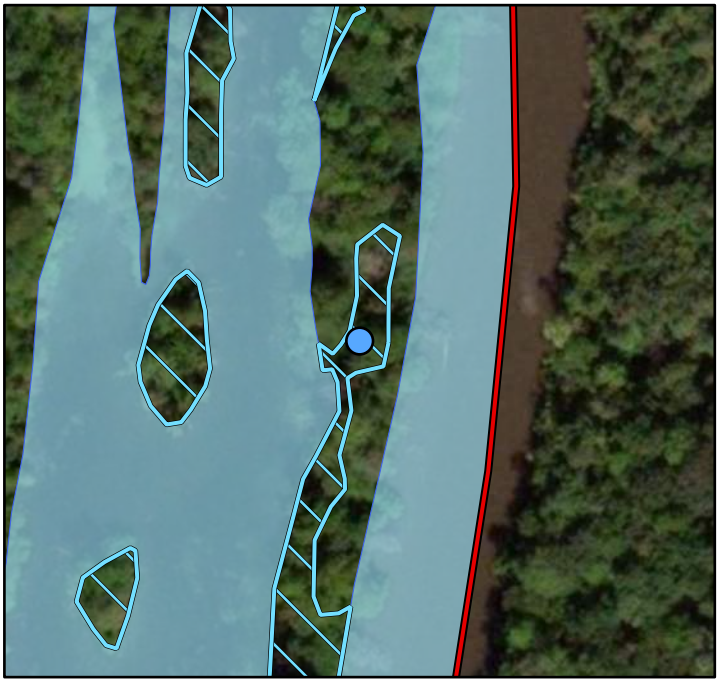
Wetland Delineation Photographs

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

Grey Cloud Island Township Parcels
Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



Grey Cloud Island Township Parcels
Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Grey Cloud Island Township Parcels
Delineation Site Photograph

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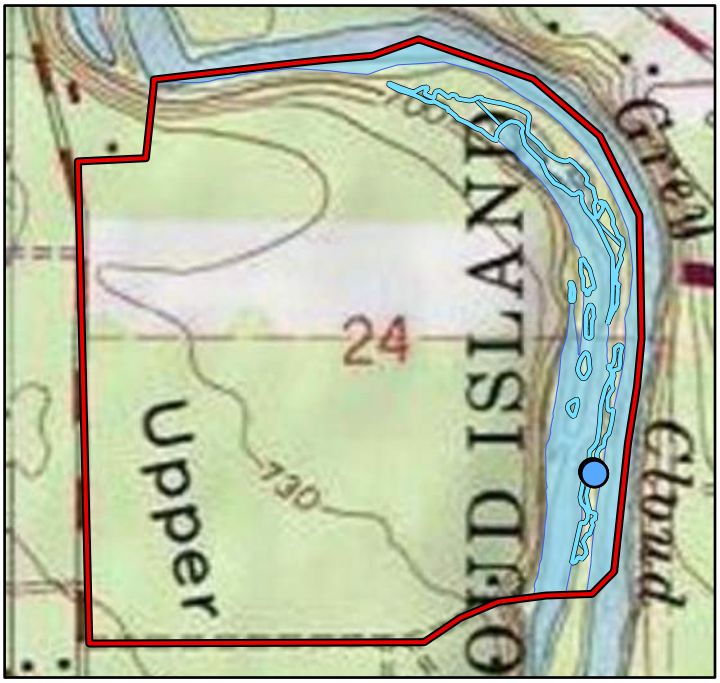

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Delineation Site Photograph

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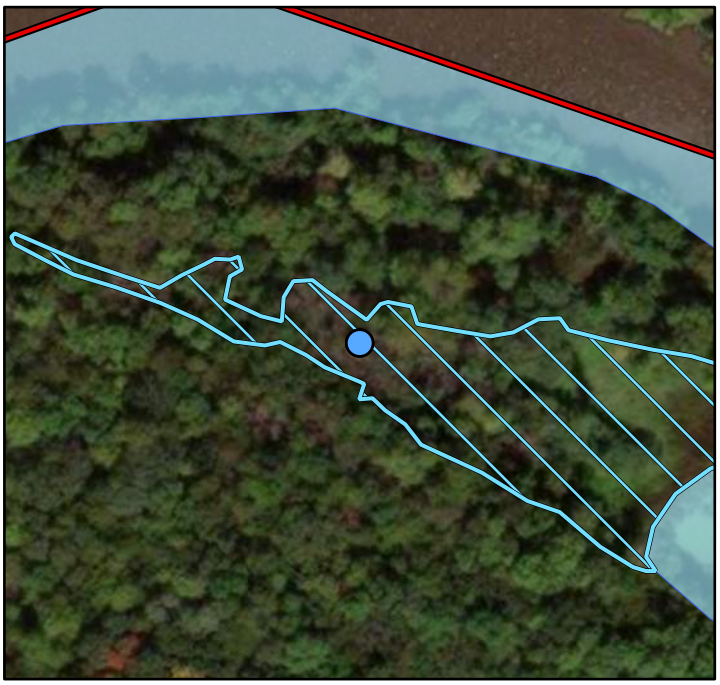
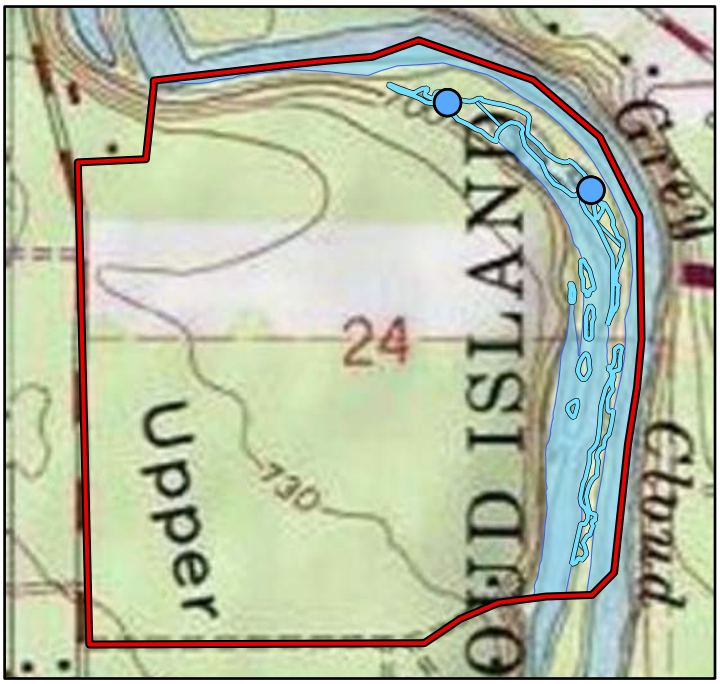
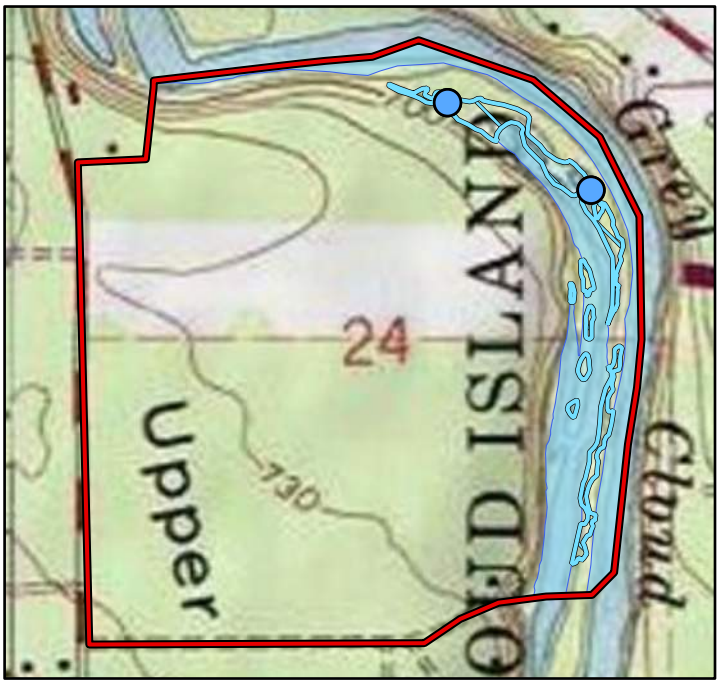




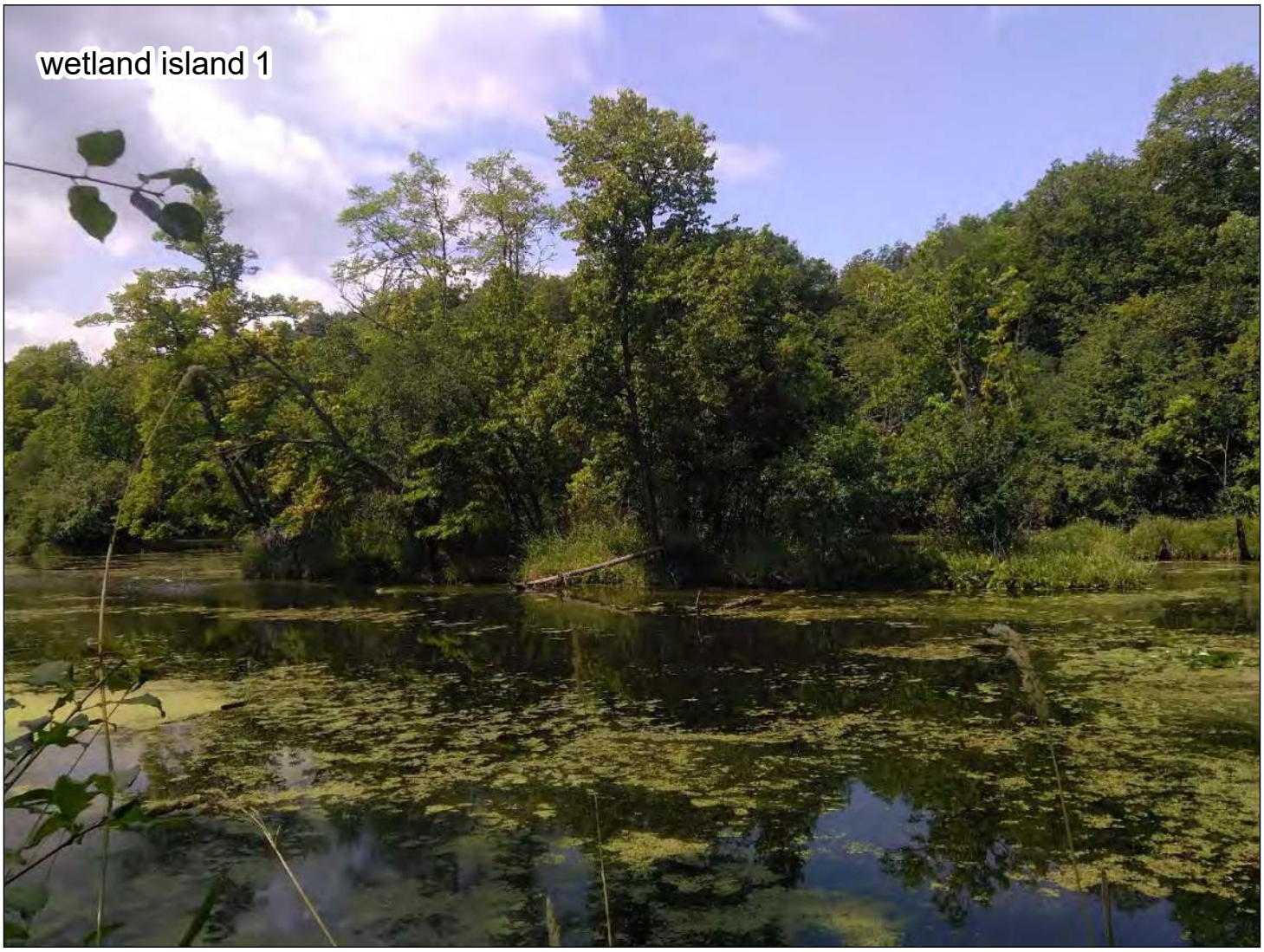
Grey Cloud Island Township Parcels
Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



Grey Cloud Island Township Parcels
Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



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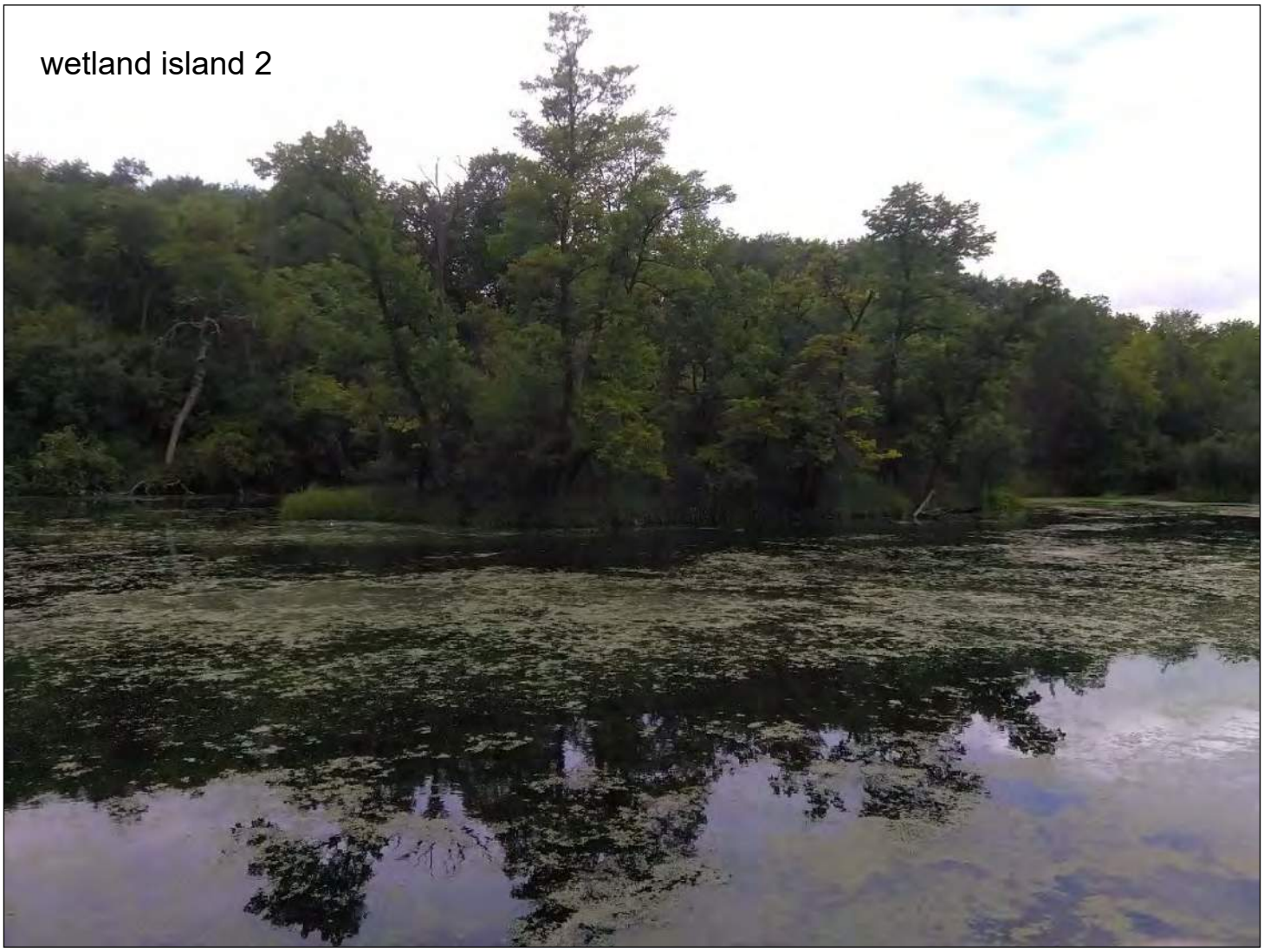
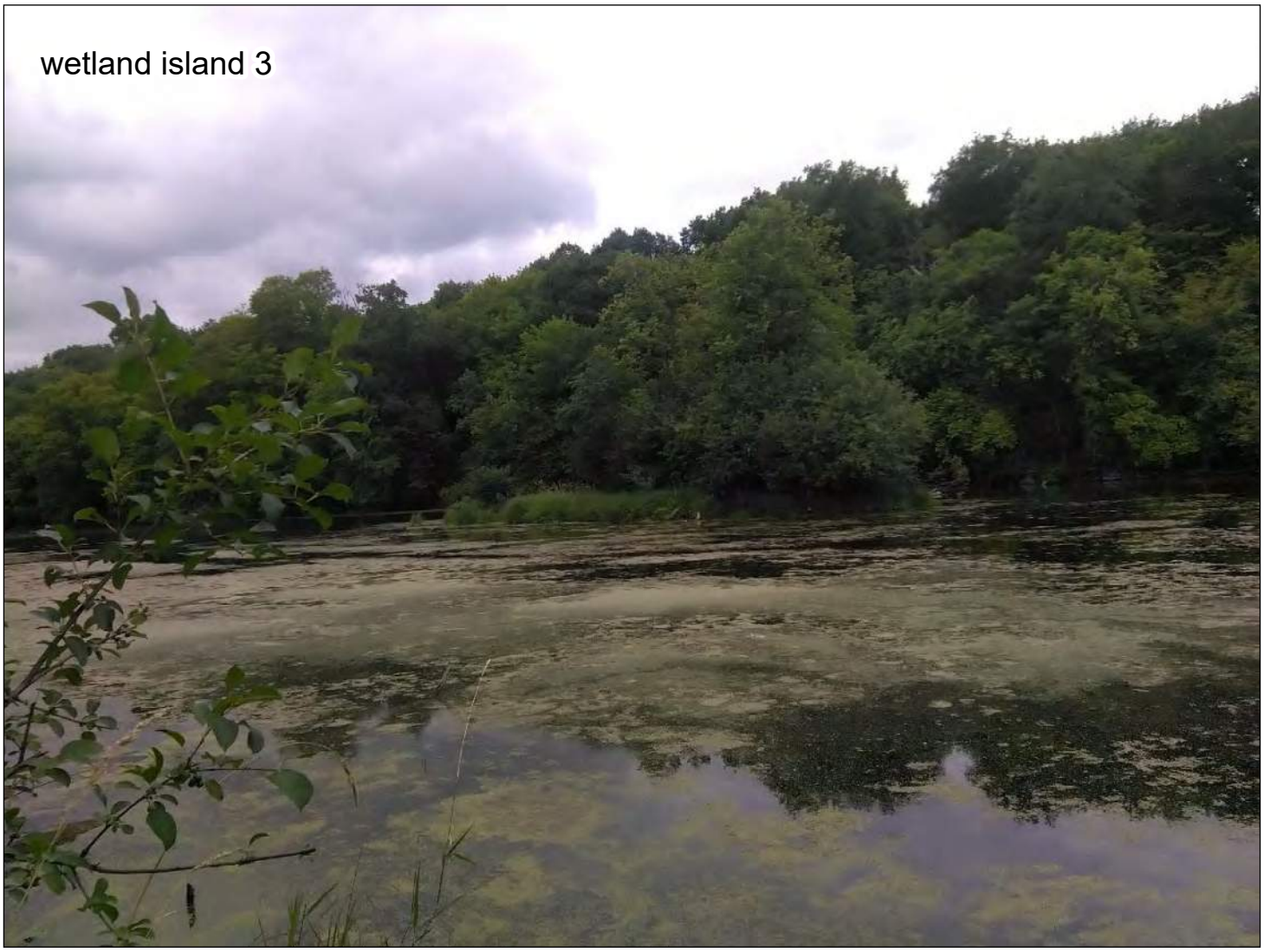
Grey Cloud Island Township Parcels
Delineation Site Photograph

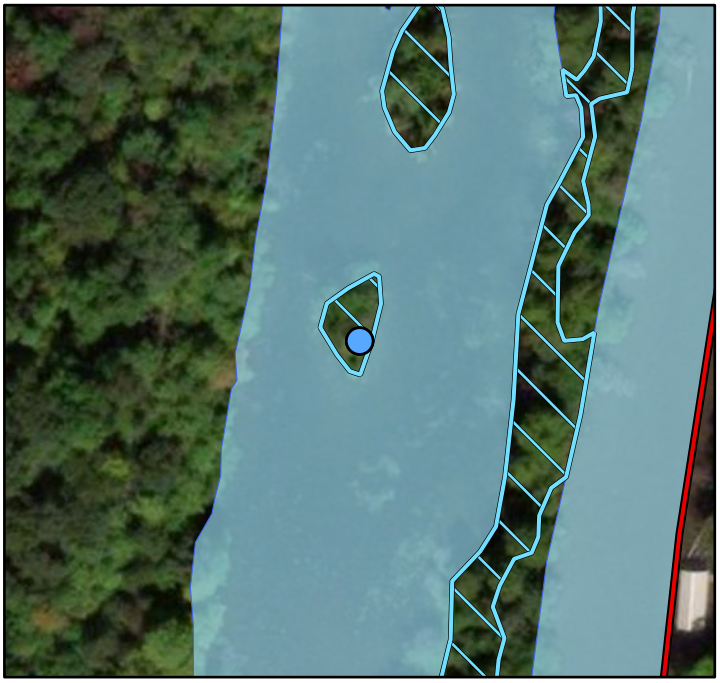
Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

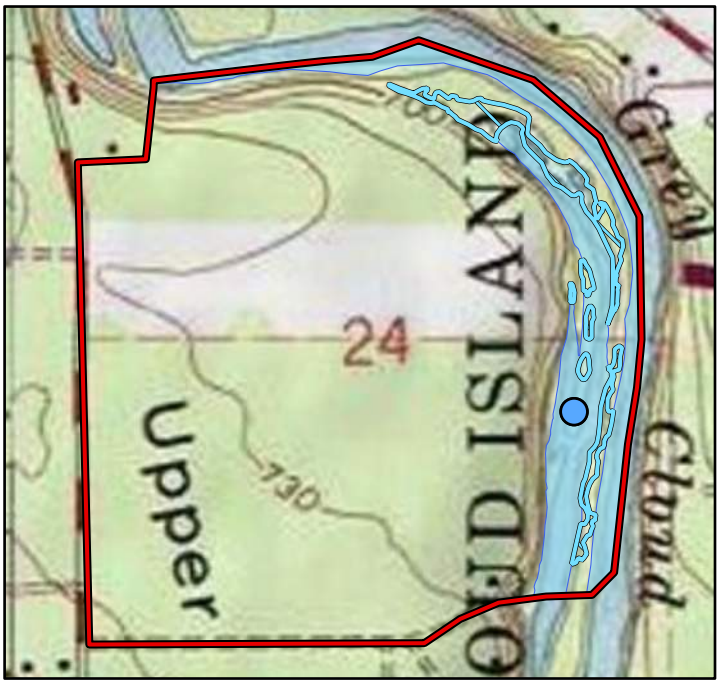


Grey Cloud Island Township Parcels Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.







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Appendix C

Non-Wetland Data Forms

& Photographs

Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Grey Cloud Island Township Parcels City/County: Washington County Sampling Date: 2023-07-19

Applicant/Owner: Holcim State: Minnesota Sampling Point: NWB-01

Investigator(s): A. McTaggart Section, Township, Range: sec 24 T027N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.810756 Long: -92.994917 Datum: WGS84

Soil Map Unit Name: Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
dry conditions

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	20	Y	FACU
2. *Quercus macrocarpa*	15	Y	FAC
3.			
4.			
5.			
	35.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rhamnus cathartica*	40	Y	FAC
2. *Tilia americana*	20	Y	FACU
3.			
4.			
5.			
	60.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex gracillima*	25	Y	FACU
2. *Rhamnus cathartica*	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	65.00	x 3 =	195.00
FACU species	65.00	x 4 =	260.00
UPL species	0.00	x 5 =	0.00
Column Totals:	130.00 (A)		455.00 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: NWB-01

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/2	100					SL	
14-24	10YR 3/3	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]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 _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

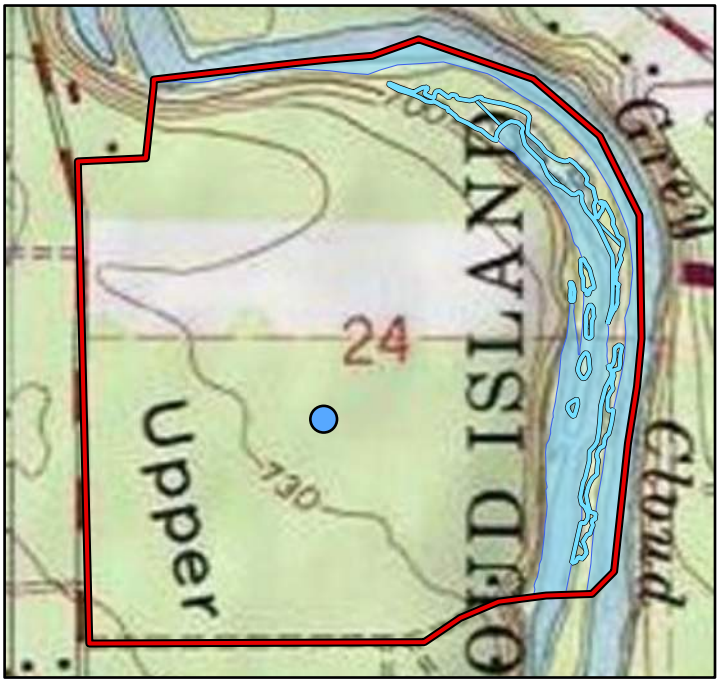
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Slight depression

Grey Cloud Island Township Parcels
Delineation Site Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



Appendix D

Watercourse Delineation

Data Forms & Photographs

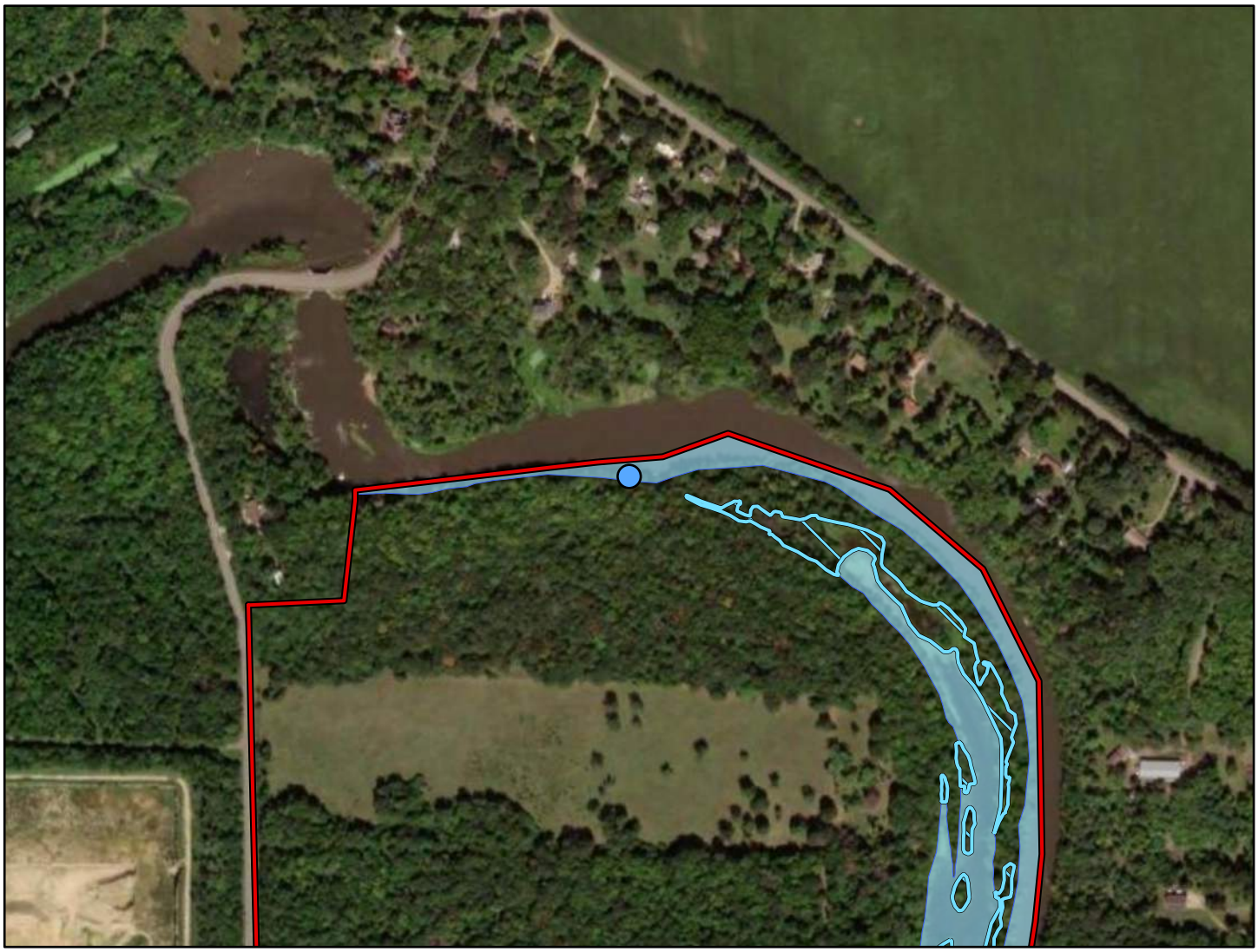
Grey Cloud Island Township Parcels

Grey Cloud Island Township, Washington County, Minnesota

Grey Cloud Island Township Parcels
Watercourse Data Form

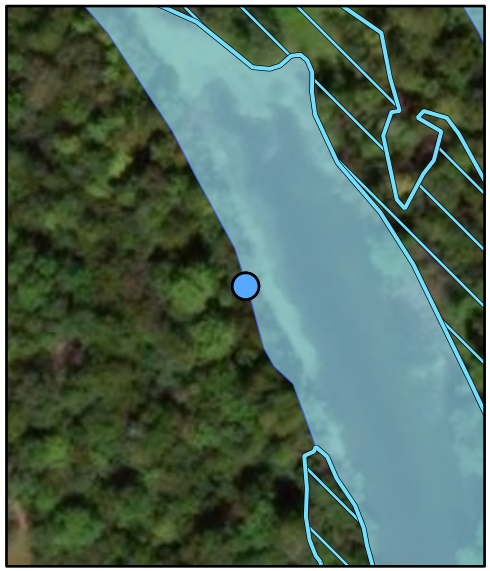
Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

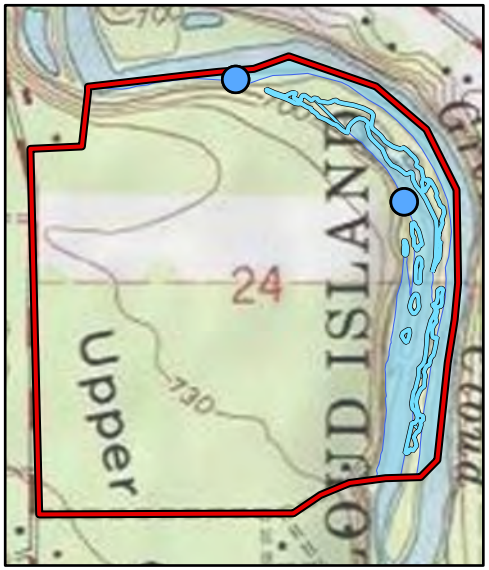
Attributes	
Feature ID	WC-01
Defined Bed & Bank	Yes
Waters of the US	Yes
Mapped on NHD	Yes
Mapped on NWI	Yes
Investigator	
Flow Characteristics	Perennial
Direction of the Flow	E
Water Width at Observation Point (ft)	280
Water Depth at Observation Point (ft)	>15
Left Bank Height (ft) - Looking Downstream	40
Right Bank Height (ft) - Looking Downstream	25
OHWM Width (ft)	280
OHWM Height (ft from Substrate)	>15
Evidence of Scour or Erosion	Yes
OHWM Criteria	Bed and banks
Pools, Riffles, Runs Present?	Runs
Substrate	Sand



Grey Cloud Island Township Parcels Watercourse Photograph

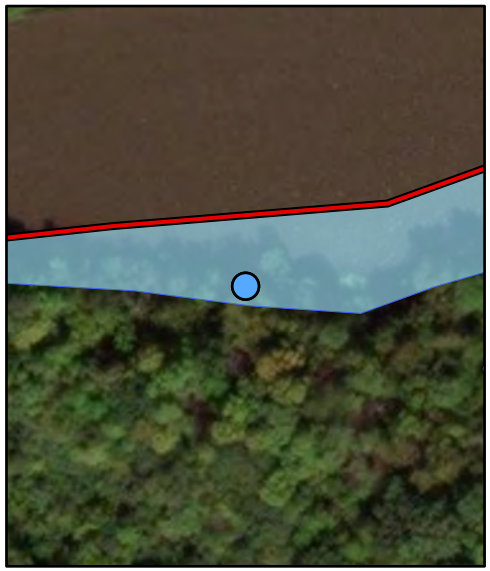
Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

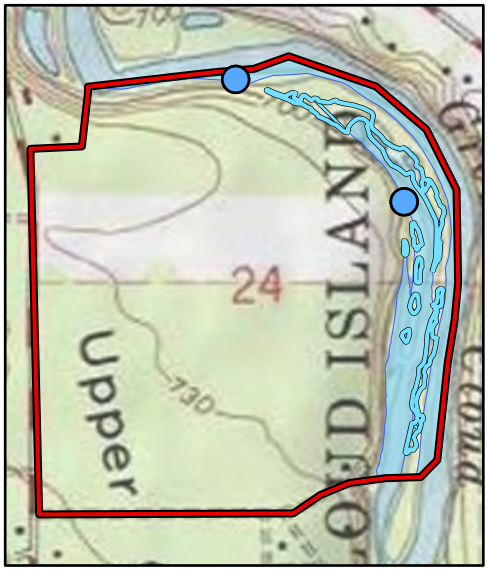




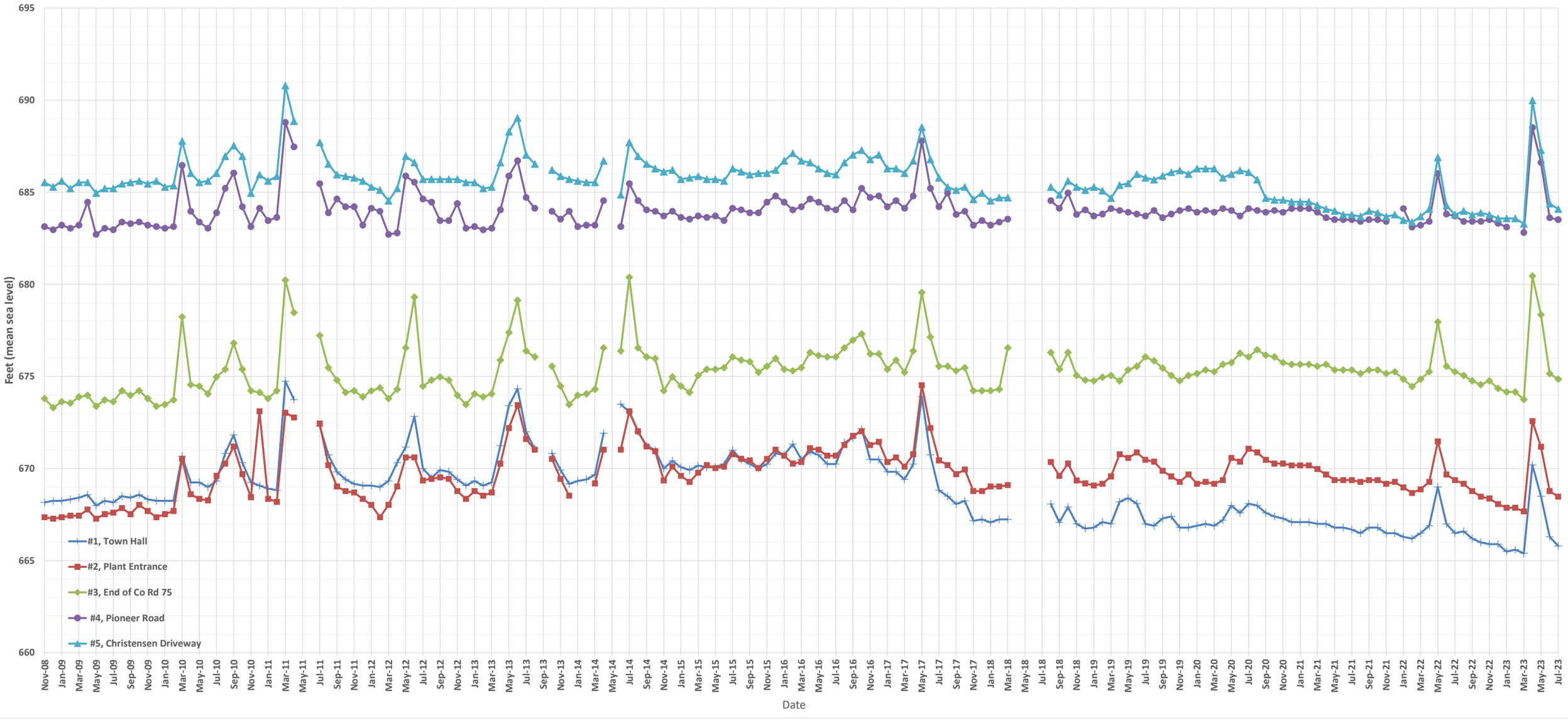
Grey Cloud Island Township Parcels Watercourse Photograph

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.





Larson Well Measurements



Unique Number	Well Name	Address	City	County	Depth(ft)	Elevation(ft)	Casing Depth(ft)	Casing Diameter
123507	COX, KENNETH	null	null	Washington	156	745	138	4
257641	ROELLER, DANIEL E.	9100 GREY CLOUD TR	ST PAUL PARK	Washington	null	740	null	null
531425	HIPPLE, DIANA	9280 GREY CLOUD ISLAND DR	ST PAUL PARK	Washington	200	738	189	4
159478	MOE, TRACY	null	null	Washington	260	735	229	4
257639	ROSE, FAITH X.	9072 GREY CLOUD TR	ST PAUL PARK	Washington	null	741	null	null
194292	NESVIG, GORDON	8590 GRAY CLOUD ISLAND DR	ST PAUL PARK	Washington	210	727	185	4
257726	SPEECH, JANE C	5585 99TH ST	ST PAUL PARK	Washington	null	726	null	null
257636	O'CONNOR, TERI L.	9040 GREY CLOUD TR	ST PAUL PARK	Washington	null	741	null	null
257640	KEALY, KELLY	9090 GREY CLOUD TR	ST PAUL PARK	Washington	null	742	null	null
159482	ARNESON, EARL	null	null	Washington	190	714	165	4
170878	STANFIELD	null	null	Washington	230	757	200	4
408286	J. L. SHIELY	10031 GREYCLOUD ISLAND DR S	null	Washington	230	765	194	4
426946	SICARD, WILLIAM	5460 99TH ST	ST PAUL PARK	Washington	200	739	175	4
257863	JASPER, DAVE AND SHARON	9280 GREY CLOUD ISLAND DR	SAINT PAUL PARK	Washington	null	735	null	null
257700	HASTINGS, KIM AND MARILYN	10023 GREY CLOUD ISLAND DR	SAINT PAUL PARK	Washington	null	728	null	null
257690	TAYLOR, MARGARET M.	9055 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	737	null	null
542034	OB WELL 2	2915 WATERS RD	EAGAN	Washington	150	774	126	4
100032	TOWN HALL OB-1	null	ST PAUL PARK	Washington	160	777	12	8
257739	FOSTER, ANN M	9750 GENEVA AV S	ST PAUL PARK	Washington	null	726	null	null
104320	BELDEN, LLOYD	9284 GREYCLOUD TR S	ST PAUL PARK	Washington	189	745	162	4
257724	AGGREGATE IND N CTRL REG INC	5350 99TH ST	ST PAUL PARK	Washington	null	767	null	null
208419	null	null	null	Washington	225	735	195	0
104263	SHIELY, JOHN	9280 GREYCLOUD ISLAND DR	ST PAUL PARK	Washington	290	735	253	4
542036	OB WELL 5 TW-4	2915 WATERS RD	EAGAN	Washington	118	738	84	4
426913	HASTINGS, BILL JR.	null	null	Washington	200	733	180	4
257692	NOTEBOOM, JIMMIE E & CYNTHIA	9100 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	710	null	null
257691	LEDO, JEROME J & HAPPE, RUTH N	9070 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	714	null	null
145822	GROSMAN, LARRY	null	null	Washington	260	740	231	4
257693	HANNA, DENNIS L	9301 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	718	null	null
257695	HELGESEN, MICHAEL P & ERNESTINE	9757 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	734	null	null
257642	SCHWEIGER, WILLIAM & MARGARET	9110 GREY CLOUD TR	ST PAUL PARK	Washington	null	732	null	null
257694	CHRISTENSEN, STEVEN L	9747 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	729	null	null
257646	SCHMIDT, RONALD	9220 GREY CLOUD TR	ST PAUL PARK	Washington	null	743	null	null
170879	BAYER, GLEN	null	null	Washington	230	768	210	4
257725	MILLER DALE D & GLORIA	5440 99TH ST	ST PAUL PARK	Washington	null	747	null	null
257696	ELISABETH & BERTON MCEATHRON TRS	9767 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	733	null	null
257648	RUMPCA, STEVEN	9270 GREY CLOUD TR	ST PAUL PARK	Washington	null	752	null	null
257689	GEORGE E WICKE JR TRS	9040 GREY CLOUD ISLAND	ST PAUL PARK	Washington	null	721	null	null
257638	PLAN, GORDON & JANET	9060 GREY CLOUD TR	ST PAUL PARK	Washington	null	733	null	null
542033	TOWN HALL OB-1	2915 WATERS RD	EAGAN	Washington	160	777	126	4
616657	STENVICK, ROGER	9877 GREY CLOUD ISLAND DR	ST PAUL	Washington	195	760	190	4
257643	WAKAT, GEORGE & BARBARA	9120 GREY CLOUD TR	ST PAUL PARK	Washington	null	740	null	null
257644	ISAACS, WARREN	9160 GREY CLOUD TR	ST PAUL PARK	Washington	null	739	null	null
257649	O'BOYLE, SHARON & ELSIE	9300 GREY CLOUD TR	ST PAUL PARK	Washington	null	739	null	null
257647	BURT, CLARK & NAOMI	9260 GREY CLOUD TR S	ST PAUL PARK	Washington	98	751	17	5
531424	REPKE, RUSS	9263 GREYCLOUD ISLAND DR	ST PAUL PARK	Washington	175	702	168	4
257637	WICKE, CYNTHIA	9044 GREY CLOUD TR	ST PAUL PARK	Washington	null	738	null	null
257688	WICKE, ANTHONY AND KIMBERLY	9010 GREY CLOUD ISLAND DR	SAINT PAUL PARK	Washington	null	744	null	null
170876	OB WELL 5	null	null	Washington	118	738	8	8
761663	WICKE, TONY	9070 GREY CLOUD ISLAND DR	ST PAUL PARK	Washington	200	713	168	4
257645	O'BOYLE, HELEN	9180 GREY CLOUD TR	ST PAUL PARK	Washington	null	741	null	null

257635	MEYERS, JANET	9020 GREY CLOUD TR	ST PAUL PARK	Washington	null	742	null	null
142513	OB WELL 2	null	ST PAUL PARK	Washington	150	774	20	8
590064	SHIELY COMPANY, INC	9821 GREY CLOUD ISLAND DR	SOUTH ST PAUL	Washington	195	750	189	4
820296	ROSE, FAITH	9072 GREY CLOUD TR S	ST PAUL PARK	Washington	220	null	189	4
820254	HANSEN	9065 GREY CLOUD ISLAND DR	ST PAUL PARK	Washington	200	null	168	4
426976	J.L. SHIELY CO.	10120 GRAYCLOUD ISLAND DR	ST PAUL PARK	Washington	240	null	220	4

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	01/01/2022 - 01/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	25	Mgal	*****	5	5	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.1	*****	8	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****	<.1	*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	317.95	*****	kg/d	*****	17	34	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	
Comment :											

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	02/01/2022 - 02/28/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	22	Mgal	*****	5.4	5.4	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	6.2	*****	7.5	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	96.06	*****	kg/d	*****	4.7	6.2	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	03/01/2022 - 03/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	21	Mgal	*****	5.3	5.3	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.2	*****	7.8	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	<40.42	*****	kg/d	*****	<2	<2	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	04/01/2022 - 04/30/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	19	Mgal	*****	4.6	4.6	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.7	*****	7.8	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****	<.1	*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	62.35	*****	kg/d	*****	3.6	3.6	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	05/01/2022 - 05/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 2	**Result**	*****	31	Mgal	*****	6.2	6.2	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 2	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 2	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 2	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 2	**Result**	*****	*****	******	7.7	*****	8	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 2	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 2	**Result**	200.54	*****	kg/d	*****	8.6	14	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	
Comment :											

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	06/01/2022 - 06/30/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	25	Mgal	*****	6.2	6.2	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.7	*****	7.9	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	55.96	*****	kg/d	*****	2.4	4.7	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	07/01/2022 - 07/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	25	Mgal	*****	6.2	6.2	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****	0.1	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****	0.6	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****	0.7	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.5	*****	8.2	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****	<.1	*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	<46.63	*****	kg/d	*****	<2	<2	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	08/01/2022 - 08/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	30.0	Mgal	*****	6	6	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.5	*****	7.7	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	63.8	*****	kg/d	*****	2.8	3.5	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Aggregate Industries Inc - Larson	MN0030473	09/01/2022 - 09/30/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	24	Mgal	*****	6	6	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.2	*****	7.7	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	28.48	*****	kg/d	*****	<2.0	2.5	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Holcim - MWR Inc - Larson Quarry	MN0030473	10/01/2022 - 10/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	29	Mgal	*****	5.8	5.8	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.2	*****	7.9	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****	<.1	*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	43.98	*****	kg/d	*****	2	4	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	
Comment :											

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Holcim - MWR Inc - Larson Quarry	MN0030473	11/01/2022 - 11/30/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	22	Mgal	*****	5.6	5.6	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****		mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.5	*****	7.8	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****		*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******	REPORT calendar month average	******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	104.05	*****	kg/d	*****	4.9	4.9	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

Summary

Minnesota Pollution Control Agency

Discharge Monitoring Report Form

Agency Interest	Permit Number	Monitoring Period
3555 - Holcim - MWR Inc - Larson Quarry	MN0030473	12/01/2022 - 12/31/2022

Station Information: MONI0000000001 - SD 001 (Surface Discharge)

☐ No Discharge/No Flow for Monitoring Period

Parameter		Quantity			Quality				Frequency of Analysis	Sample Type	Exception
		Average	Maximum	Units	Minimum	Average	Maximum	Units			
Flow 50050 Modification # 0	**Result**	*****	25	Mgal	*****	6.2	6.2	mgd	once per day	Measurement	
	Limit	******	REPORT calendar month total	Mgal	******	REPORT calendar month average	REPORT calendar month maximum	mgd	once per day	Measurement	
Nitrite Plus Nitrate, Total (as N) 00630 Modification # 0	**Result**	*****	*****	******	*****	*****	.1	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Kjeldahl, Total 00625 Modification # 0	**Result**	*****	*****	******	*****	*****	.6	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
Nitrogen, Total (as N) 00600 Modification # 0	**Result**	*****	*****	******	*****	*****	.7	mg/L	once per year	Grab	
	Limit	******	******	******	******	******	REPORT calendar year maximum	mg/L	once per year	Grab	
pH 00400 Modification # 0	**Result**	*****	*****	******	7.2	*****	8.1	SU	twice per month	Grab	
	Limit	******	******	******	>=6.0 calendar month minimum	******	<=9.0 calendar month maximum	SU	twice per month	Grab	
Phosphorus, Total (as P) 00665 Modification # 0	**Result**	*****	*****	******	*****	REPORT calendar month average	*****	mg/L	once per quarter	Grab	
	Limit	******	******	******	******		******	mg/L	once per quarter	Grab	
Solids, Total Suspended (TSS) 00530 Modification # 0	**Result**	132.9	*****	kg/d	*****	5.7	8.2	mg/L	twice per month	Grab	
	Limit	<=772.14 calendar month average	******	kg/d	******	<=30 calendar month average	<=60 calendar month maximum	mg/L	twice per month	Grab	

Comment :

NA-02628-02

Department of MINNESOTA Natural Resources
Division of Waters

WATER APPROPRIATION PERMIT

Box 32, Centennial Office Building
St. Paul, MN 55155

AMENDED

PERMIT	67-200
COUNTY	Washington

IN THE MATTER OF THE APPLICATION FOR APPROPRIATION OF WATERS OF THE STATE, PERMISSION IS HEREBY GRANTED TO:

PERMITTEE	Authorized Agent
J. L. Shiely Company	J. L. Shiely III

Address: 1101 Snelling Ave. No., St. Paul, MN 55108

To Appropriate From: "Larson Plant Quarry"

Point of Taking:
Government Lot 1 Section 26, T27N, R22W

Purpose: Dewatering a quarry for mining aggregates (sand and gravel)

Property Described as: Government Lot 1 Section 26, T27N, R22W

Authorized Signature	Title	Date
Sarah P. Tufford	Sarah P. Tufford Administrator Water Use Management Section	9/14/84

This permit is granted subject to the following **CONDITIONS:**

1. QUANTITY:
The permittee is authorized to appropriate water at a rate not to exceed 8000 gallons per minute. The total amount of water appropriated shall not exceed xxxxx acre feet or 5500 million gallons per year.

2. LIMITATIONS:

(a.) Any violation of the terms and provisions of this permit and any appropriation of the waters of the state in excess of that authorized hereon shall constitute a violation of Minnesota Statutes, Chapter 105.

(b.) This permit shall not be construed as establishing any priority of appropriation of waters of the state.

(c.) This permit is permissive only. No liability shall be imposed upon or incurred by the State of Minnesota or any of its employees, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, for any damage or injury resulting from any such act or omission, or as stopping or limiting any legal claim or right of action of the state against the permittee, for violation of or failure to comply with the provisions of the permit or applicable provisions of law.

(d.) In all cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights and interests necessary therefore.

(e.) This permit shall not release the permittee from any other permit requirements or liability or obligation imposed by Minnesota Statutes, Federal Law, or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.

(f.) Unless explicitly specified, this permit does not authorize any alterations of the beds or banks of any public (protected) waters or wetlands. A separate permit must be obtained from the Department of Natural Resources prior to any such alteration.

(OVER)

3. PERMITTEE'S RESPONSIBILITIES:

(e.) MONITORING.

The permittee shall equip each installation for appropriating or using water with a device or employ a method to measure the quantity of water appropriated to within ten (10) percent of actual amount withdrawn unless otherwise specified by special provision.

(b.) REPORTS.

Monthly records of the amount of water appropriated or used shall be recorded for each installation. Such readings and the total amount of water eppropriated or used shall be reported annually to the Director of the Division of Waters, on or before Februery 15 of the following year, upon forms supplied by the Division. Any processing fee required by law or rule shall be submitted with the records whether or not any water was appropriated during the year. Failure to report shall be sufficient cause for tarminating the permit 30 days following written notice.

(c.) TRANSFER OR ASSIGNMENT.

Any transfer or essignment of rights, or sale of property involved hereundar shall be reported within 90 days theraafter to the Director of the Division of Waters. Such notice shall be made by the transferee (i.e. new owner) and shall state the intention to continue the appropriation as stated in the permit. This permit shall not be transferred or assigned excapt with the written consent of the Commissioner.

(d.) MODIFICATION.

The permittee must notify the Commissioner in writing of any proposed changes to the existing permit. This permit shall not be modifiad without first obtaining the written permission from the Commissionar.

4. COMMISSIONER'S AUTHORITY:

(a.) The Commissioner may inspect eny installetion utilized for the appropriation or use of water. The permittee shall grant access to the site at all reasonable times and shall supply such information concerning such installation as the Commissioner may require.

(b.) The Commissioner may, as he deems necessary, raquire the permittee to insteil gagas and/or observation wells to monitor the impact of the permittee's appropriation on the water resource and require the permittee to pey necessary costs of installation and maintenance.

(c.) The Commissioner may restrict, suspend, amend, or cancel this permit in accordance with applicable laws and rules for any cause for the protection of public interests, or for violation of the provisions of this permit.

5. PUBLIC RECORD:

All data, facts, plans, maps, applications, annual weter use reports, and eny additional information submittad as part of this permit, and this permit itself are part of the public record and are available for public inspection at the offices of the Division of Waters. The information contained tharein may be used by the Division as it deems necessary. The submission of false data, statements, reports, or any such additional informetion, at any time shall be deemed es just grounds for revocation of this permit.

ADDITIONAL CONDITIONS

1. Monitoring is to continue as recommended by Barr Engineering. A copy of the revised monitoring plan recommendations are to be submitted to the Commissioner as soon as possible for DNR review. The Commissioner reserves the right to change the amended permit as necessary based on this review.

2. The permittee shall equip the pump with a flow meter to keep a continuous record of the amount of water pumped under this permit to within 10 percent of actual flow. Monthly totals and the total amount appropriated per year shall be reported to the Director of the Division of Waters on forms supplied on or before February 15 of the following calendar year. Based on these reports and the monitoring data, the Commissioner reserves the right to amend the permit as necessary.

cc: Kent Lokkesmoe, Regional Hydrologist
Washington County SWCD
Grey Cloud Town Board of Supervisors
Data Systems

Minnesota Department of Natural Resources

WATER APPROPRIATION PERMIT

500 Lafayette Road
St. Paul, MN 55155-4032

PERMIT NUMBER
2002-6042
COUNTY
Washington (82)

IN THE MATTER OF THE APPLICATION FOR APPROPRIATION OF WATERS OF THE STATE, PERMISSION IS HEREBY GRANTED TO:

PERMITTEE	Authorized Agent
Aggregate Industries, Inc.	Dan Gallagher
Address	
2915 Waters Road, Suite 105, Eagan, Minnesota 55121 Phone: 651-683-8169	
To Appropriate from:	
Mississippi River (19-0005P): Two Pumps, 1500 GPM each Point of Taking: SW¼ NW¼ NE¼, Section 26, Township 27 North, Range 22 West	
Purpose:	
Gravel washing from March 1 to November 30 of each year (Larson Plant) Use Code (244)	
Property described as:	
SW¼ NW¼ NE¼, Section 26, Township 27 North, Range 22 West Mississippi River – Metro Watershed (20)	

Authorized Signature	Title	Date
Dale E. Homuth	Regional Hydrologist	1-10-2002

This permit is granted subject to the following **CONDITIONS**:

1. **QUANTITY:**
The Permittee is authorized to appropriate water at a rate not to exceed **3000** gallons per minute. The total amount of water appropriated shall not exceed **N.A.** acre feet or **340.2** million gallons per year.

2. **LIMITATIONS:**
(a) Any violation of the terms and provisions of this permit and any appropriation of the waters of the state in excess of that authorized hereon shall constitute a violation of Minnesota Statutes, Chapter 103.
(b) This permit shall not be construed as establishing any priority of appropriation of waters of the state.
(c) This permit is permissive only. No liability shall be imposed upon or incurred by the State of Minnesota or any of its employees, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the Permittee relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the Permittee, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the Permittee, for violation of or failure to comply with the provisions of the permit or applicable provisions of law.
(d) In all cases where the doing by the Permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the Permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests necessary therefore.
(e) This permit shall not release the Permittee from any other permit requirements or liability or obligation imposed by Minnesota Statutes, Federal Law, or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.
(f) Unless explicitly specified, this permit does not authorize any alterations of the beds or banks of any public (protected) waters or wetlands. A separate permit must be obtained from the Department of Natural Resources prior to any such alteration.

(Over, please)

3. **PERMITTEE'S RESPONSIBILITIES:**
(a) FLOW METER.
The Permittee shall equip each installation for appropriating or using water with a flow meter, unless another method of measuring the quantity of water appropriated to within ten (10) percent of actual amount withdrawn is approved by the Department.
(b) REPORTS.
Monthly records of the amount of water appropriated or used shall be recorded for each installation. Such readings and the total amount of water appropriated or used shall be reported annually to the Director of DNR Waters, on or before February 15 of the following year, upon forms supplied by the Division. Any processing fee required by law or rule shall be submitted with the records whether or not any water was appropriated during the year. Failure to report shall be sufficient cause for terminating the permit 30 days following written notice.
(c) TRANSFER OR ASSIGNMENT.
Any transfer or assignment of rights, or sale of property involved hereunder shall be reported within 90 days thereafter to the Director of DNR Waters. Such notice shall be made by the transferee (i.e., new owner) and shall state the intention to continue the appropriation as stated in the permit. This permit shall not be transferred or assigned except with the written consent of the Commissioner.
(d) MODIFICATION.
The Permittee must notify the Commissioner in writing of any proposed changes to the existing permit. This permit shall not be modified without first obtaining the written permission from the Commissioner.

4. **COMMISSIONER'S AUTHORITY:**
(a) The Commissioner may inspect any installation utilized for the appropriation or use of water. The Permittee shall grant access to the site at all reasonable times and shall supply such information concerning such installation as the Commissioner may require.
(b) The Commissioner may, as he/she deems necessary, require the Permittee to install gages and/or observation wells to monitor the impact of the Permittee's appropriation on the water resource and require the Permittee to pay necessary costs of installation and maintenance.
(c) The Commissioner may restrict, suspend, amend, or cancel this permit in accordance with applicable laws and rules for any cause for the protection of public interests, or for violation of the provisions of this permit.

5. **PUBLIC RECORD:**
All data, facts, plans, maps, applications, annual water use reports, and any additional information submitted as part of this permit, and this permit itself are part of the public record and are available for public inspection at the offices of DNR Waters. The information contained therein may be used by the Division, as it deems necessary. The submission of false data, statements, reports, or any such additional information, at any time shall be deemed as just grounds for revocation of this permit.

6. **WETLAND CONSERVATION ACT:**
Where the work authorized by this permit involves the draining or filling of wetlands not subject to DNR regulations, the permittee shall not initiate any appropriation under this permit until the permittee has obtained official approval from the responsible governmental unit as required by the Minnesota Wetland Conservation Act.

7. **WELL SEALING:**
The permittee shall notify the Minnesota Department of Health prior to sealing, abandoning, removing, covering, plugging or filling the well(s) from which the authorized appropriation was made. The well(s) must be sealed by a licensed well driller and in accordance with the procedures required under Minnesota Statutes 103I and Minnesota Rules 4725 as administered by the Minnesota Department of Health.

8. **INTERFERENCE:**
If notified by the Department that well interference is suspected and probable from your appropriation, based on confirmation of a formal well interference complaint, all appropriation authorized by this permit must cease immediately until the interference is resolved. The permittee may be required to obtain domestic well information within a radius of one and one half miles of the production well should well interference problems develop.

9. **CONSERVATION:**
All practical and feasible water conservation methods and practices must be employed to promote sound water management and use the least amount of water necessary, such as reuse and recycling water, saving devices, and water storage.

10. **DISCHARGE EROSION AND SEDIMENTATION CONTROL:**
The Permitted shall ensure that discharge points are adequately protected from erosion and scour. The discharge shall be dispersed over sand bags, plastic sheeting, natural rock riprap, or other approved energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids larger than five microns in size

11. **SURFACE WATER SOURCES:**
All pumps intakes must be screened to prevent fish from being drawn into the system. The Division of Waters may require the suspension of appropriations during periods of low flows and low water levels in order to maintain minimum flows and water levels within the watershed.

c: City of Cottage Grove, Kim Lindquist
Washington County Soil and Water Conservation District, Mark Doneux
East Mississippi River Watershed District
DNR Conservation Officer, Joel Heyn
DNR Central Waters: Appropriation Permits and SWUDS
Region 6 Waters

ATTACHMENT 8
BARR ENGINEERING 2004, 2018, 2023
GROUNDWATER FLOW MODEL SIMULATIONS MEMORANDUMS

Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601 • www.barr.com *An EEO Employer*

Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO

Technical Memorandum

To: Bob Bieraugel, Asst. Vice President – Properties, Aggregate Industries

From: Ray W. Wuolo, PE, PG

Subject: Results of Groundwater Flow Model Simulations of Proposed Larson Quarry Expansion

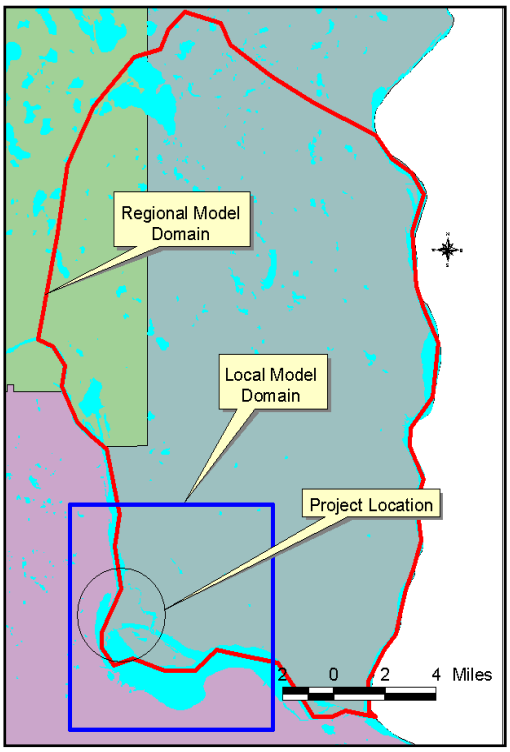
Date: November 29, 2004

Project: Aggregate Industries Larson Quarry

c: File

Introduction

As you directed, Barr Engineering Co. performed a groundwater flow modeling analysis of the proposed mine expansion at Aggregate Industries' Larson Limestone Quarry, Grey Cloud Island Township, Washington County, Minnesota. The purpose of this modeling was to provide supporting technical analyses for the EAW by predicting the effects of dewatering of future mine expansion, north of the existing mining operations. Quantitative predictions include: (1) drawdown of the water table resulting from future dewatering and (2) quarry dewatering rates.



Method of Analysis

A computer groundwater flow modeling approach was used in this analysis. An existing three-dimensional groundwater flow model of southern Washington County[1] (developed for the Washington County Dept. of Public Health & Environment) was used as a starting point. This model uses the U.S. Geological Survey's MODFLOW computer code to simulate regional groundwater flow in the following hydrostratigraphic units: Quaternary unconsolidated deposits; St. Peter Sandstone; Shakopee Formation; Oneota Dolomite; St. Lawrence Formation; Franconia

[1] Funding for this project was recommended by the Legislative Commission on Minnesota Resources from the Minnesota Environment and Natural Resources Trust Fund.

Formation; and Ironton-Galesville Sandstones. This model has undergone extensive calibration to water-level measurements from over 1,000 wells in Washington County, pumping tests performed in Woodbury, and stream baseflow measurements for Valley Creek.

Only a small portion of the Washington County groundwater model was used for this analysis. A local model was extracted from the regional model through the process of *telescoping mesh refinement* (TMR). The boundaries of the TMR model are set from the calibration solution of the regional model.

The hydrogeologic parameters that included horizontal hydraulic conductivity, vertical hydraulic conductivity, and recharge rate were arrived at through a process of automated inverse optimization for the regional model. Aquifer base elevations were interpolated from grid elevation data provided by the Minnesota Geological Survey.

Modifications were made to the local model after extraction from the regional model. These modifications included: substantial refinement of the finite-difference grid mesh in the Grey Cloud Island area; refinement of the constant head cells that simulate the Mississippi River and connecting waterways; and slight downward adjustments in hydraulic conductivity of the Shakopee Formation to provide a better calibration to five monitoring wells located near the quarry on Grey Cloud Island.

The existing Larson quarry features were not in the regional model. The south quarry area was simulated as a constant head feature with the elevation equal to 646 feet, MSL (estimated from the topographic map developed by Aggregate Industries). The north quarry was simulated as a drain feature, with the stage elevation equal to 636 feet, MSL (also estimated from the topographic data). The model's prediction of steady-state dewatering for current conditions is 1,980 million gallons per year (MGY). This compares very favorably with the range of reported pumping rates for the quarry for the past eight years, as listed in the MDNR's SWUDS database.

The two proposed future mining areas were simulated using drain features, with elevations set approximately 120 feet below ground surface, to simulate the combined 70-foot and 50-foot benches that are proposed. Only the final mining depths were simulated. Both future quarries were assumed to be open and dewatering at the same time. Two simulations were performed: (1) with future and current quarries operating and dewatered and (2) with future quarries operating and dewatered but existing quarry features reclaimed as lakes.

To: **Bob Bieraugel**
From: Ray Wuolo
Subject: Results of Groundwater Flow Model Simulations of Proposed Larson Quarry Expansion
Date: **November 29, 2004**
Project: **Aggregate Industries Larson Quarry**
c: **File**

Predicted Effects of Future Mining on Groundwater Conditions

1. Current and Future Quarries Dewatered Simultaneously

The predicted dewatering rate for the combined withdrawals from the current quarries and the proposed quarries is 4,015 MGY. Of this 4,015 MGY, 2,336 MGY is predicted to be the dewatering rate of the future quarries.

The predicted drawdown caused by dewatering of the future quarries and current quarries is shown on Figure 1. The predicted drawdowns at the five monitoring wells are:

Monitoring Well	Predicted Drawdown (feet)
MW-1	11.4
MW-2	5.8
MW-3	2.6
MW-4	2.7
MW-5	15.2

(Note: the monitoring wells are screened in the Oneota Dolomite, which experiences slightly less drawdown than the values shown on Figure 1 for the Shakopee Formation).

Drawdowns are confined to Upper Grey Cloud Island – Moore Lake, the Mississippi River, and Grey Cloud Slough are predicted to be effective hydrologic boundaries.

2. Future Conditions Only

If operations in the existing quarries cease and the quarries are reclaimed as lakes before the proposed future quarries reach final depth, the model predicts that total dewatering rates and drawdowns will be less. The total dewatering rate for the proposed future quarries under these conditions is predicted to be 2,580 MGY. The predicted drawdowns are shown on Figure 2 and the predicted drawdowns at the five monitoring wells are as follows:

Monitoring Well	Predicted Drawdown (feet)
MW-1	-1.7 (rebound)
MW-2	-8.1 (rebound)
MW-3	-5.8 (rebound)
MW-4	-0.7 (rebound)
MW-5	10.8

The negative values in the table indicate that water levels in these wells will rise above their current levels, primarily because dewatering in the current quarries would cease.

Summary

Drawdowns in the water table caused by dewatering of the proposed future quarries are predicted to be confined to the immediate vicinity of the quarries and within the boundaries of upper Grey Cloud Island. Dewatering rates are predicted to remain well within the current appropriation permit's limits (5,500 MGY).

We believe that the most up-to-date available information was used to perform this analysis and that the methodologies and assumptions used are within commonly used standards in this region and for this profession. Groundwater modeling is an approximation of actual conditions and there is inherent uncertainty in the predictions and results. Local or unexpected conditions may vary from those modeled. Caution should be exercised in using the results of this analysis.

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Date: **November 29, 2004**
Project: **Aggregate Industries Larson Quarry**
c: **File**

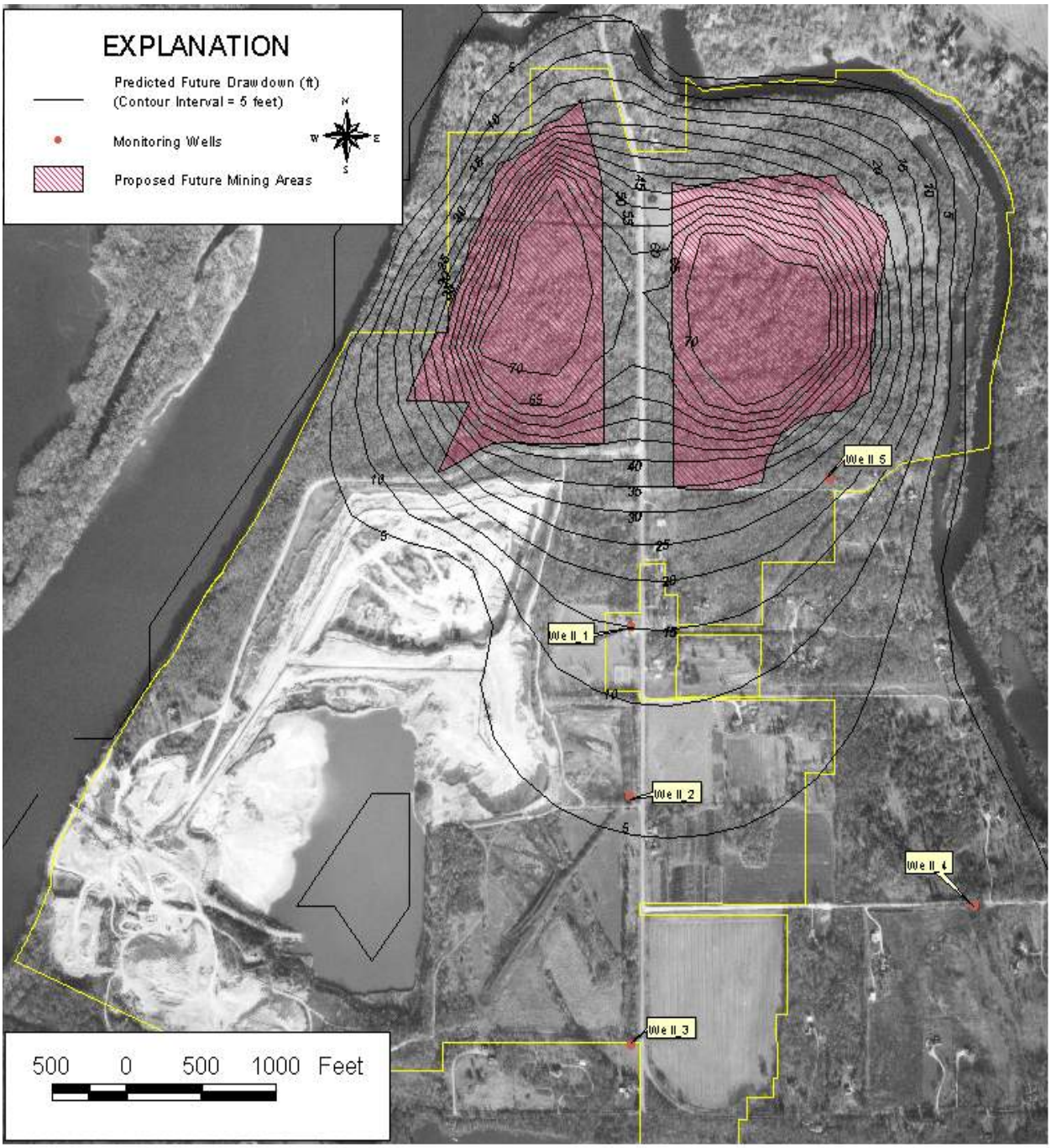

Figure 1

Model Prediction of Future Drawdown (feet) of Water Table
(with continued dewatering of existing quarries)

(contours are of *additional* drawdown predicted to result from dewatering of future quarries)

To: **Bob Bieraugel**
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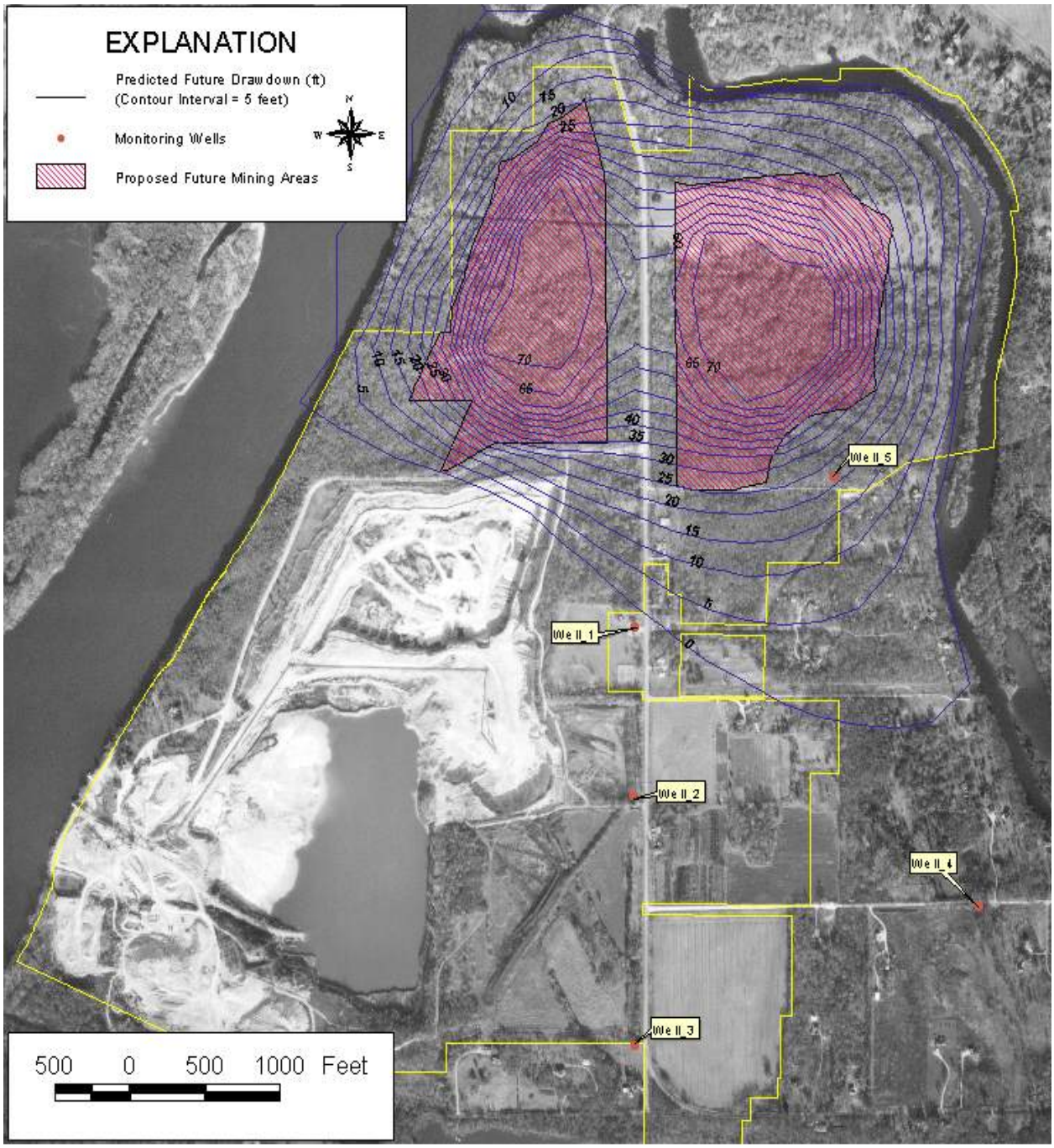

Figure 2

Model Prediction of Future Drawdown (feet) of Water Table
(with existing quarries reclaimed as lakes)

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engineering and environmental consultants

BARR

Technical Memorandum

To: Robert Bieraugel, Aggregate Industries
From: Evan Christianson, Ray Wuolo
Subject: Larson Quarry Expansion EAW
Date: June 8th, 2018
Project: 23/82-1193

1.0 Introduction

Aggregate Industries is proposing two changes to their current mining plan for the Larson Quarry in Grey Cloud Township, Minnesota: (1) a modest increase in the mining area for the northern part of the quarry and (2) changes to the loop road and traffic, allowing for the realignment of County Road 75 (Grey Cloud Island Drive), which currently bisects the proposed mine expansion area.

An Environmental Assessment Worksheet (EAW) is being developed by Aggregate Industries. The evaluation presented in this technical memorandum provides supporting technical analyses for the EAW by predicting the effects of dewatering the mine expansion. Quantitative predictions include: (1) drawdown of the water table resulting from future dewatering and (2) quarry dewatering rates. This analysis was conducted using a preexisting groundwater flow model of the quarry area developed in 2004 and previously used to evaluate the effects of the future quarry on the groundwater system (Barr Engineering, 2004; Attachment A). For this analysis the quarry footprint within the model was updated and the effects of dewatering were reevaluated.

2.0 Evaluation of Mine Pit Expansion on Groundwater

The groundwater model used for this analysis is documented in Attachment A (Barr, 2004). The mining extent of the northern portion of the quarry was updated in the model to reflect the current plan to realign County Road 75 and mine the area of the existing alignment (Figure 1). Previously, separate mine pits on the east and west of County Road 75 were planned; the updated model simulates a continuous pit across the existing County Road 75 alignment. Simulated mining depths remained consistent with the previous analysis (Barr, 2004), representing approximately 120 feet below ground surface.

Similar to the analysis conducted in 2004 two scenarios were evaluated: (1) with the northern expansion and the older southern pit area operating and dewatered, and (2) with the northern expansion operating and dewatered but the southern quarry area reclaimed as lakes.

Predicted drawdown of the water table for Scenario 1 (dewatering of both the southern pit area and northern expansion) is presented on Figure 2. Predicted drawdown of the water table for Scenario 2 (dewatering of only the northern expansion) is shown on Figure 3. Predicted drawdowns for each of the scenarios at the locations of five monitoring wells are presented in Table 1. Negative values presented in Table 1 indicate that the water levels in these wells will rise, primarily because dewatering of the southern pit area would cease for Scenario 2.

Table 1. Simulated water table drawdown

Monitoring Well	Simulate Drawdown Scenario 1 (ft)	Simulated Drawdown Scenario 2 (ft)
MW-1	15.6	-1.9 (rebound)
MW-2	6.2	-12.7 (rebound)
MW-3	1.4	-7.7 (rebound)
MW-4	1.5	-1.0 (rebound)
MW-5	24.2	21.4

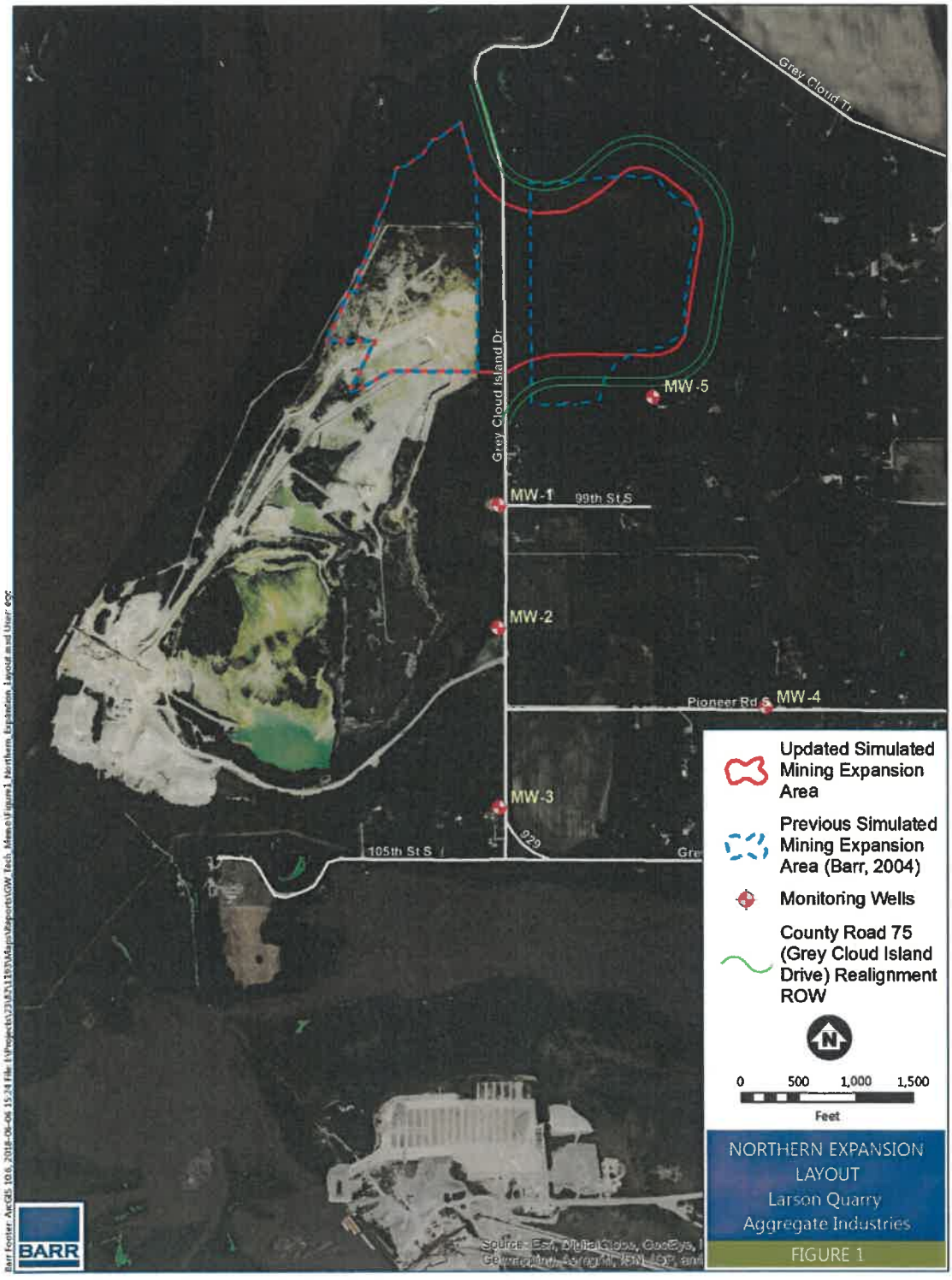
Scenario 1: All quarry pits dewatered
Scenario 2: Northern expansion area dewatered and southern quarry area reclaimed as lakes
Note: negative values indicate water levels rise, primarily because dewatering in the southern quarry area would cease.

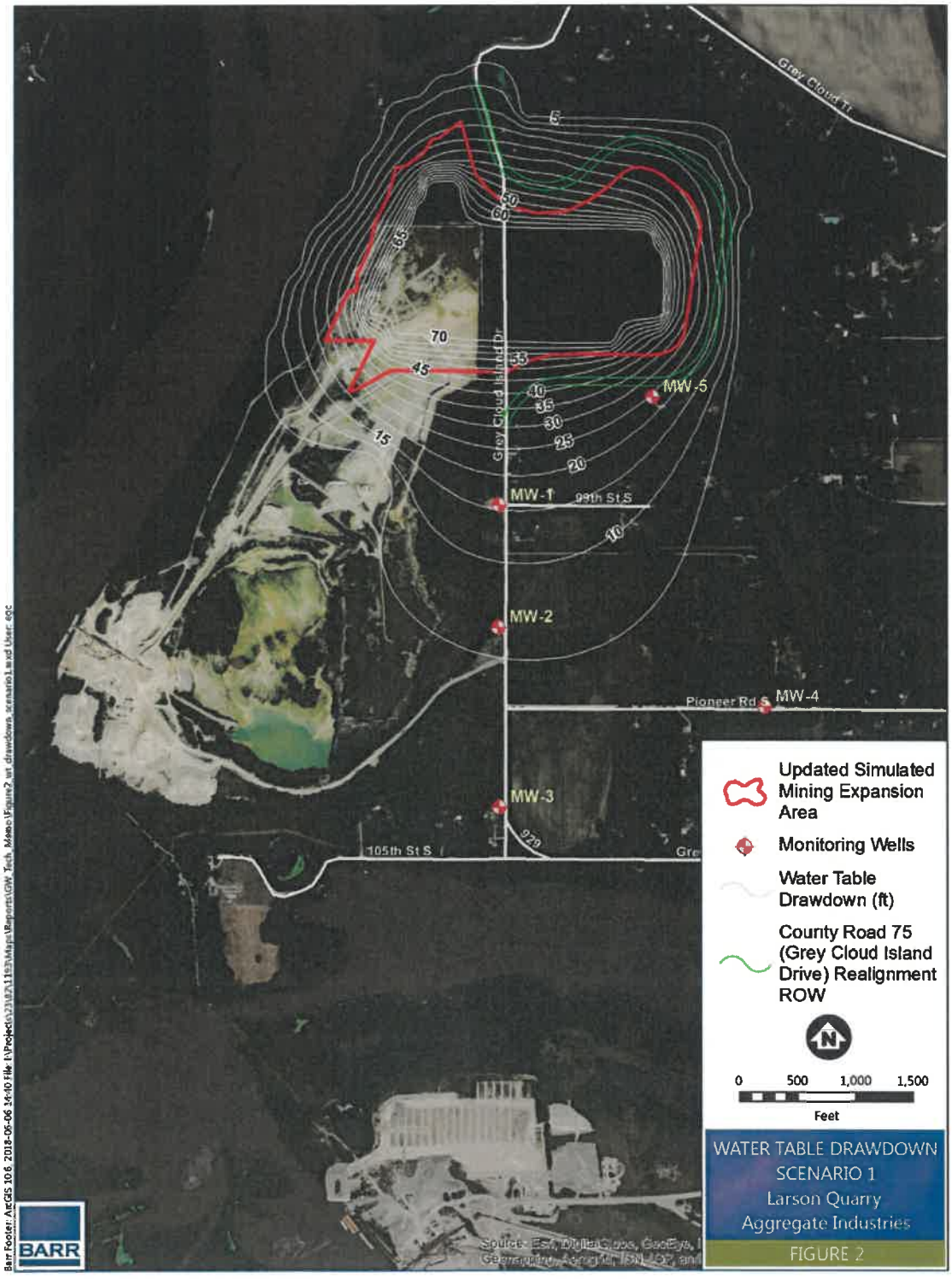
Dewatering rates for each of the scenarios are presented in Table 2. Dewatering rates for the combined southern pit area and the northern expansion are presented for Scenario 1. For Scenario 2, dewatering is only simulated for the north expansion so the total dewatering rate and dewatering rate for the north portion are equal, as shown in Table 2.

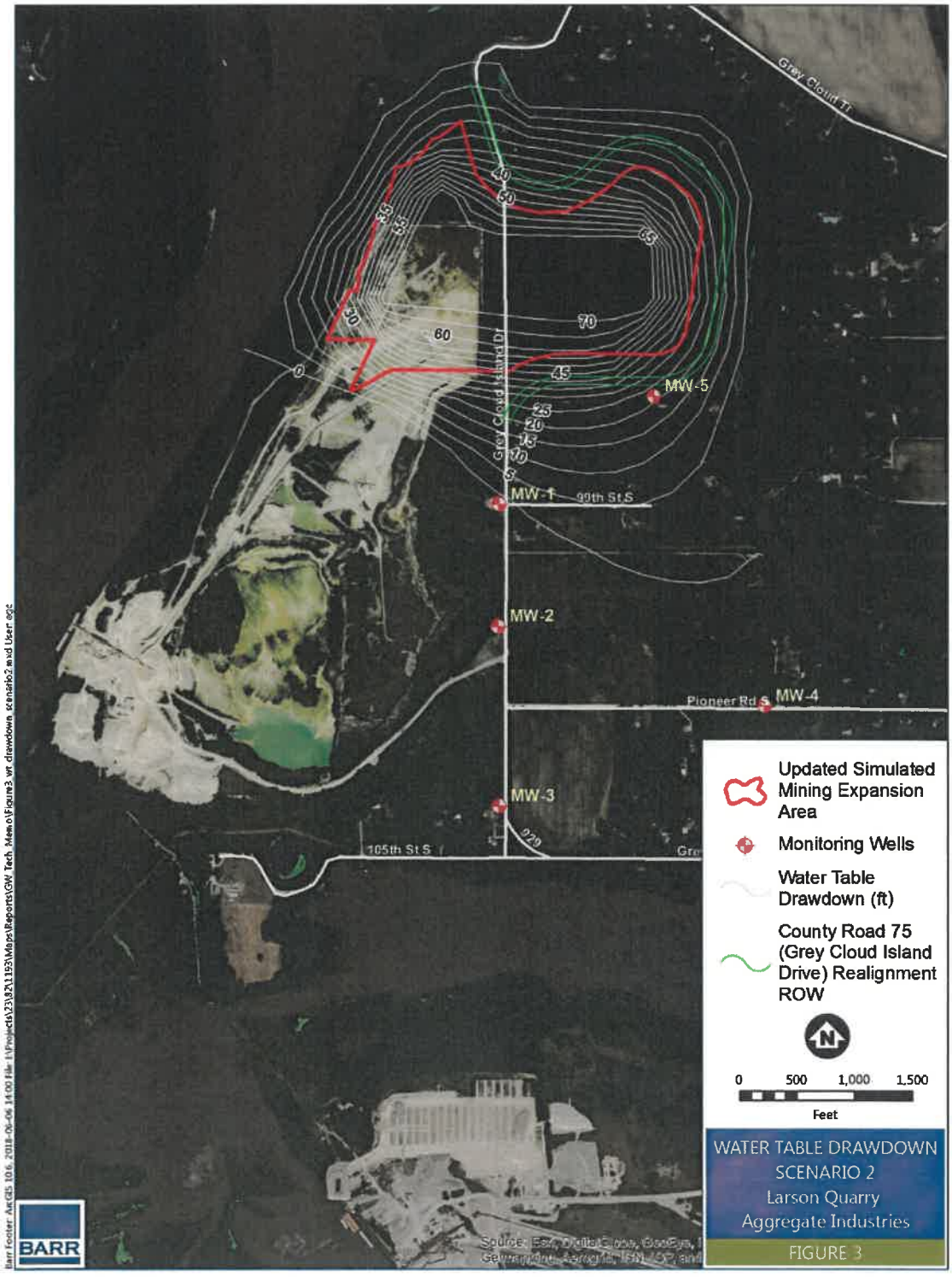
Table 2. Simulated dewatering rates

Scenario	Total Dewatering Rate (Million Gallons per Year)	Northern Portion Dewatering Rate (Million Gallons per year)
1	4028	2356
2	2607	2607

Drawdown at the water table caused by dewatering of the proposed future quarry is predicted to be confined to the immediate vicinity of the quarries and within the boundaries of upper Grey Cloud Island; Moore Lake, the Mississippi River, and Grey Cloud Slough are effective hydraulic boundaries. Dewatering rates are predicted to remain well within the current appropriation permit's limit of 5,500 million gallons per year.


Grey Cloud Tr
Grey Cloud Island Dr
MW-5
MW-1
99th St S
MW-2
Pioneer Rd S
MW-4
MW-3
105th St S
Updated Simulated Mining Expansion Area
Previous Simulated Mining Expansion Area (Barr, 2004)
Monitoring Wells
County Road 75 (Grey Cloud Island Drive) Realignment ROW
N
0 500 1,000 1,500
Feet
NORTHERN EXPANSION LAYOUT
Larson Quarry
Aggregate Industries
FIGURE 1
BARR


Grey Cloud Tr
5
50
60
65
70
45
55
40
35
30
25
20
15
10
Grey Cloud Island Dr
MW-5
MW-1
99th St S
MW-2
Pioneer Rd S
MW-4
MW-3
105th St S
Updated Simulated Mining Expansion Area
Monitoring Wells
Water Table Drawdown (ft)
County Road 75 (Grey Cloud Island Drive) Realignment ROW
N
0
500
1,000
1,500
Feet
WATER TABLE DRAWDOWN
SCENARIO 1
Larson Quarry
Aggregate Industries
FIGURE 2
BARR


Grey Cloud Tr
Grey Cloud Island Dr
99th St S
105th St S
Pioneer Rd S
MW-1
MW-2
MW-3
MW-4
MW-5
40
50
55
65
30
60
70
0
45
25
20
15
10
5
Updated Simulated Mining Expansion Area
Monitoring Wells
Water Table Drawdown (ft)
County Road 75 (Grey Cloud Island Drive) Realignment ROW
N
0
500
1,000
1,500
Feet
WATER TABLE DRAWDOWN
SCENARIO 2
Larson Quarry
Aggregate Industries
FIGURE 3
BARR

3.0 Certification

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the state of Minnesota

Name: Evan G. Christianson
Date: 6/2/2020 License. No: 51379

4.0 References

Barr Engineering, 2004. Technical Memorandum, Results of Groundwater Flow Model Simulations of Proposed Larson Quarry Expansion, November 29, 2004.

Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601 • www.barr.com *An EEO Employer*

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Technical Memorandum

To: Bob Bieraugel, Asst. Vice President – Properties, Aggregate Industries

From: Ray W. Wuolo, PE, PG

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c: File

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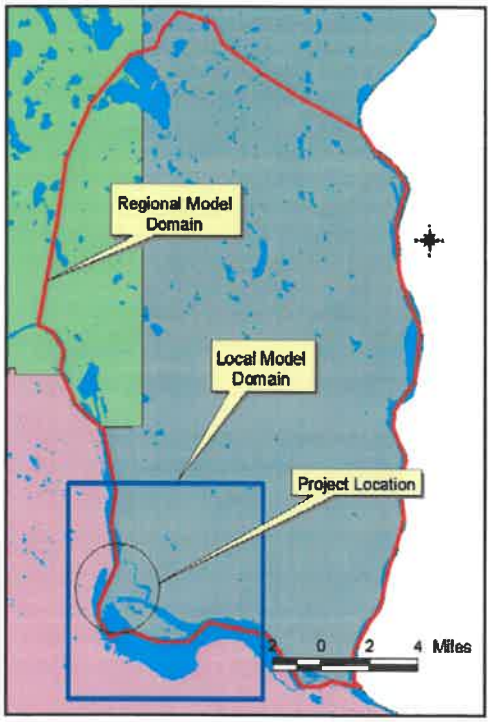

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[1] Funding for this project was recommended by the Legislative Commission on Minnesota Resources from the Minnesota Environment and Natural Resources Trust Fund.

Oneota Dolomite; St. Lawrence Formation; Franconia Formation; and Ironton-Galesville Sandstones. This model has undergone extensive calibration to water-level measurements from over 1,000 wells in Washington County, pumping tests performed in Woodbury, and stream baseflow measurements for Valley Creek.

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Subject: Results of Groundwater Flow Model Simulations of Proposed Larson Quarry Expansion
Date: **November 29, 2004**
Project: **Aggregate Industries Larson Quarry**
c: **File**

Predicted Effects of Future Mining on Groundwater Conditions

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(Note: the monitoring wells are screened in the Oneota Dolomite, which experiences slightly less drawdown than the values shown on Figure 1 for the Shakopee Formation).

Drawdowns are confined to Upper Grey Cloud Island – Moore Lake, the Mississippi River, and Grey Cloud Slough are predicted to be effective hydrologic boundaries.

2. Future Conditions Only

If operations in the existing quarries cease and the quarries are reclaimed as lakes before the proposed future quarries reach final depth, the model predicts that total dewatering rates and drawdowns will be less. The total dewatering rate for the proposed future quarries under these conditions is predicted to be 2,580 MGY. The predicted drawdowns are shown on Figure 2 and the predicted drawdowns at the five monitoring wells are as follows:

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MW-4	-0.7 (rebound)
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The negative values in the table indicate that water levels in these wells will rise above their current levels, primarily because dewatering in the current quarries would cease.

Summary

Drawdowns in the water table caused by dewatering of the proposed future quarries are predicted to be confined to the immediate vicinity of the quarries and within the boundaries of upper Grey Cloud Island. Dewatering rates are predicted to remain well within the current appropriation permit's limits (5,500 MGY).

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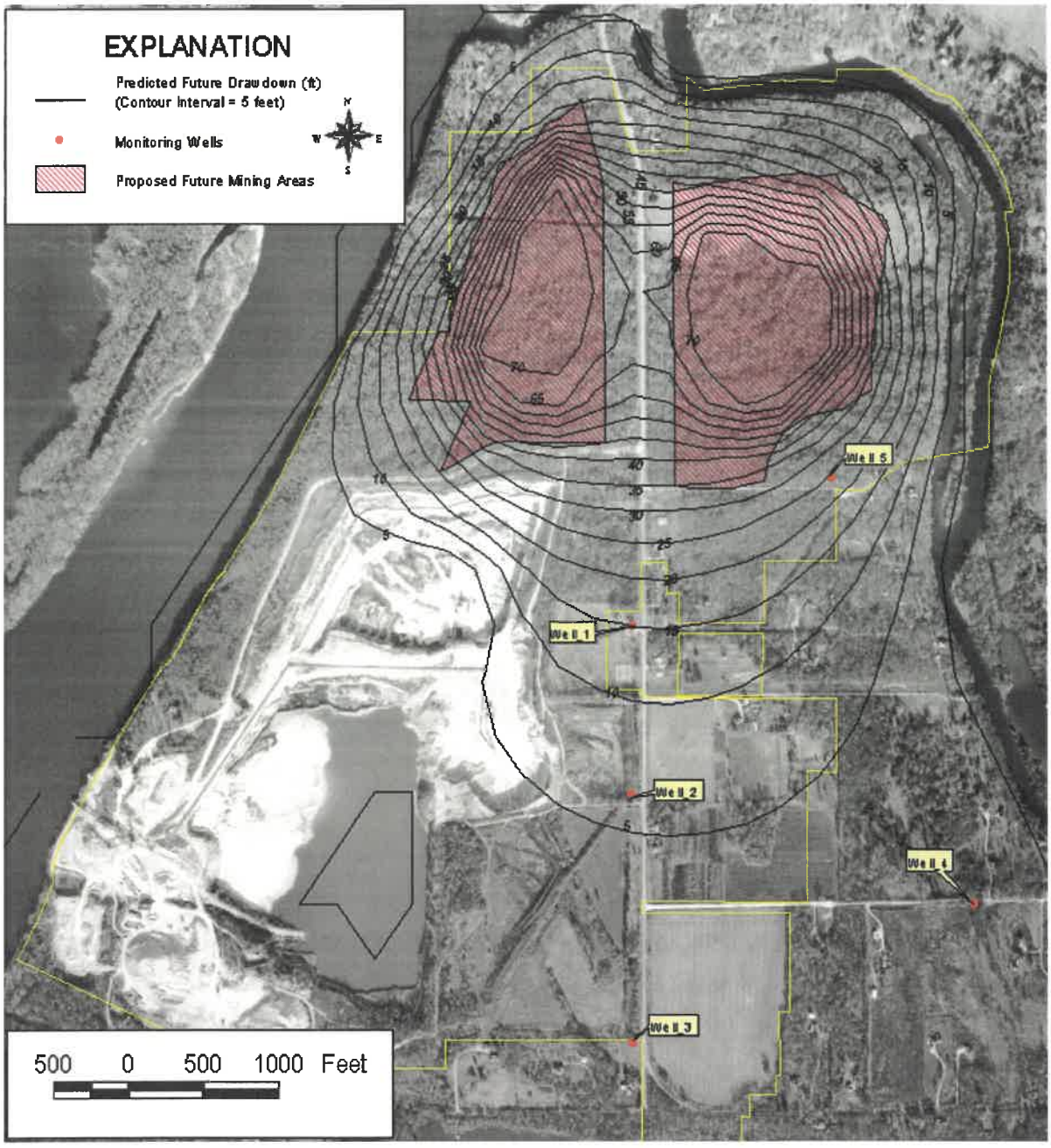

Figure 1

Model Prediction of Future Drawdown (feet) of Water Table
(with continued dewatering of existing quarries)

(contours are of *additional* drawdown predicted to result from dewatering of future quarries)

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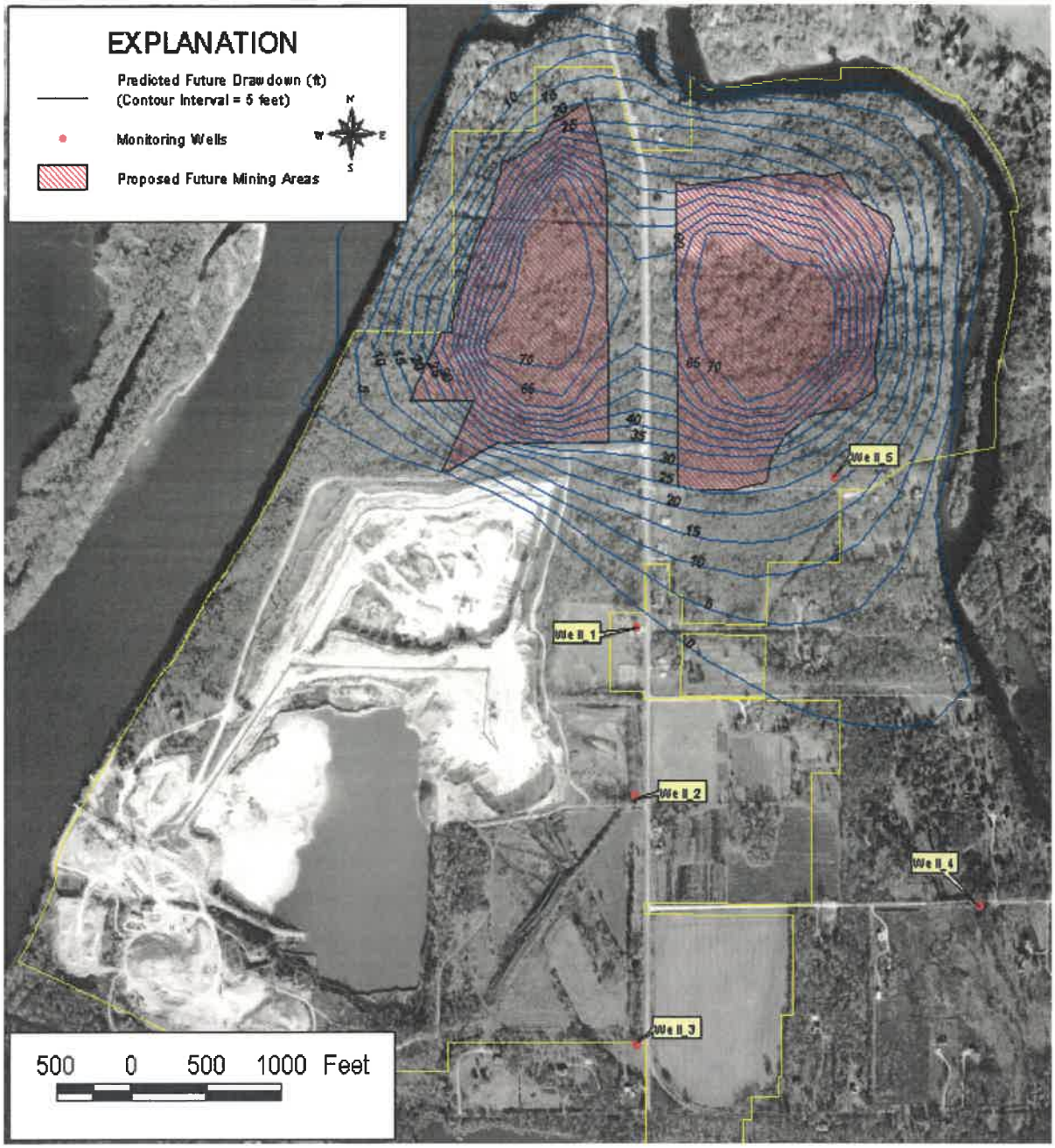

Figure 2

Model Prediction of Future Drawdown (feet) of Water Table
(with existing quarries reclaimed as lakes)

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Memorandum

To: Kirsten Pauly, Sunde Engineering
From: Ray Wuolo, Barr Engineering Co.
Subject: Responses to Groundwater Comments to Larson Quarry EAW
Date: June 8, 2023
Project: Click or tap here to enter text.

Dear Ms. Pauly:

At your request, we have reviewed and prepared responses for the two comments concerning groundwater in the March 14, 2023 EAW Completeness Memorandum for the proposed extension of the Larson Quarry prepared by Short Elliott Hendrickson Inc. (SEH) for Washington County Public Works.

Comment 1 (Page 6 of SEH memorandum): The EAW states that "The proposed Project will have no impact to surface waters." Followed later in the document by "……dewatering of the quarry may cause induced seepage from the Grey Cloud Channel" seems like conflicting information. Induced seepage is likely a groundwater impact that should be described.

Groundwater entering the quarry as seepage is from three sources: seepage from the main Mississippi River Channel, seepage from the Grey Cloud Channel, and regional groundwater flow in the bedrock (primarily the Prairie du Chien-Jordan aquifer). Regional groundwater flow in the bedrock is east-to-west and regional groundwater discharge from the bedrock is the Mississippi River. The predictive simulations of groundwater flow for the proposed Project indicate that the proposed expansion will result in 43.5 gallons per minute (gpm) (approximately 0.1 cubic feet per second) of additional seepage from Grey Cloud Channel. The 43.5 gpm additional seepage from Grey Cloud Channel is approximately 0.1% of the total groundwater seepage into the Larson Quarry. Because Grey Cloud Channel is hydrologically connected to the main Mississippi River channel, the induced seepage of 43.5 gpm will have no *measurable* impact on the hydrology of Grey Cloud Channel, either in terms of water stage or flow. In practical terms, the additional induced seepage from Grey Cloud Channel from the project is so small compared to natural fluctuations in hydrologic condition and stage controls at dams, that it would be impossible to measure with current instrumentation. Furthermore, pump discharge return to the surface-water system (a component of the quarry-hydrology water balance) was purposefully not included in the model in order for the model results to represent a worst-case condition.

Comment 2 (Page 11 of SHE memorandum): The comment on the dewatering producing a cone of depression 12 feet deep and 700 feet from the quarry face is a detail that should be discussed in the groundwater section, as that is a potential impact detail that requires elaboration.

Figures 2 and 3 of the Barr 2018 groundwater modeling memorandum (an attachment to the EAW) show the predicted drawdown of the water table resulting from quarry dewatering for the proposed Project. As stated on Page 2 of the Barr 2018 memorandum, "drawdown (i.e. the "cone of depression) at the water table caused by dewatering of the proposed future quarry is predicted to be confined to the immediate vicinity of the quarries and within the boundaries of upper Grey Cloud Island; Moore Lake, the Mississippi River, and Grey Cloud Slough are effective hydraulic boundaries." Predicted changes to water levels measured in monitoring wells near the Larson Quarry are listed in Table 2 of the Barr 2018 memorandum and range from 1.4 (MW-3, approximately 4,000 feet south of the mining area) to 24.2 feet (MW-5, approximately 250 feet from the quarry face). All of the domestic water-supply wells listed in the Minnesota Well Index for the areas of Grey Cloud Island that are predicted to be in the area affected by pumping in the Quarry are at least 175 feet deep, completed in the Jordan Sandstone, and have over 100 feet of available drawdown. Test pumping of these wells at the time of construction indicates that aquifer transmissivity is high and test pumping at sustained rates of 15-20 gpm (on the high end for domestic well pumping) resulted in little measurable drop in water level in the well during pumping. Therefore, it is unlikely that the water-table drawdown that will result from quarry dewatering will cause adverse impacts to existing wells. In the unlikely event that future quarry dewatering results in a drop in the water level in a well to the point of cavitation ("sucking air"), sections of drop pipe can be added to the pump as a remedy.

WENCK File #1461-59
August 2019

Spill Prevention, Control, and Countermeasure Plan

AGGREGATE INDUSTRIES
Larson Facility
10120 Grey Cloud Island Dr.
St. Paul Park, MN 55071

Prepared for:
Aggregate Industries
2815 Dodd Road
Suite 101
Eagan, MN 55121

WENCK
Responsive partner.
Exceptional outcomes.

Prepared by:

WENCK Associates, Inc.
1802 Wooddale Drive
Woodbury, MN 55125
Phone: 651-294-4580
Fax: 651-228-1969

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TABLES

FIGURES

APPENDICES

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USEPA SPCC REQUIREMENTS

Section in 40 CFR 112	EPA SPCC Requirements	Section / Page in this SPCC Plan
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3(e)	Distribution of plan and availability	Section 2 / Page 2-1
Amendment of Spill Prevention, Control and Countermeasure Plan by Regional Administrator		
4(a)	Facility discharges submit information to the Regional Administrator	Section 2 / Page 2-1
Amendment of Spill Prevention, Control and Countermeasure Plan by owners or operators		
5(a)	Amending the SPCC Plan	Section 1 / Page 1-3
5(b)	Review and evaluation of SPCC	Section 1 / Page 1-3
5(c)	Professional Engineer certification of technical amendment	Section 1 / Page 1-3
General Requirements for Spill Prevention, Control and Countermeasure Plans		
7(a)	Management Commitment Oil Spill Control Plan	Section 1 / Page 1-1 Section 6 / Page 6-1
7(a)(3)	The physical layout of the facility ▲ Diagrams ▲ Countermeasures for discharge discovery and response ▲ Methods for disposal of recovered materials ▲ Contact list and phone numbers	SPCC Fact Sheet Section 3 / Page 3-1 Section 6 / Page 6-1 Figures 1 and 2 Appendices C & E
7(b)	Plan a prediction of the direction, rate of flow and total quantity of oil which could be discharged from the facility as a result of major equipment failure	Section 4 / Page 4-2
7(c)	Provide appropriate containment and/or diversionary structures or equipment to prevent a discharge	Section 4 / Page 4-4
7(d)	Impracticability Determination	Section 2 / Page 2-1
7(e)	Inspections, tests and records	Section 5 / Page 5-5
7(f)	Personnel, training and discharge prevention procedures	Section 5 / Page 5-7
7(g)	Security (excluding oil production facilities)	Section 5 / Page 5-6
7(h)	Tank truck loading / unloading	Section 5 / Page 5-3
7(j)	State Regulations	Section 2 / Page 2-2
Requirements for onshore facilities (petroleum oils)		
8(b)	Facility drainage	Section 4 / Page 4-5
8(c)	Bulk storage containers	Section 4 / Page 4-1
8(d)	Facility transfer operations, pumping and facility process	Section 5 / Page 5-1

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Applicability:

The United States Environmental Protection Agency (USEPA) requires owners of facilities to develop and implement a Spill Prevention, Control and Countermeasure (SPCC) Plan if the capacity of any aboveground storage tank (AST) or the total aboveground aggregate storage capacity is 1,320 gallons.

This SPCC Plan is required because the facility stores oil products in quantities greater than 1,320 gallons. Table FS-1 further evaluates whether the facility qualifies as a Tier I facility according to 40 CFR 112.

Table FS-1: Planning Level Eligibility Determination

Tier I Criteria Qualify for SPCC Template (Appendix G of SPCC Rule) and self-certification if facility can answer no to all questions below:	
▲ Is there >10,000 gallons in aggregate aboveground oil storage capacity	Yes
▲ Is the maximum individual aboveground oil storage container >5,000 gallons	Yes
▲ Determine secondary containment to be impracticable	No
▲ Use environmentally equivalent measures	Yes
▲ There have been discharges to navigable waters in the past 3 years (single discharge >1,000 gal. or two discharges >42 gal. in same year)	No
Aggregate Industries' Larson facility does not qualify as a Tier I facility.	
Aggregate Industries' Larson facility will prepare a PE-certified Plan in accordance with all applicable requirements of 112.7.	

Total Facility Oil Storage Capacity:

- ▲ Bulk storage containers: Approximately 12,800 gallons
- ▲ Oil containing equipment: Approximately 3,062 gallons

SPCC Plan Fact Sheets
Aggregate Industries - Larson Facility

The individual tanks are included in Table FS-2 below. Tank locations are shown on Figure 2.

Table FS-2: Oil Related Materials (Regulated Under SPCC Rule)

BULK STORAGE TANKS					
Description	**Capacity (Gallons)**	**Location**	**Material**	**Secondary Containment**	**Control, Notes, Other**
Off-Road Diesel Tank # 10791	10,000	Outside: South Side of Maintenance Shop	Steel Derson, Mfg. Horizontal Tank	Double wall AST (Also within concrete containment)	• Visual level gauge w/ audible alarm • Interstitial space monitor • Spill box attached to fill port • Double-wall steel above ground piping leads to fueling island • Tank on a concrete slab and protected by concrete walls • Protected aboveground galvanized 2" piping, 20' run to pump
Gasoline Tank # 10792	525	Outside: South Side of Maintenance Shop (adjacent to Diesel Tank)	Steel Derson, Mfg.	Double wall AST within concrete containment	• Visual sight gauge • Interstitial space gauge • Tank mounted pump with manually controlled nozzle and a flexible hose • Spill box attached to fill port • Tank on a concrete slab and protected by concrete walls • Manual pump top mounted with flex hose
Used Oil Tank # 10037	500	Outside: Maintenance Shop	Steel	Double wall AST	• Manual level checks • Enclosed drainage pan (No pumps/piping) • Tank located on concrete pad with canopy

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BULK STORAGE TANKS					
Description	**Capacity (Gallons)**	**Location**	**Material**	**Secondary Containment**	**Control, Notes, Other**
Hydraulic Oil Tank # 10793	280	Inside: Maintenance Shop	Steel Derson, Mfg.	Double wall AST	• Visual level gauge • Interstitial space monitor • Spill box at fill port • Air driven pump and nozzle attached to tank
Motor Oil Tank # 10794	280	Inside: Maintenance Shop	Steel Derson, Mfg.	Double wall AST	• Visual level gauge • Interstitial space monitor • Spill box at fill port • Air driven pump and nozzle attached to tank
Grease Drum	1 - 55-gal. drum	Inside: Maintenance Shop	Steel	Building Concrete Floor	• Manual pump
Lube Oil, Gear Oil, Hydraulic Oil, Transmission Fluid	660 (12 – 55-gallon drums)	Inside: Enclosed Drum Shed	Steel	Spill Pallets	• Manual pump to handheld containers
PORTABLE TANKS					
Off Road Diesel - Portable Tank 10863	500	Adjacent to Shop	Steel	Spill response equipment/ facility containment	• Visual level gauge • Manually controlled nozzle with a flexible hose • No secondary containment • Only fill to use and store empty • Active response and spill kit

Total Bulk Oil Storage: 12,800 Gallons

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OIL FILLED OPERATING EQUIPMENT					
Description	**Capacity (Gallons)**	**Location**	**Material**	**Secondary Containment**	**Control, Notes, Other**
LocoTrack - Hydraulic oil	80 (approx.)	Outside: Rock Wall Inside Quarry	Steel	Spill response equipment/ facility containment	---
Omnicone Crusher - Hydraulic oil	80 (approx.)	Outside: Aggregate Plant	Steel	Spill response equipment/ facility containment	---
Hydraulic Shovel	357	Mine Face	Steel	Spill response equipment/ facility containment	---
Transformer 1 1 x 5000 KVA	813	Outside: AVC Spread	Steel	Site containment	• Protected by fencing • Sits on concrete pad
Transformer 2 1 x 25 KVA	30 (approx.)	Outside: AVC Spread	Steel	Site containment	• Pole mounted
Transformer 3 3 x 25 KVA	90 (3 @ 30 gallons each)	Outside: Near Scale and Shop	Steel	Site containment	• Pole mounted
Transformer 4 3 x 167 KVA	240 (3 @ 80 gallons each)	Outside: Near Aggregate Plant	Steel	Site containment	---
Transformer 5 3 x 167 KVA	180 (3 @ 60 gallons each)	Outside: West of Sedimentation Basin	Steel	Site containment	• Protected by fencing • Sits on concrete pad
Transformer 6 3 x 167 KVA	180 (3 @ 60 gallons each)	Outside: Near Conveyer on North West Side of Sediment Basin	Steel	Site containment	• Pole mounted
Transformer 7 1 x 1500 KVA	482	Outside: Near Crusher	Steel	Site containment	• Protected by fence
Transformer 8 3 x 167 KVA	180 (3 @ 60 gallons each)	Inside: Active Mine Area (In White Housing)	Steel	Site containment	• Sits on concrete floor
Transformer 9 1 x 750 KVA	350 (approx.)	Outside: Near Rip Rap Area	Steel	Site containment	---

Total Filled Operating Equipment: 3,062 Gallons

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Aggregate Industries - Larson Facility

Table FS-3 summarizes additional information about the SPCC Plan.

Table FS-3: SPCC Plan Inspection, Procedure, and Response Information

Plan Location:	Quarry Manager's Office
SPCC Plan Review:	Annually for accuracy and completeness by the plant
	Every 5 years for re-certification (Professional Engineer)
	Within 6 months of major facility changes (changes affecting potential for oil spill/release at facility)
Inspections:	**Weekly:** Per MPCA AST Rules, weekly visual inspections are required of regulated ASTs. However, Aggregate Industries does not operate with any tanks that require weekly inspections as the 10,000-gallon tank is double-walled and is exempt from weekly inspections. Thus, weekly inspections are not required for this Facility.
	Monthly: All tanks, equipment, containment area, and transfer area inspections completed by plant engineer or designee. (document in inspection log – Appendix A)
	Annual: Equipment used for release detection (gauges, alarms, etc.) will be checked annually or in accordance with manufacturers guidance.
	Internal / External Tank Integrity Test: See Schedule in Table 5-2
Training:	**Annually** for every individual that handles oil products (document)
Transfer Operations: (also see Appendix B)	A company representative and tank truck operator must be present during all loading and unloading operations
	1. Check the level in the storage tank to ensure that it can take the entire delivery. 2. Delivering truck driver is responsible for the cleanup of any spill that he/she causes. 3. Identify the receiving line hookup. 4. Check that all lines and valves to the storage tank are open. 5. Connect the unloading hose to the receiving line. 6. Check that the truck unloading hose is securely attached to the correct line. 7. Clear unloading line. 8. Drain any hose connection drippings into container provided or containment area.

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Table FS-3: SPCC Plan Inspection, Procedure, and Response Information

Security:	No fencing exists around the facility; however, access during non-operating hours is prevented by locking gates on entrance roads. In addition the site is bordered on the west side by water, and wooded areas on the north and south. The locations of the tanks are such that they are not visible from any publicly traveled roadway. Figure 2 shows access would be limited by topography and trees. All masterflow valves and drain valves for containers at this site are either: located on top of the tank to prevent direct outward flow or are flanged closed.	
Emergency Contact List:	Primary Spill Coordinator – • Ms. Cassie Johnson Larson Plant Manager	O: (651) 459-0607 C: (612) 297-2829
	Secondary Spill Coordinator – • Tom Burrows Area Manager	O: n/a C: (612) 282-8609
	Police/Fire/Medical	911
	MN State Duty Officer	800-422-0798
	National Response Center	800-424-8802
Location of Spill Materials	Locations are shown on Figure 2	
Clean-up and Disposal:	Once a spill is contained and if conditions warrant, equipment will be used to remove the pooled product. Sorbents will be containerized and disposed of properly. Contaminated soils/debris will be managed in a manner that complies with MPCA requirements for disposal of soils from petroleum spills (landfarm, incineration, etc.). The Spill Coordinator will define the actual cleanup responsibilities once the spill is contained and its magnitude determined.	
Spill Report Form:	Document the spill/release and response activities on the Spill Report Form.	
Reportable Quantities	Oil	State: Report spills/releases of any quantity that reaches, or has the potential to reach, any natural surface water or the environment (air, soil, storm drain). This includes any spill of five gallons or more of oil. Immediately notify the State Duty Officer.
		Federal: Report spills/releases of any quantity that reaches, or has the potential to reach, any natural surface water or the environment (air, soil, storm drain) to the National Response Center.

SPCC Plan Fact Sheets
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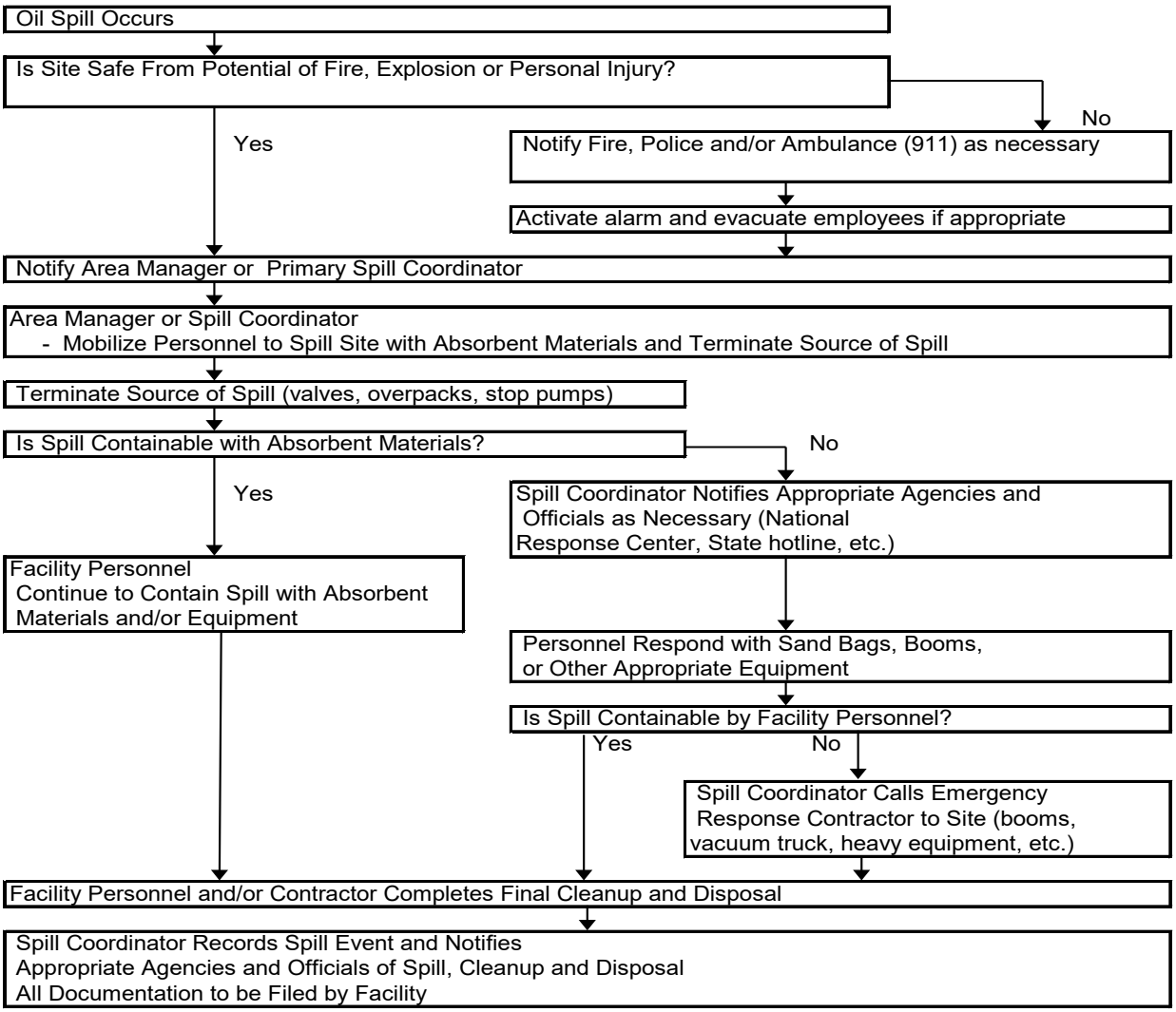
Spill Response Flow Chart



1.0 Certification

1.1 PROFESSIONAL ENGINEER'S CERTIFICATION

40 CFR 112.3(d)

I attest that I am familiar with the requirements of the SPCC Rule; I or my designated agent have visited and examined the facility; the Plan has been prepared in accordance with good engineering practices, including consideration of applicable industry standards and with the requirements of the SPCC Rule; procedures for required inspections and testing have been established and the Plan is adequate for the facility.

Signature: Denise Kazmierczak 8/20/19
Name: Denise Kazmierczak Date
Registration: Minnesota Professional Engineer Registration #26594

1.2 SPCC MANAGEMENT APPROVAL

40 CFR 112.7(a)

This SPCC Plan is fully approved by the management of Aggregate Industries and the necessary resources have been committed to implement the plan as described.

Signature: Randall Gaworski 8/21/19
Name: Randy Gaworski, Region Head Date
Aggregate Industries – MWR, Inc.

1.3 CERTIFICATION OF SUBSTANTIAL HARM

40 CFR 120

The Oil Pollution Act of 1990 requires additional information and submission of the SPCC Plan to the USEPA Region 5 Regional Administrator if the facility could reasonably be expected to cause "substantial harm" to the environment by discharging oil into navigable water. Aggregate Industries does not pose "substantial harm" and therefore is not subject to this part of the Rule.

Facility Name: Aggregate Industries – Larson Facility
Facility Address: 10120 Grey Cloud Island Drive, St. Paul Park, MN 55071

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?
   Yes _____ No ___X___

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?
   Yes _____ No ___X___

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula[1]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this part, Section 10, for availability) and the applicable Area Contingency Plan.
   Yes _____ No ___X___

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula[1]) such that a discharge from the facility would shut down a public drinking water intake[2]?
   Yes _____ No ___X___

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?
   Yes _____ No ___X___

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature

Region Head
Title

Randy Gaworski
Name (please type or print)

8/21/19
Date

[1] If a comparable formula is used documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.
[2] For the purposes of 40 CFR Part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

1.4 SPCC PLAN REVIEW AND RECERTIFICATION

40 CFR 112.5

The SPCC Plan shall be amended, within six months, whenever a change in the facility's design, construction, operation, or maintenance materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. The plan must be reviewed at least once every five years, and amended to include more effective prevention and control technology, if: (1) such technology will significantly reduce the likelihood of a spill event from the facility, and (2) if such technology has been proven in the field. The Plan and technical amendments to the Plan must be certified or re-certified by a registered professional engineer (P.E.).

Examples of changes that may require amendment of the Plan and certification include but are not limited to:

- commissioning or decommissioning bulk storage containers;
- replacement, reconstruction or movement of bulk storage containers;
- replacement or installation of piping systems;
- altering secondary containment structures; or
- modification of tank inspection guidelines.

Non-technical changes not requiring the exercise of good engineering practice do not require P.E. certification. Such non-technical changes include but are not limited to:

- changes to the contact list;
- modifications to transfer procedures;
- requirements for storm water discharges; or
- changes associated with location and handling of 55-gallon drums.

The table provided below is to be completed following each evaluation, and/or amendment.

Table 1-1 SPCC Plan Review and Recertification

Review Date	Review Comments/ Amendments	Reviewer Signature	AGGREGATE INDUSTRIES Reviewer	PE Certification Required
	Great Plains Env. Original Plan – Larry Sibik, P.E.		Kate Burek	(Y) / N
Oct. 2008	Wenck Associates, Inc. SPCC Plan Update		Kate Burek	(Y) / N
July 2014	Wenck Associates, Inc. 5-Year Update		Ken Coats	(Y) / N
August 2019	Wenck Associates, Inc. 5-Year Update	I have completed review and evaluation of the SPCC Plan for the Larson site of Aggregate Industries on the date listed. Patty Bestler	Patty Bestler	(Y) / N

2.0 Introduction

The United States Environmental Protection Agency (USEPA) requires owners of non-transportation-related oil and petroleum products facilities to develop and implement a Spill Prevention, Control and Countermeasure (SPCC) Plan. SPCC Plans must be prepared and implemented if: the capacity of any aboveground storage tank (AST) or the total aboveground aggregate storage capacity is 1,320 gallons or more; and, due to its location, the facility could potentially allow discharge of oil into or upon the navigable waters of the United States.

This SPCC Plan is required of Aggregate Industries' Larson Facility because petroleum products stored at the facility exceed the above referenced threshold. The purpose of the SPCC Plan is to prevent the occurrence of oil spills by the use of sound engineering and management controls; and prevent discharge of oil into or upon navigable waters of the United States or adjoining shorelines (including discharge of oil via groundwater). In the event a discharge occurs, the Plan identifies control and countermeasures. This SPCC Plan has been prepared in general accordance with Title 40, Code of Federal Regulations (CFR), Part 112.

2.1 IMPRACTICABILITY DETERMINATION

40 CFR 112.7(d)

There is no determination of impracticability. Facility management has determined, in accordance with 40 CFR 112.7(d), that use of the containment and diversionary structures or readily available equipment to prevent discharged oil from reaching navigable waters is practical and effective at this facility.

2.2 SPCC PLAN AVAILABILITY

40 CFR 112.3(e)

A complete copy of this SPCC Plan will be available in the Plant Manager's Office and the main files in the Eagan Main Office (2815 Dodd Road, Suite 101). The Plan will be available for on-site review by the USEPA or Minnesota Pollution Control Agency (MPCA) representatives during normal working hours.

2.3 SPCC PLAN SUBMITTAL AND SPILL REPORTING

40 CFR 112.4

This SPCC Plan must be submitted to the USEPA Region 5 Regional Administrator within 60 days, along with the other information specified in §112.4 and a written report containing the items shown below, **if** either of the following occurs:

- The facility discharges more than 1,000 gallons of oil in a single discharge into or upon the navigable waters of the United States or adjoining shorelines in a single event; and/or
- The facility discharges more than 42 gallons (one barrel) of oil in each of two discharges into or upon the navigable waters of the United States or adjoining shorelines within any 12-month period.

The written report is to contain the following information:

- Name of the facility;
- Name(s) of the owner or operator of the facility;
- Location of the facility;
- Date and year of initial facility operation;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- Description of the facility, including maps, flow diagrams, topographical maps, and other maps;
- A complete copy of the SPCC Plan with any amendments;
- The cause(s) of spill(s), including a failure analysis of the system or subsystem in which the failure occurred;
- The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements;
- Additional preventive measures taken or contemplated to minimize the possibility of recurrence;
- Such other information as the Regional Administrator may reasonably require pertinent to the plan or spill event.

2.4 STATE REGULATION REGARDING SPILL PREVENTION & CONTAINMENT

40 CFR 112.7(j)

Any spill or discharge of waste that may cause pollution to waters of the state must be reported immediately. The owner, operator, or person responsible for a spill or discharge must notify the State Duty Officer as soon as possible (800-422-0798) and provide all relevant information about the spill. Depending on the severity of the spill or accidental discharge, the department may require the owner or operator to:

- Take immediate remedial measures;
- Determine the extent of pollution to waters of the state;
- Provide alternate water sources to water users impacted by the spill or accidental discharge; or
- Any other actions necessary to protect human health and the environment.

Minnesota Statute 115.061

It is the duty of every person to notify the agency immediately of the discharge, accidental or otherwise, of any substance or material under its control which, if not recovered, may cause pollution of waters of the state, and the responsible person shall recover as rapidly and as thoroughly as possible such substance or material and take immediately such other action as may be reasonably possible to minimize or abate pollution of waters of the state caused thereby. Notification is not required for a discharge of five gallons or less of petroleum.

3.0 Facility Information

40 CFR 112.7(a)(3)

3.1 FACILITY NAME: Aggregate Industries – Larson Facility

3.2 MAILING ADDRESS/LOCATION: 10120 Grey Cloud Island Drive
St. Paul Park, MN 55071
(See Figure 1)

3.3 OWNER NAME/ADDRESS: Aggregate Industries
2815 Dodd Road, Suite 101
Eagan, MN 55121

3.4 CONTACT PERSON: Ms. Cassie Johnson – Larson Plant Manager
Primary Spill Coordinator
O: (651) 459-0607
C: (612) 297-2829

3.5 KEY PERSONNEL: Tom Burrows – Area Manager
Secondary Spill Coordinator
O: n/a
C: (612) 282-8609

3.6 LOCATION

Aggregate Industries' Larson Facility is located at 10120 Grey Cloud Island Dr., in the city St. Paul Park, MN, in Washington County, Minnesota. The site is bordered to the north, east and south by a mix of undeveloped woodlands, agricultural property, and a few residences. The west side of the site is bordered by the Mississippi River (see Figure 1). Figure 1 contains a Site Location Map. Figure 2 shows a Site Detail Map indicating property boundaries and oil storage areas.

3.7 FACILITY DESCRIPTION

The primary industrial activity at the Aggregate Industries' Larson Facility is the quarrying of limestone and subsequent processing to produce crushed rock, aggregate, and ag lime. The facility mines approximately 1.1 million tons of aggregate material per year. The material is transported by conveyor to the plant for crushing, screening, classification, and washing. Aggregate materials are then loaded by conveyor onto barges and trucks and transported to end users. The majority of site operations are typically carried out during non-frozen conditions. Administrative activities take place in an on-site office building. Site detail is shown on Figure 2.

3.8 TOTAL OIL STORAGE

The total oil storage available at this site is approximately **15,862 gallons**. A breakdown of the oil type of product storage is shown in the Fact Sheet in the front of this Plan.

4.0 Oil Storage and Containment

4.1 BULK STORAGE CONTAINERS

40 CFR 112.8(c)

There are five (5) bulk storage containers on-site containing off road diesel fuel, gasoline, used oil, hydraulic oil and motor oil. The facility also utilizes several 55-gallon drums containing hydraulic oil, lube oil and gear oil located throughout the facility. There is also one portable tank containing off-road diesel located west of the off road diesel fuel tank. Mobile or portable oil storage containers are located to prevent a discharge. Detailed tank and product information is documented in the Fact Sheet in the front of this Plan. The location of the tanks and containers are illustrated on Figure 2.

112.8(c)(1) – Aggregate Industries only uses containers of material and construction that are compatible with the materials stored and the conditions of storage (temperature and pressure). Oil leaks which result in a loss of oil from tank seams, gaskets, rivets and bolts are promptly corrected.

112.8(c)(2) – Secondary containment is provided for each Bulk Storage Tank. Specific secondary containment information is provided in Section 4.5.

112.8(c)(3) – Drainage of rainwater from diked areas (bypassing treatment) is completed as necessary. Drainage information is provided in detail in Section 4.6.

112.8(c)(4)&(5) – There are no completely buried or partially buried metallic tanks used for oil storage on-site.

112.8(c)(6) – The SPCC Rule requires that each aboveground container be tested for integrity on a regular schedule including visual inspection with another testing technique. Inspection and integrity testing information is provided in detail in Section 5.3.

112.8(c)(8) – Overfill prevention is provided for each bulk storage tank in operation at the facility. Methods in use include liquid level gauges and manual checks during product transfers. Specific overfill protection equipment is identified in the Fact Sheet in the front of this Plan.

112.8(c) (9) – The facility does not operate an industrial wastewater pretreatment plant.

112.8(c) (10) – Oil leaks which result in a loss of oil from tank seams, gaskets, rivets, and bolts are promptly corrected.

112.8(c) (11) – Portable and mobile oil storage containers are positioned inside facility structures to prevent a release. Facility containment is described in Section 4.5.

4.2 OIL FILLED OPERATION EQUIPMENT

The hydraulic tanks on the LocoTrack and the Omnicone crusher have an estimated capacity of 80 gallons each. Several oil-filled transformers are located at various locations around the site. The tanks and transformers will be managed as oil-filled operating equipment in this Plan. Detailed lists of the storage containers and equipment subject to SPCC at this facility can be found in the Fact Sheet in the front of this Plan and on Figure 2.

4.3 PORTABLE STORAGE

A trailer-mounted, 500-gallon off-road diesel fuel tank is located at the Larson Facility. The tank is filled from the 10,000-gallon diesel tank located on-site and is used for general equipment refueling. Only fuel needed for immediate use is transferred into the portable tank for transfer to equipment. The portable tank is otherwise stored empty.

4.4 SPILL POTENTIAL

40 CFR 112.7(b)

Aggregate Industries provides secondary containment for the bulk storage containers used for “oil” storage. Therefore, tank failures would not be expected to reach navigable waterways. The most reasonable potential for a spill event occurrence is due to operational or equipment failure during oil product transfers such as tank overflow, hose rupture, or pump leakage.

If a spill were to occur during oil transfer, the spill event would most likely be small and could be contained within close proximity of the spill. It is unlikely that a spill could migrate off-site.

Spill containment equipment is located throughout the facility. Specific locations are shown on Figure 2. Potential spill scenarios are described below.

Table 4-1 Spill Potential

Potential Event	Spill Description / Direction	Volume Released	Spill Rate
1) Tank # 10791 – 10,000-gallon Off-Road Diesel Tank and Tank # 10792 – 525-gallon Gasoline Tank			
Complete or partial failure of a full tank, or tank overfill	Release would be contained within the double wall tank system. If the secondary containment failed, the fuel would be contained within the poured concrete containment structure.	1 to 10,000 gallons	Gradual to instantaneous

Potential Event	Spill Description / Direction	Volume Released	Spill Rate
Tanker truck failure or release during transfer operations	Release would pool in the transfer area where it would be contained using equipment to construct containment berms. If significant, material could migrate east toward the retention pond where it could be contained. Material that by-passed the retention pond would discharge into the Mississippi River.	1 to 2,000 gallons	Gradual to instantaneous
Transfer pipe failure	A release would be contained within the double wall piping. If double wall piping failed, the portion outside the concrete containment structure would pool where it would be contained using spill equipment.	1 to 10,000 gallons	Gradual to instantaneous
2) Tank # 10793 – 280-gallon Hydraulic Oil Tank and Tank # 10794 – 280-gallon Motor Oil Tank			
Complete or partial failure of a full tank, or tank overfill	Release from tank failure would be contained within the double-wall tank system. If containment failed, material would pool in the area surrounding the tank inside the maintenance garage and be contained using spill equipment.	1 to 280 gallons	Gradual to instantaneous
Tanker truck failure or release during transfer operations	Release would be contained within the building using spill response equipment. If containment failed, material would pool in the area surrounding the tank and could migrate east toward the sedimentation basin.	1 to 2,000 gallons	Gradual to instantaneous
3) Tank # 10037 – 500-gallon Used Oil Tank			
Complete or partial failure of a full tank	Release would be contained within the double-wall tank. If the secondary containment failed, material would pool in the area surrounding the tank and could migrate toward the retention pond where it would be contained. Material by-passing the retention pond would discharge into the Mississippi River.	1 to 500 gallons	Gradual to instantaneous

Potential Event	Spill Description / Direction	Volume Released	Spill Rate
Tanker truck failure or release during transfer operations	Release would pool in the area surrounding the tank and could migrate toward the retention pond where it would be contained. Material by-passing the retention pond would discharge in to the Mississippi River.	1 to 500 gallons	Gradual to instantaneous
4) 3 - 80-gallon Hydraulic Oil Tanks (LocoTrack, Omnicone Crusher, Hydraulic Shovel)			
Tank failure, equipment failure (hose, pumps, etc.)	Release would pool in the transfer area where it would be contained using spill equipment. If containment failed, material would flow toward the retention pond.	1 to 80 gallons	Gradual to instantaneous
5) Miscellaneous Drums			
Drum failure, or release during transfer operations	Release would pool in the spill containment pallets. If containment failed, material would pool in the area surrounding the tank and could migrate toward the retention pond.	1 to 55 gallons	Gradual to instantaneous

4.5 CONTAINMENT AND DIVERSIONARY STRUCTURES

40 CFR 112.7(c)

General secondary containment options will be utilized in the following areas with the potential for discharge: operating equipment, non-rack transfers, piping and portable containers.

- The facility maintains a large supply of spill response equipment (sorbents, booms, aggregate materials, heavy equipment, etc.) to respond to indoor and outdoor releases and provide containment at the facility. Spill kits are staged at locations throughout the facility (see Figure 2). Response equipment is identified in Appendix D.

- Transfer area secondary containment is discussed in Section 5.2.

40 CFR 112.8(c)(2)

Secondary containment for all of the bulk storage ASTs is provided by double wall tank systems. Tertiary containment for the gasoline and off-road diesel tanks is provided by poured concrete containment structures. The diked areas are manually pumped to remove water after rain or snow events. Secondary containment for 55-gallon drums on-site is provided by containment pallets.

4.6 FACILITY DRAINAGE

40 CFR 112.8(b)

4.6.1 General Drainage and Site Storm Water Structures

The Aggregate Industries property has complex terrain with many sloping areas. In most areas the surface is graded to direct surface flow in from the perimeter. The majority of storm water at the site is directed into three primary drainage areas: the active quarry floor, the large central sedimentation basin, and the retention pond along the western edge of the facility. The drainage areas allow settling of suspended solids. Ultimately, water is discharged into the Mississippi River under the NPDES Permit (MN0030473).

The active quarry must be dewatered in order to complete mining activities. One primary dewatering station is set up in the northwest corner of the quarry. Dewatering station pumps are operated continuously year-round. The discharge from the quarry is directed by aboveground line into the Retention Pond.

The central sedimentation basin is a former quarry area designed to receive storm water as well as process water from operational areas. Wash water from the wash plant is discharged through a 24-inch underground concrete line into the basin. Water levels in the sedimentation basin are controlled to promote settling suspended solids. To control levels, water is pumped out of the basin and into the retention pond on the west end of the site. This is accomplished via a 16-inch steel underground pipe.

The retention pond receives water from the dewatering stations and storm water runoff from surrounding areas. The pond was designed to provide additional settling of solids. The pond discharges directly into the Mississippi River. The average discharge rate is approximately 5.5 million gallons per day. The pond is also used to provide make-up water for the wash plant. Water is pumped via an 8-inch underground poly line into the wash plant.

A map of storm water structures with general flow directions is depicted on Figure 2.

4.6.2 Storm Water Inspection and Disposal

Storm water accumulated in containment structures will be inspected for the presence of oil products prior to discharge. The authorized individual will be trained in how to dispose of storm water and actions to be taken in case of overflow, rupture or leaking. Storm water discharge procedures are identified below:

a) Disposal of storm water
   i. Inspect storm water within the containment area to ensure no fuel is present. Particularly observe if there is any product sheen present on the surface of the water.
   ii. If not, use a pump to drain storm water from the containment areas.
   iii. Document inspections and discharges in the Weekly Inspection Form (see Appendix A). Records of drainage activities from containment areas will be maintained for five years.

b) Disposal of contaminated water
   i. If the inspection in a) i. above shows the presence of oil, the authorized person shall notify his immediate supervisor who, in turn, will contact the Plant Manager at 612-297-2829 or other contacts as listed in Appendix E of this document.
   ii. Maintenance forces will be mobilized with spill containment equipment. Oil will be cleaned up and sheens removed from the surface of the storm water. Following proper cleanup, clean storm water will be discharged.

5.0 Procedures

5.1 TRANSFER OPERATIONS, PUMPING, AND IN-PLANT PROCESSES

40 CFR 112.8(d)

Transfers of oil at this facility generally occur in three ways: bulk transfer into facility containers by vendors, transfer from storage containers through piping systems to equipment, or manual transfer by employees from storage containers into portable containers, equipment or vehicles.

40 CFR 112.8(d)(1)

- The Larson facility does not use completely buried piping for any of the SPCC-subject containers or equipment.

40 CFR 112.8(d)(2)

- All terminal connections for piping at transfer points are currently in use. If in the future piping is placed out of service, the terminal connections will be capped or blank-flanged as required and marked as to origin.

40 CFR 112.8(d)(3)

- The 10,000-gallon off-road diesel tank (Tank # 10791) has associated above-ground piping which transfers fuel from the tank to the pump island. The line is double walled to provide containment which consists of 2-inch outer diameter galvanized steel outerwall. Piping is mounted on pipe supports. The supports provide stability to the piping, without abrading or corroding the piping lines. Piping systems are protected from vehicle traffic using concrete blocks, and are inspected to assess general condition of joints, valves, supports and metal surfaces. Preventative maintenance will be performed as necessary on all piping to prevent leaks.

40 CFR 112.8(d)(4)

- Aggregate Industries will incorporate visual inspection of the valves, piping and appurtenances into the visual inspection requirements for the facility. Gauging equipment will be tested according to manufacturer's recommendations.

40 CFR 112.8 (d)(5)

- Pipe supports have been properly designed to minimize corrosion and allow for expansion and contraction. Piping systems have been designed to provide protection from vehicle traffic and are inspected weekly to assess general condition of joints, valves, supports and metal surfaces. Preventative maintenance will be performed as necessary on piping to prevent leaks.

All oil product transfer is performed in accordance with the provisions of this SPCC Plan.

1) 10,000-gallon Off-Road Diesel Fuel Tank (Tank # 10791)
   a. Employee Transfer Activities: A fueling island installed approximately 40 feet away from the tank draws fuel from the tank. A manually controlled nozzle is connected by a 1-inch hose to the pump at the fueling island. The nozzle is also equipped with an automatic shut-off device. The pump and nozzle system for this tank are used for vehicle and equipment fueling by employees. A document detailing fueling procedures can be found in Appendix B and in the Aggregate Industries' Envoy system (electronic environmental management system).
   b. Vendor Bulk Transfer Activities: A representative of the fuel supply vendor connects a vendor-owned transfer hose to the 4-inch fill line located at the top of the tank. The vendor pumps off-road diesel fuel from the delivery vehicle into the tank.

2) 525-gallon Gasoline Tank (Tank # 10792)
   a. Employee Transfer Activities: An electric pump installed on top of the tank draws fuel from the tank. The pump is connected to a flexible hose and manually controlled nozzle. The nozzle is also equipped with an automatic shut-off device. The pump and nozzle system for this tank is used for vehicle and equipment fueling by employees. A document detailing fueling procedures can be found in Appendix B and in the Aggregate Industries' Envoy system (electronic environmental management system).
   b. Vendor Bulk Transfer Activities: A representative of the fuel supply vendor connects a vendor-owned transfer hose to the fill port on the top of the tank. The vendor pumps fuel from the delivery vehicle into the tank.

3) 500-gallon Used Oil Tank (Tank # 10037)
   a. Employee Transfer: Used oil is removed from fleet vehicles and equipment into portable containers and poured into the drainage pan on top of the tank.
   b. Vendor Transfer: When used oil is removed from the container and the site for recycling, the vendor pump inserts a line into the top of the tank. Used oil is vacuum pumped into the vendor vehicle.

4) 280-gallon Motor Oil Tank (Tank # 10794) and 280-gallon Hydraulic Oil Tank (Tank #10793)
   a. Employee Transfer Activities: Product is withdrawn from the top of the tanks using air driven pumps, which feed oil into 1-inch flexible hoses on reels. The quantity of product transferred is controlled by employees using manual nozzles.
   b. Vendor Transfer Activities: The vendor transfers bulk oils into fill ports located at the top of the each bulk tank using flexible hose owned by the vendor. The vendor pumps oil from the delivery vehicle into the tank. The vehicle is parked inside the maintenance building.

5) 55-gallon drums(Lube Oil, Gear Oil, Hydraulic Oil)
   a. Employee Transfer Activities: Product is transferred from the drums by hand pump or gravity fed into portable containers that are used to transfer the product into fleet vehicles or equipment.
   b. Vendor Transfer Activities: Vendors deliver sealed drums to the facility.

5.2 TANK TRUCK LOADING/UNLOADING

40 CFR 112.7(h)

Operators of fuel delivery trucks must be licensed in accordance with all state and federal regulations and be properly trained by the distributor in the use of the equipment. Specific information on fuel unloading locations and quantity of product to be delivered will be provided to the delivery truck operator by Aggregate Industries' personnel. An Aggregate Industries' representative and the tanker truck operator are required to stay with the truck during unloading.

Loading / unloading rack means a fixed structure (such as a platform or gangway) necessary for loading or unloading a tank truck or rail car and includes a loading or unloading arm. A loading / unloading arm is typically a movable piping assembly that includes fixed piping or a combination of fixed and flexible piping typically with at least one swivel joint that allows movement of the piping to transfer product to/from a tank truck or rail car. A transfer rack may include any combination of piping assemblages, valves, pumps, shut off devices, overfill sensors, or personnel safety devices.

Based upon information from the USEPA's guidance, **the facility does not operate any transfer racks**. Loading/unloading areas using a single hose and connection or include moving portable containers are not considered "racks".

Areas where oil is transferred but no loading or unloading rack is present are subject to general secondary containment requirements in 40 CFR 112.7(c). Secondary containment size should be based on the magnitude of a most likely discharge, taking into consideration the specific features of the facility and operation. Active secondary (manual response) can help satisfy this requirement. USEPA recommends that a determination of adequate secondary containment consider:

- The reasonably expected sources and causes of a discharge.
- The reasonably expected maximum rate of discharge.
- The ability to detect and react to the discharge.
- The reasonably expected duration of the discharge.

Table 5-1 Transfer Area Secondary Containment Determination

Scenario:
A fuel truck is transferring fuel into a diesel or gasoline storage tank with an attendant present throughout the operation.
Details:
The truck is unloading at a rate of 80 gallons per minute.
The reasonably expected source of a discharge is a ruptured flexible transfer hose.
A pump shutoff switch and valve are present and accessible to the attendant.
An evaluation determines that the discharge will not impede the attendant's access to the shutoff valve and that he can safely shut down transfer operations within 30 seconds of the hose rupture.
Calculations:
The maximum reasonably expected discharge would be calculated to be: [(80 gal/min) x (1 min/60 sec) x (30 sec)] = 40 gallons.

Conclusion:

Secondary containment volume should be at least 40 gallons. A larger volume for secondary containment would be needed if time required to safely close the shutoff valve takes longer than 30 seconds. The facility has this containment capacity in the form of spill response equipment. Additional transfer specifics are provided below.

- Transfers into the 10,000-gallon off-road diesel fuel aboveground storage tank (Tank # 10791) are completed by a contracted vendor. The fuel is pumped from a 2,000-gallon tanker truck into the tank using a flexible hose connected to a 4-inch steel fill line located adjacent to the concrete containment structure. The connection point is within a closed/covered containment box to capture small releases and drips. Aggregate Industries has measures in place to provide secondary containment for the most likely spill scenario; however, facility drainage and spill equipment provide the capacity to contain the volume of the single largest compartment of the tanker truck release.

- Transfers into the 525-gallon gasoline aboveground storage tank (Tank # 10792) are completed by a contracted vendor. The fuel is pumped from a 2,000-gallon tanker truck into the tank using a flexible hose connected to a fill port at the top of the tank. Aggregate Industries has measures in place to provide secondary containment for the most likely spill scenario; however, facility drainage and spill equipment provide the capacity to contain the volume of the single largest compartment of the tanker truck release.

- Transfers into the 280-gallon motor oil and 280-gallon hydraulic oil aboveground storage tanks (Tank # 10794 and 10793) are completed by the vendor using flexible hose real connected to a fill port at the top of the tank. The delivery truck is positioned inside the shop, and the building and spill equipment provide secondary containment for the for the most likely spill scenario.

- The used oil tank (Tank # 10037) is emptied by a contracted disposal vendor. The vendor vacuum pumps used oil from the tanks using a flexible hose inserted into the tank.

- Oil containing equipment is operated as part of the aggregate mining and processing operations. Equipment is identified in the Fact Sheet in the front of this Plan. Transfer of new oil into the equipment is completed manually from 55-gallon drums as needed. For hydraulic equipment, short runs of hose/pipe transfer the oil from the equipment reservoir to the hydraulic mechanism. Transfers to transformers are unlikely; however, if it is necessary to replace oil, oil is brought to the site in drums and transferred into the transformer using small, portable containers.

- The tank truck loading and unloading procedures meet the minimum requirements of the U.S. Department of Transportation (DOT), which require the tank truck operator to be DOT certified and the loading/unloading procedures to be monitored by at least one Aggregate Industries' employee.

- Unloading lines will be cleared. Drippings from the hose will be contained/cleaned up. Prior to departure of any tank truck, outlets of such vehicles will be closely examined for leakage, and if necessary, tightened, adjusted, or replaced by the transporter to prevent liquid leakage while in transit.

- Warning signs and/or wheel chocks will be used to prevent premature vehicle departure.
- Nighttime oil transfers and transfer during precipitation events will be avoided, if possible.
- Spill response materials are available to contain a spill in tank transfer areas. In addition, a quick response and control of a spill shall be implemented.

5.3 INSPECTIONS AND RECORDS

40 CFR 112.7(e)

A visual inspection of all tanks, containment structures, piping, etc. will be completed weekly. Facility inspections will be completed by trained personnel, and records of these inspections will be documented and made available for review. The facility inspection forms are attached in Appendix A. Inspection reports will be retained on-site for a minimum of five years and document the following:

- Areas inspected.
- Damage/leaks.
- Necessary corrective action.
- Stormwater accumulation and drainage.

40 CFR 112.8(c)(6)

This section of the SPCC Rule requires that each aboveground container be tested for integrity on a regular schedule. Testing techniques may include hydrostatic testing, ultrasonic testing, or another system of non-destructive shell testing. The facility will perform integrity testing on the bulk storage tanks based on the requirements of the Steel Institute Standard SP001. Requirements are summarized in the table below.

Table 5-2 Tank Integrity Testing Schedule

Steel Tank Institute Standard for Inspection of ASTs			
Shop Fabricated Tanks:	Category 1 Tanks (5,000 to 30,000 ASTs)	Formal External Inspection Every 20 years	Formal Internal Inspections
Tank 10791 10,000-gal diesel fuel	Category 1 Tanks (5,001 to 30,000 ASTs) AST with Continuous Release Detection Method and Secondary Containment System	Every 20 Years Tank installed:2002 Next inspection due: 2022	Not required by the STI Standard for this Category of tank.
Shop Fabricated Tanks:	Category 1 Tanks (<5,000-gallons in size)	Formal External Inspection	Formal Internal Inspections
Tank 10792 525-gal gasoline tank **Tank 10793 & 10794 280-gal oil**	AST with Continuous Release Detection Method and Secondary Containment System	Not required by the STI Standard for this Category of tank due to size	Not required by the STI Standard for this Category of tank due to size

Steel Tank Institute Standard for Inspection of ASTs

Formal integrity tests will be performed by an inspector with the following qualifications:

- API Standard 653 Authorized Inspector Certification and/or
- STI Certified SP001 Tank System Inspector

Following inspection by a certified tank inspection contractor, if the inspector recommends an alternate schedule based on the results, this schedule will be modified and the SPCC Plan updated as appropriate.

Hydraulic tanks associated with the LocoTrack, Omnicone Crusher and Hydraulic Shovel: The tanks on the LocoTrack, Omnicone Crusher and Hydraulic Shovel meet the definition of oil-filled equipment according to EPA's "Guidance for Regional Inspectors" Version 1.0 from 11/28/2005. According to page 2-23, paragraph 2.8.2 of the guidance, oil-filled equipment is not subject to the requirements that apply to bulk storage containers under 112.8 (c). As a result, integrity testing under 112.8(c)(6) does not apply. These containers will be inspected for evidence of leaking on a regular basis. The visual leak detection inspection schedule for oil-filled operating equipment at the facility will be monthly when the facility is in operation in accordance with the checklists in Appendix A.

Transformers: Aggregate Industries will ensure at least a monthly visual leak inspections of oil-filled transformers are completed by site representatives. The inspections will provide an assessment of the condition of the transformer with regard to any potential failures that may lead to leaks or spills. Records of these inspections will be maintained.

5.4 SECURITY

40 CFR 112.7(g)

40 CFR 112.7(g)(1) – Fencing
No fencing exists around the facility; however, access during non-operating hours is prevented by locking gates on entrance roads. In addition, the site is bordered on the west side by water, and wooded areas on the north and south. The locations of the tanks are such that they are not visible from any publicly traveled roadway. Figure 2 shows access would be limited by topography and trees.

40 CFR 112.7(g)(2) – Master flow and Drain Valves
Masterflow valves and drain valves for containers at this site are either: located on top of the tank to prevent direct outward flow or are flanged closed.

40 CFR 112.7(g)(3) – Pump Starter Control Locking
For the purposes of this Plan, the "non-operating or non-standby status" for pumps requiring locking in this Plan will be considered to be those hours when the entire facility is not attended or is not operating. The pumps will be considered in stand-by and will remain powered and unlocked during hours when the facility is attended by at least one employee. The power starter control locking requirements for this facility are as follows:

- 10,000-gallon off-road diesel tank (Tank # 10791) and 525-gallon gasoline tank (Tank #10792): Aggregate Industries will power down and lockout the electrical source for the pumps associated with the off-road diesel tank and gasoline tank at the end of each operating day. The shut off for these tanks is located on the west side of the poured concrete containment structure. The breaker box is locked during non-attended hours to prevent access to unauthorized persons.

- Used Oil Tank (Tank #10037): The used oil tank does not have any associated pumping equipment. Lock-out of starter controls is not applicable to this tank.
- Hydraulic and Motor Oil Tanks (Tank # 10793 and 10794): The air driven pumps associated with these tanks are located inside the maintenance building. The compressors which power the pumps will be shut-off at the end of the night.

40 CFR 112.7(g)(4) – Security for Piping
Loading/unloading connections of oil piping is secured by capping when not in service.

40 CFR 112.7(g)(5) – Facility Lighting

Oil transfer activities and consumption occur during daylight hours or inside of well-lit buildings while the facility is attended.

5.5 TRAINING PROCEDURE

40 CFR 112.7(f)

Since an SPCC Plan depends on its implementation, Aggregate Industries will provide baseline and annual refresher training to its personnel who are involved in the handling, storage, or use of oil products. SPCC training may be completed in conjunction with other facility training programs such as emergency response training.

40 CFR 112.7(f)(1)
At a minimum, training will cover operation and maintenance of equipment to prevent discharges, discharge procedure protocols, applicable pollution control laws, rules and regulations, general facility operations and the contents of the SPCC Plan. During this training there will be an opportunity for facility operators and other personnel to share recommendations concerning health, safety, and environmental issues encountered during operation of the facility.

40 CFR 112.7(f)(2)
The person accountable for discharge prevention at the Facility is the Plant Manager.

40 CFR 112.7(f)(3)
Yearly spill prevention briefings will be provided by management for operation personnel to ensure adequate understanding of the Spill Prevention Countermeasure and Control Plan. These briefings will highlight any past spill events or failures and recently developed precautionary measures. Training will be held on oil spill prevention, containment, and retrieval methods. Records of these briefings and spill prevention training will be kept on file.

A form to record these trainings and briefings is included in Appendix F.

6.0 Spill Response Plan

40 CFR 112.7(a)

6.1 OIL SPILL CONTROL PLAN

6.1.1 Introduction

Prompt response to a spill is the best means of minimizing any impact to the environment and preventing a discharge from reaching waters of the United States.

In the case of a petroleum product spill, appropriate and timely measures will be taken to prevent the migration of spilled oil products and protect the health and safety of the public. The key steps of the spill control plan are presented in the following Section 6.1.2. The Plan identifies who contains the spill and when outside sources (such as police, fire, or emergency response personnel) are needed to control and clean up the petroleum product spill. In the event of a spill or release, incident information and response actions will be recorded on the Spill Report Form located in Appendix G.

6.1.2 Oil Spill Plan

Once a petroleum product spill is detected at the facility, the detector will quickly assess the immediate area with regard to its safety and attempt to stop the source of the spill, if possible. In the event there is a fire, explosion, or personal injury, notify the local emergency units (911) and take appropriate action as required. The detector will also notify the respective Plant Manager. The Plant Manager will then direct spill response procedures. The spill area will be isolated and evacuation initiated as needed. Specific response procedures are Identified in Appendix C and discussed in greater detail in the SPCC Plan Fact Sheet flow chart located in the front of the Plan.

6.2 EMERGENCY CONTACT LIST

Appendix E contains all emergency personnel and phone numbers.

6.3 SPILL CONTAINMENT EQUIPMENT LOCATION AND USE INSTRUCTIONS

Spill containment equipment is located in the office and the maintenance building. Locations are shown on Figure 2.

A Spill Equipment inventory is completed periodically during weekly and monthly site/tank inspections. Materials will be replaced as needed to maintain an adequate supply of absorbents and related spill equipment supplies. Following a larger spill, spill control equipment will be ordered and restocked as part of the cleanup and disposal process. A spill equipment inventory can be found in Appendix D.

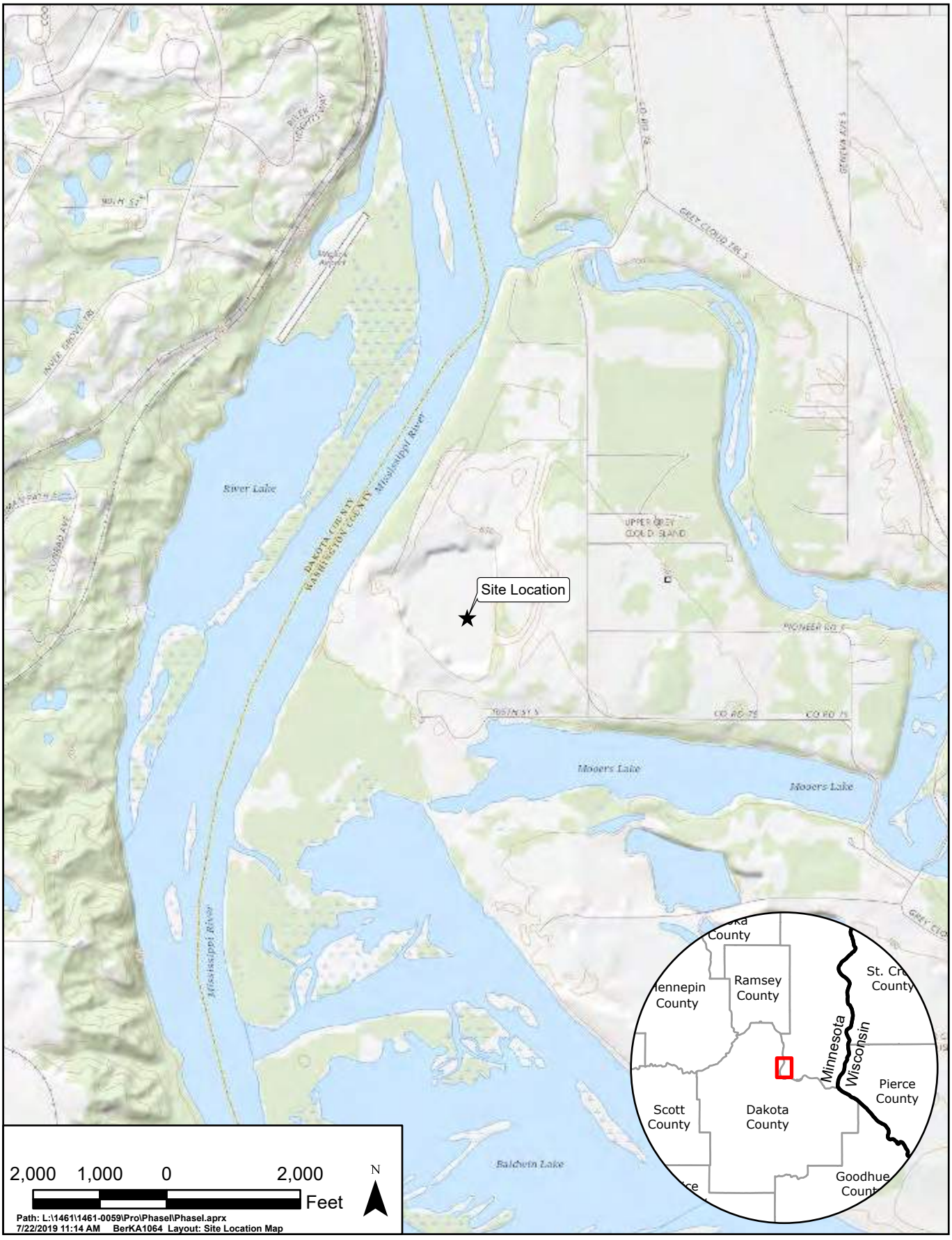
6.4 SPILL CLEANUP AND DISPOSAL

The Plant Manager will define the actual cleanup responsibilities once the spill is contained and its magnitude determined. Once a spill is contained, equipment will be used to recover the pooled product. Used absorbents will be containerized and disposed of properly. Contaminated soils/debris will be managed in a manner that complies with USEPA and MPCA requirements for disposal of soils from petroleum spills (landfarm, incineration, etc.). Current versions of the spill report form is located in the Aggregate Industries Envoy system (electronic environmental management system). A spill report form is located in Appendix G.

6.5 SPILL REPORTING AND NOTIFICATION

See Sections 2.2 and 2.3 for USEPA and the State of Minnesota reporting and notification requirements.

Figures



AGGREGATE INDUSTRIES INC. - LARSON FACILITY

Site Location Map

WENCK

Responsive partner. Exceptional outcomes.

JUL 2019

Figure 1

AGGREGATE INDUSTRIES INC. - LARSON FACILITY

Site Detail Map

WENCK

Responsive partner. Exceptional outcomes.

AUG 2019

Figure 2

Appendix A

Inspection Forms

Appendix A
SPCC Plan - Larson Facility

WEEKLY SITE ENVIRONMENTAL INSPECTION FORM

DIVISION: _____ **WEATHER CONDITIONS:** _____

PLANT NAME: _____ **NEXT INSPECTION DATE:** _____

DATE & TIME: _____ **INSPECTOR:** _____

OPERATING - YES OR NO _____

AREA INSPECTED	INSPECTED			SATISFACTORY		COMMENTS
	YES	NO	N/A	YES	NO	IMPROVEMENTS/PROBLEMS
1 FUEL STORAGE/CONTAINMENT & DISPENSER SUMP						
2 BARRELS/CONTAINMENT						
3 WASTE OIL/CONTAINMENT & OIL/WATER SEPARATOR						
4 ADDITIVE/CHEMICAL CONTAINMENT						
5 PARKING AREAS						
6 PERIMETER EROSION						
7 SETTLING PONDS						
8 CHECK DAMS						
9 BERMS/DITCHES						
10 WASHOUT/RINSEOFF AREAS						
11 GENERAL DRAINAGE						
12 DISCHARGE POINTS						
13 SHOP FACILITY						
14 SPILL RESPONSE EQUIPMENT						
15 BONEYARD						
16 RECORD KEEPING						
17 GOOD HOUSEKEEPING (General Plant Conditions)						
18 SOURCE EMISSIONS						
19 FUGITIVE EMISSIONS						
20 CONTROL EQUIPMENT						
21 UNIVERSAL WASTE such as fluorescent bulbs, batteries, mercury etc.						
22 SEPTIC SYSTEM						
23 TRANSFORMERS						
24 OIL FILLED OPERATING EQUIPMENT Locotrack, Omnicone						
23 OTHER						

23 CORRECTIVE ACTIONS REQUIRED AND DUE DATES:

24. IMPROVEMENTS AND/OR BMPS

SIGNATURE/DATE

Appendix B

Oil Product Transfer, Loading and Unloading Procedures

Oil Product Transfer and Loading Procedure

This procedure shall be used by tanker trucks each time fuel is deliver to an Aggregate Industries tank.

1. Check the level in the storage tank to ensure that it can take the entire delivery.
2. Delivering truck driver is responsible for the cleanup of any spill that he/she causes.
3. Identify the receiving line hookup.
4. Check that all lines and valves to the storage tank are open.
5. Connect the unloading hose to the receiving line.
6. Check that the truck unloading hose is securely attached to the correct line.
7. Clear unloading line.
8. Drain any hose connection drippings into container provided or containment area.

IN THE EVENT OF A SPILL, ALERT PLANT MANAGER OR PLANT SUPERVISOR IMMEDIATELY!

This procedure shall be used by Aggregate Industries employees who fuel company vehicles and/or equipment.

1. Do not leave equipment unattended while fueling.
2. Do not smoke within 25 feet of fueling area.
3. Do not override any safety mechanism.
4. Do not use cellular phone while fueling.
5. Before exiting fueling station:
    - -Remove fuel nozzle from equipment.
    - -Secure fuel nozzle to pump.
    - -Shut off pump.
    - -Remember to replace fuel cap.
    - -Be certain automatic shutoff is off.
6. Report any malfunctions to your supervisor.
7. Know the location of your spill kit, fire extinguisher, and emergency shut-off switch.

FAILURE TO COMPLY WILL RESULT IN DISCIPLINARY ACTION!

Appendix C

Spill Response Procedures

Uncontrolled if Printed

SPR6 - Emergency & Spill Response Procedure - Version 3.6

Owner: Patricia Bestler

Status: Published **Version:** 3.6

Categories: Environment

Required for these Roles: AGGT Admin / Clerical, AGGT AGGT Haz Waste Manifest Signer / Transporter of acid batteries or mercury light bulbs, AGGT Backhoe Operator, AGGT Barge Loader, AGGT Barge Repair, AGGT Bull Dozer Operator, AGGT Crane Operator, AGGT Dispatcher, AGGT Dragline Operator, AGGT Dredge Operator, AGGT Driller & Blaster, AGGT Electrician, AGGT Fork Lift Operator, AGGT Fuel Truck Operator, AGGT Grader Operator, AGGT Haul Truck Operator, AGGT Laborer, AGGT Loader Operator, AGGT Lowbed / Lowboy Operator, AGGT Mobile Equip Mechanic, AGGT Plant Manager, AGGT Plant Mechanic, AGGT Plant Operator, AGGT Quality Control, AGGT Quality Control Manager, AGGT Rail Car Dropper, AGGT Rail Engineer, AGGT Rubber Tire Dozer Operator, AGGT Scale Operator, AGGT Scraper Operator, AGGT Shop employee, AGGT Shovel Operator, AGGT Skid Steer Operator, AGGT Sweeper Operator, AGGT Tow Boat Deck Hand, AGGT Tow Boat Engineer, AGGT Tow Boat Mate, AGGT Tow Boat Pilot, AGGT Trackhoe Operator, AGGT Water Truck Driver, AGGT Welder, AGGT Work Boat Operator, RMC Batcher, RMC Dispatcher, RMC Loader Operator, RMC Mixer Driver, RMC Ops Mgr, RMC Plant Mgr

Required for Work in these Areas: Pit / Material Extraction / Overburden/Material Removal, Pit / Material Extraction / Dredging Material, Pit / Material Processing / Crushing/Screening Material, Pit / Material Processing / Washing Material, Pit / Material Processing / Lighting/Powering the Plant, Pit / Material Processing / Sampling the Material for QC, Pit / Site and Land Management / Weed Management, Pit / Site and Land Management / Housekeeping, Pit / Site and Land Management / Storage of Decommissioned Equipment / Parts, Pit / Site and Land Management / Signage, Pit / Site and Land Management / Berms and BMP Management, Pit / Site and Land Management / Erosion Control, Pit / Material Transport / Conveying Material, Pit / Material Transport / Using Heavy Equipment, Pit / Material Transport / Barging Material, Pit / Material Transport / Hauling Material, Pit / Water Management / Discharge Points, Pit / Water Management / Settling Pond / Catch Basin Maintenance, Pit / Office Building / Electricity Consumption, Pit / Office Building / Water Consumption, Pit / Office Building / Office Associated Activities, Pit / Office Building / Air Conditioning, Pit / Waste Management / Recycling of Steel, Pit / Waste Management / Contaminated Waste Management, Pit / Waste Management / Fluorescent Bulb Management, Pit / Waste Management / Battery Management, Pit / Waste Management / Empty Barrel Management, Pit / Waste Management / Used Tire Management, Pit / Chemical, Oil, Material Storage & Delivery / Fueling Vehicles and Equipment, Pit / Chemical, Oil, Material Storage & Delivery / Stockpile Management, Pit / Chemical, Oil, Material Storage & Delivery / Fuel Tank Management, Pit / Chemical, Oil, Material Storage & Delivery / Used Oil Management, Pit / Chemical, Oil, Material Storage & Delivery / Delivery of Fuel into AST, Pit / Chemical, Oil, Material Storage & Delivery / Bulk / Drum Oil Delivery, Pit / Plant Maintenance / Preventative Maintenance / Repairs, Pit / Reclamation / Planting and Seeding, Pit / Reclamation / Site Grading, Pit / Shop / Welding Activites, Pit / Shop / Preventative Maintenance/Repairs, Pit / Shop / Oil Filter Management, Pit / Shop / Antifreeze Management, Pit / Shop / Parts Cleaner, Pit / Shop / Shop-related Chemical/Oil Storage, Pit / Shop / Steam Cleaning/Power Washing, Pit / Shop / Battery Management, Pit / Shop / Used Oil Management, Pit / Shop / Drum Management, Pit / Shop / Tire Management, Pit / Shop / Fluorescent Bulb Management, Pit / Shop / Oily Rag/Floor Dry Management, Pit / Shop / Storage of Decommissioned Parts/Equipment, Pit / Shop / Fueling Vehicles, Pit / Shop / Air conditioning repair

Distributed to these people in Dashboard/Documents: AGGT Plant Manager, RMC Plant Mgr

Details

GENERAL EMERGENCY RESPONSE

Employees are expected to use common sense and good judgment in responding to emergency situations

- If the emergency requires immediate outside assistance, call 911 and notify the Area Manager.
- If outside assistance (ambulance, fire department, police) is not necessary or after any needed emergency services are contacted, proceed with notifying the Area Manager.
- If possible and only if safe, minimize risk (contain, reduce area enlargement, shut off source, etc.)
- In case of non-life-threatening injuries, notify the Area Manager to take the employee to the hospital. The Area Manager will then notify all relevant and necessary departments (Safety, Environmental, Upper Management, etc.)
- Notify all employees on duty of the IMMEDIATE emergency.
- For fire and non-tornado emergencies, meet at front sign near Plant entrance, if necessary and instructed to do so.
- In case of tornado, the following sheltering options may be used:
    - Personnel at the Wash Plant and Crushing Plant may shelter in the tunnels at the Plant. Crouch to ground, face down and protect head.
    - Employees working on the Dredge may shelter in the Conex on the Dredge or, if time allows, travel to the pit tunnels.
    - Employees near the Plant office may shelter against interior walls of the building away from windows.
    - Any personnel not near a sturdy building, should lie flat and face-down on low ground, protecting the back of their head with their arms. Get as far away from trees, loose equipment and cars as possible.
- In case of injury, follow all First Aid, CPR, and Blood born pathogen training.
- The Area Manager or a delegate, will count heads at the Welding Shop.
- If an employee appears to be missing, the Area Manager or a delegate will follow up to locate the employee and notify upper management of the situation.

Spill Response and Reporting

1. Basic Spill Response and Recovery Procedures for Spills

SAFETY AND SPILL EVALUATION

- Contact 911 if the spill poses a risk of fire or the release threatens human health or safety.
- Take any necessary safety precautions associated with the spilled material.
- Determine if the release in an incidental spill or a potentially significant spill that may pose a serious safety or environmental risk.
    - If the spill poses a significant risk to human health and safety, do not continue with containment or clean-up. Contact the Area Manager, Operations Management or emergency services as needed.
    - If the spill threatens a water body, storm sewer or other environmentally sensitive area. Contain the spread of the spill and then contact the Area Manager immediately for emergencies services.
- Ensure the safety of people in the spill area or evacuate. Contact emergency services directly when needed or request additional help from the Area Manager.
- If the spill is incidental and does not pose significant risk to safety and health, continue with this procedure.
- Wear appropriate PPE if you will handle any of the spilled material. See the chart below for basic PPE guidelines. Always read the MSDS prior to response for any unfamiliar material.

CONTAIN

- Stop the spill at the source, when safety allows.

- Create an impermeable or semi-impermeable barrier around any flowing material using spill kits materials, drain mats, sand, earth or other materials.
- Identify and protect waters of the state like drains, storm sewers grates, streams and lakes by creating a drainage barrier. Earth, drain mats, spills kits or other available materials can be used to create a temporary barrier to help prevent spills from flowing into a water of the state.

REPORT

- Involved employees will verbally report the incident to their supervisor and/or a regulatory agency, according to their responsibilities.

CLEAN-UP

- Once initial reporting is completed, incidental spills must be cleaned-up by a responsible employee. Only begin to clean-up after appropriate waste containers are located.
- All contaminated materials and clean-up wastes must be stored and disposed of according to regulatory requirements by responsible employees. See the chart below for storage and disposal guidance.
- Place all disposal materials in a compatible container.
- Close and label all waste containers.
- Place the waste container in an inside storage area.
- Report the storage location of the waste container to the Site Representative (Area Manager).
- Ensure that responsible employee restocks any spill kit materials or absorbents stocks, as needed.
- The Area Manager will provide further instructions relating to disposal of materials.

3. Spill Reporting Requirements for Responsible Employees

At the Scene - Immediate Internal Notification

Responsible employees involved in a spill or release must notify the Area Manager and the Area Land & Environment Manager, as soon as health and human safety are ensured and the spill is temporarily contained.

- Tom Burrows, Area Manager @ (612) 282-8609
- Patty Bestler, Area Land & Environment Manager @ (612) 214-8577

If, for any reason, the Area Manager or the Area Land & Environment Manager are unavailable, the Operations Manager should be contacted:

- Don Sedgeman Operations Manager at (612) 202-0839

If Aggregate Industries' staff need additional assistance in containing and cleaning up a spill, the following firms may be contacted:

Wenck Associates, (800) 368-8831

Bay West, (800) 279-0456

OSI Environmental, (800) 777-8542

Legal Reporting Requirements

The Area Manager and/or the Area Land & Environment Manager are responsible for completeing spill and release reporting as required by Local, State or Federal Law. If for some reason these staff persons are not available, then the Operations Manager is responsible for contacting authorities. If none of the listed management from the operations, executive or environmental departments are availble, then a foreman or another responsible employee needs to report a qualifying spill to the authorities. Spill reporting requirements for Minnesota are listed below

MINNNESOTA DUTY OFFICER @ (651) 649-5451 or (800) 422-0798.

- Immediate reporting of all Spills of oil or oil-based materials with volume equal to five gallons or more.
- Immediate reporting any spill of any volume of a potentially hazardous material.

NATIONAL RESPONSE CENTER @ (800) 424-8802 or

- Immediate reporting of spills of oil or oil-based materials to a NAVIGABLE WATER of the United States that:
  - Impact water quality
  - Causes a sheen
  - Causes deposition of sludge or solids

4. Spilled Liquids - PPE, Material Storage and Disposal Chart

Follow the general clean-up and disposal guidelines in the chart below for common materials involved in spills. Consult the MSDS sheet for any substance that is unfamiliar.

Spilled Material Type	Storage of Clean-up Waste	Disposal of Clean-Up Waste
Antifreeze **PPE Requirements for Handling Spilled Material and Waste:** Chemical Resistant Gloves Splash Goggles	• Store in a closed container marked with the words **Used Antifreeze for Recycling**. • Place the container inside the shop, shed or plant building.	• Used antifreeze must be transported offsite by a hauler with an EPA ID Number, such as OSI Environmental Services. • Keep all records of used antifreeze disposal. Used antifreeze haulers must provide receipts or a bill of lading for the used antifreeze.
Diesel Fuel or Gasoline	• Label storage container **Hazardous Waste - Waste**	• Waste fuels from spills must be transported off site immediately after clean-up.

PPE Requirements for Handling Spilled Material and Waste: Gloves Safety Glasses	**Diesel** or **Hazardous Waste - Waste Gasoline.** • Cover the storage container. • Contact a registered disposal company immediately.	• Waste fuels and fuel/water mixes must be recycled by an MPCA registered disposal company, such as OSI Environmental Services. • The transporter and the recycler may be the same company. • The transporter must be compliant with MNDOT specifications for the waste type and characteristics. The transporter must deliver the fuel or fuel/water mix directly to the recycler within 5 days. • The recycling facility must place the fuel into recycling within 24 hours. • Ensure that all shipping papers provided by the transporter are retained on site. • Contact the recycling company within 5 days to ensure receipt of the waste.
Parts Washer Solvent – Petroleum Based **PPE Requirements for Handling Spilled Material and Waste:** Chemical Resistant Gloves Splash Goggles	• Label storage container **Hazardous Waste – Solvent.** • Cover the storage container. • Place the container inside the shop, shed or plant building. • Contact a registered disposal company immediately.	If you manage the spilled solvent as non-hazardous. • The licensed waste hauler must complete a test on the material. • If the test result indicate that the solvent is not hazardous, then a manifest is not required. • The transporter and the disposal company must be licensed appropriately for the waste. • Ensure that all shipping papers provided by the transporter and disposal company are retained on site If you manage the spilled solvent waste as hazardous. • The solvent waste must be hauled by a licensed and registered transporter and recycler such as OSI Environmental Services. • Solvent waste must be manifested as hazardous waste. • Ensure copies of the initial and final manifests and any disposaql receipts are retained on site. • Ensure copy of the initial and final manifests is sent to the appropriate government office within 30 days.
Used Oil, Motor Oil, Gear Oil, Hydraulic Fluid, Transmission Fluids, Power Steering Fluid, Brake Fluid, Grease **PPE Requirements for Handling Spilled Material and Waste:** Gloves Safety Glasses	• Collect any usable free oil for reuse whenever possible. Place usable oil in a drum. Place the drum in a contained area or on a containment pallet. Ensure the drum is labeled with contents. • Store unusable oil in closed container marked with the words **Used Oil**. • Do not mix used oils with liquid solvent. • Do not mix used oils with antifreeze, carburetor cleaner, brake cleaner, paint thinners, gasoline, diesel or fuel oils.	• Used oil must be transported offsite by a hauler with an EPA ID Number, such as OSI Environmental Services. • Used oil must be recycled by the vendor, either by re-refining or by burning for energy recovery. • Keep all records of used oil disposal. Used oil haulers must provide receipts or a bill of lading for the used oil. • Used oils contaminated with solvents, brake cleaners or other non-oils must be tested by a licensed hazardous waste hauler. Any used oil with hazardous contamination must be manifested as hazardous waste by the disposal company.
Acidic Washing Agent, Truck Wash Detergents, Admixtures, Liquid Concrete Colors. **PPE Requirements for Handling Spilled Material and Waste:** Chemical Resistant Gloves Splash Goggles	• Collect usable liquid for reuse whenever possible. Place usable washing material into a plastic container and cover. Ensure the container is labeled with contents. • Never mix the spilled material with other products. • Store unusable washing material into a plastic container. • Cover or seal the container. • Label the container with its contents. • Store the container inside a building, whenever possible.	• Assume the waste material will require disposal as a hazardous waste. • Contact a disposal company, such as OSI Environmental Services, immediately. • Request OSI to test the waste to determine if the waste poses a hazard. • Only licensed waste haulers and disposal companies may be used. • Retain records of all test results, transport and disposal.

5. Used Absorbent Material Disposal Chart

Used Floor Dry, Used Absorbent Pads, Used Socks and Booms, Used Paper Towels	• Store in closed container. • Label the container and indicate the contaminant for example, "Used Floor Dry – Antifreeze" • Do not mix absorbents together when the material is contaminated with different materials. Segregate absorbents used for spill clean-up according to the contaminant.	• If the sorbent is contaminated only with used oil or grease, the used sorbents must be sent to a disposal company licensed to burn oil-contaminated waste in an incinerator. • Do not place used sorbent materials on the rubble pile without permission from the Environmental Advisor or the MPCA's emergency response department. • If the sorbent is wet and contaminated with any hazardous materials such as solvent waste, the sorbent must be manifested as hazardous waste. The transporter and disposal company for a hazardous waster must be licensed by the Minnesota Pollution Control Agency. The transporter and disposal company must have appropriate EPA ID numbers.
Contaminated Soils, Sand	• Store in closed container. • Label the container and indicate the contaminant for example, "Contaminated Soils – Antifreeze" • Do not mix sand and soils together when the material is contaminated with different materials.	• If the soil or sand is contaminated only with used oil or grease, the Company may seek permission to thin spread or self-treat the contaminated material. This option is only allowed for small amounts of contamination and only the plant or area manager can authorize this type of disposal. • If the contaminated of the soils or sand is any hazardous material such as solvent waste, the sorbent must be manifested as hazardous waste. The transporter and disposal company for a hazardous waster must be licensed by the Minnesota Pollution Control Agency. The transporter and disposal company must have appropriate EPA ID numbers. • Never place contaminated materials on a rubble pile or in a wash pond without permission from the MPCA's Emergency Response Department or the Environmental Advisor. The Area Land & Environment Manager is responsible for obtaining appropriate permission for this type of disposal. • Contaminated soil and sand, when treated offsite, must be sent to a registered disposal company with an appropriate transporter.

⊞⊞

⊞ History (56)

Site: NC-Nelson S&G and RMC
Created: 10-May-2017 09:47 by Patricia Bestler
Last Updated: 10-May-2017 10:03 by Patricia Bestler

Tool: Site Procedures **Generated:** 10-May-2017 09:48 by Patricia Bestler

Found 1 Record in 0 seconds

Filter: Record = "SPR6 - Emergency & Spill Response Procedure"

Appendix D

Spill Equipment Inventory

Appendix D
SPCC Plan – Larson Facility
Spill Equipment Inventory

Maintenance Shop

30-gallon spill kit (1) –	Universal absorbent pads Oil-only absorbent pads

Oil Shed

8-foot absorbent booms	Several
Absorbent pads	Several packages
Floor dry	Several bags

Appendix E

Emergency Contact Information

ENVIRONMENTAL EMERGENCY CONTACTS
LARSON QUARRY
10120 Grey Cloud Island Drive South
St. Paul Park, MN 55071
(651) 459-0607

Title	Name	Office Phone Number	Cell Phone Number
Plant Manager	Cassie Johnson	651-459-0607	612-297-2829
Operations Manager	Scott Schaffler	n/a	612-282-8608
General Manager	Tom Schmit	n/a	651-319-2369
Regional Manager, Enviornmental & Land Services	Patty Bestler	651-683-8133	612-214-8577
Region Head	Randy Gaworski	651-683-8134	612-716-5956
Health & Safety Coordinator	Ryan Severson	n/a	612-401-1078
Minnesota State Duty Officer:	1-800-422-0798		
National Response Center:	1-800-424-8802		
Minnesota Pollution Control Agency	651-296-6300		
EPA Region V	1-800-621-8431		
Clean-Up Contractors:	Bay West	800-279-1456	
	OSI Environmental	800-777-8542	
	Wenck Associates, Inc.	800-472-2232	
Supplies and Equipment:	DAWG	800-935-3294	
	New Pig	800-468-4647	

Appendix F

Record of Spill Prevention Briefings and Training

RECORD OF TRAINING FORM

Date of Training: _____

Operation/Site: _____

Trainer: _____

Information covered in Training: _____

_____

_____

_____

By signing below, you indicate that have received training on the above topic(s) and that you are competent to perform your job duties relating to the training topic(s).

PRINT NAME	SIGNATURE
_____	_____
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Check box after entered into ENVOY ☐

Appendix G

Spill Report Form

SPILL REPORT FORM

AGGREGATE INDUSTRIES

1. TODAY'S DATE _____PLANT / DIVISION_____STATE_____

2. DATE OF SPILL _____ TIME OF SPILL _____

3. PRODUCT SPILLED _____
(diesel fuel, gasoline, motor oil, concrete, other)

4. AMOUNT SPILLED _____
(gallons, yards, other)

5. Is the spill in your area greater than the following amount? YES ☐ NO ☐

- Colorado – 25 gallons **
- Louisiana – 42 gallons **
- Illinois – 25 gallons **
- Maryland – *any volume of oil*
- Massachusetts – 10 gallons **
- Michigan – 55 gallons **
- Minnesota – 5 gallons **
- Nevada – 25 gal. or 3 cubic yards **
- Texas – 25 gallons
- New Hampshire – 25 gallons **
- North Dakota - 5 gallons **
- South Dakota – 25 gallons **
- Utah – 25 gallons **
- Virginia – 25 gallons **
- West Virginia – federal reporting only**
- Wisconsin – 1 gal gas, 5 gal other **
- District of Columbia – federal reporting only
- Oklahoma – 25 gallons

** Federal Reporting – 1000 gallons, or 2nd spill within 12 months (both > 42 gallons)

6. DID THE SPILL REACH STATE WATERS? YES ☐ NO ☐
(lake, river, stream, ditch, wetland)

7. IF THE ANSWER TO #5 OR #6 IS YES, THE SPILL IS REPORTABLE.
Contact the Environmental Department Immediately!

8. HOW DID THE SPILL OCCUR? (include name of person or company responsible):

_____

_____

_____

9. LOCATION OF SPILL AND IMPACTED AREA (attach map if available):

_____

_____

_____

10. RESPONSE PROCEDURES / ENVIRONMENTAL CORRECTIVE ACTIONS TAKEN:

_____

_____

11. DISCIPLINARY ACTIONS TAKEN: _____

_____

_____

12. REPORTED BY: _____ DOCUMENTED BY:_____

13. REPORTED TO: _____ DATE:_____

14. ANY OTHER COMMENTS: _____

_____

REGIONAL OFFICE CONTACT INFORMATION

GREAT LAKES REGION Brian Gasiorowski Director of Land and Environment 6211 Ann Arbor Road Dundee, Michigan 48131 Telephone: 734-529-4192 Mobile: 248-705-8201	NORTH CENTRAL REGION – FARGO/MOOREHEAD and TWIN CITIES Patty Bestler Land and Environmental Manager 2915 Waters Road, #105 Eagan, MN 55121 Phone: (651) 683-8133 Cell: (612) 214-8577
MID AMERICA REGION Frank O'Laughlin Compliance and EMS Manager 1300 S. IL Route 31 South Elgin, IL 30177 Telephone: 815-331-7200 Mobile - 847-417-1755	MOUNTAIN REGION (Colorado/Arizona) Christine Felz Land and Environmental Manager 1687 Cole Blvd., Suite 300 Golden , CO 80401 Telephone: 303-809-7231
MID-ATLANTIC REGION Sharon Hogan Compliance and EMS Manager 6401 Golden Triangle Dr., Suite 400 Greenbelt, MD 20770 Ph: (301) 982-1400 (ext. 517) Fax: (301) 837-5696 Mobile: (703) 795-2357	NORTHEAST REGION Lisa Young Director of Land and Environmental 1715 Broadway Saugus, Massachusetts 01906 Telephone: 781-941-7200 Fax: 781-941-7273 24-Hour/After hours - (866) 735-2839
TEXAS-LOUISIANA REGION (Lattimore) Marilyn Jones Regional Environmental Manager 15900 Dooley Road Addison, TX 75001 Phone (972) 221-4646 Fax: (214) 379-1816	TEXAS LOUISIANA REGION Mark Miller Director of Land and Environmental 15900 Dooley Road Addison, TX 75001 Phone number (702) 649-6250 Fax number (702) 649-9275
TEXAS – LOUISIANA REGION (Louisiana) Heather Bergeron Regional Environmental Manager 1 Galleria Blvd., Suite 1070 Metairie, LA 70001 Phone (504) 875-2207 Mobile: (504) 330-4885 Fax: (504) 875-2408	TEXAS LOUISIANA REGION (Nevada) Katie Hites Land and Environmental Manager 3101 E Craig Rd N Las Vegas, NV 89030 Mobile: (702) 468-0391

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DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

August 7, 2023
Correspondence # MCE 2023-00446

Tyler Dahm
Sunde Engineering, PLLC

RE: Natural Heritage Review of the proposed Holcim Larson Quarry,
T27N R22W Section 24; Washington County

Dear Tyler Dahm,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- There is an area ranked as an *Area with Potential Local Conservation Value* within the project boundary that the Minnesota Biological Survey considered for Sites of Biodiversity Significance but was determined to be below the minimum biodiversity threshold for statewide significance. These areas, however, have conservation value at the local level as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat. This area contains two mapped examples of a native plant community, FDs37a – Oak – (Red Maple) Woodland, which has a state conservation rank of S4 – Apparently Secure. Although quarrying activities will remove any surface vegetation, for those parts of the project area that will not be quarried, we encourage you to consider project alternatives that would avoid or minimize disturbance. Actions to minimize disturbance may include, but are not limited to, the following recommendations:
    - Minimize vehicular disturbance in the MBS Site (allow only vehicles/equipment necessary for construction activities);
    - Do not park equipment or stockpile supplies in the MBS Site;
    - Do not place spoil within MBS Site or other sensitive areas;

- Use effective erosion prevention and sediment control measures;
- Inspect and clean all equipment prior to bringing it to the Site to prevent the introduction and spread of invasive species;
- As much as possible, operate within already-disturbed areas;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities can be viewed using the Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact the NH Review Team if you need assistance accessing the data. Reference the MBS Site Biodiversity Significance and Native Plant Community websites for information on interpreting the data.

- Pool 2 of the Mississippi River has been identified as a Lake of *Outstanding* Biological Significance. Lakes of Biological Significance were ranked as *Outstanding, High or Moderate* based on unique plant and animal presence. This stretch of the river was ranked based largely on its fish and mussel species. These species are intolerant of environmental degradation, especially turbidity and siltation, that can be caused by pollution, pesticides, and runoff. As such, it is important that effective erosion and sediment control practices are implemented and maintained near the lake throughout the project.

State-listed Species

- Waterhyssop (*Bacopa rotundifolia*), a state-listed threatened plant, and Kentucky coffee tree (*Gymnocladus dioca*), state-listed as a species of special concern, have been documented in the vicinity of the proposed project. In eastern Minnesota, waterhyssop occus along the sandy or silty margins of islands in the Mississippi River. These islands and beaches form by natural riverine processes and are constantly shifting. Kentucky coffee tree is most often found on river terraces above the reach of normal flood events. Minnesota's Endangered Species Statute (*Minnesota Statutes*, section 84.0895) and associated Rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the take of endangered or threatened plants or animals, including their parts or seeds, without a permit. The proposed project, as planned, does not appear likely to directly affect potential waterhyssop habitat so the DNR has no significant concerns for impacts to this species. **If plans change and potential habitat for this species will be impacted, contact the Natural Heritage Review team at Review.NHIS@state.mn.us, as a survey may be needed.**

- Rock pocketbook (*Arcidens confragosus*) and wartyback (*Quadrula nodulata*), both state-listed threatened mussels, and American eel (*Anguilla rostrata*) and blue sucker (*Cycleptus elongatus*), both state-listed fish species of special concern, have been documented in the Mississippi River in the vicinity of the proposed project. Mussels are particularly vulnerable to deterioration in water quality, especially increased siltation. As such, the mining project should not be allowed to negatively affect the water quality of the Mississippi River. A buffer of vegetation should remain between the mine and the river, and sound erosion and sediment control practices should be implemented and maintained for the duration of the project. **Please contact the Natural Heritage Review team at Review.NHIS@state.mn.us if the proposed project will impact the river's water quality or have direct impacts on the river bed,** as a mussel survey may be required.

- Blanchard's cricket frog (*Acris blanchardii*), state-listed as endangered, has been documented near the proposed project. This species is found in shallow wetlands, lakes, streams, and rivers. They typically occupy areas along the water's edge and prefer open areas with muddy shorelines and abundant emergent vegetation. The current description of the proposed project says the bluff and bottomlands will not be disturbed by the project. Given that, the DNR does not have significant concerns about impacts to this species. **If plans change and the floodplain or river bottom will be impacted, contact the Natural Heritage Review team at Review.NHIS@state.mn.us as further action may be necessary.**

- Bell's vireo (*Vireo bellii*) and lark sparrow (*Chondestes grammacus*), both state-listed bird species of special concern, have been documented in the vicinity of the project. In Minnesota, Bell's vireo prefers shrub thickets within or bordering open habitats such as grasslands or wetlands. This bird suspends its nests from forks of low branches of small trees or shrubs. Lark sparrows are found in open, dry grasslands with scatter trees and shrubs. If feasible, avoid intiital disturbance to grassland areas and tree and shrub removal from May 15th through August 15th to avoid disturbance of nesting birds.

- The North American racer (*Coluber constrictor*), a state-listed species of special concern, has been documented in the vicinity of the proposed project and may be encountered on site. These snakes occupy a variety of habitats in the deciduous forest region including forested hillsides, bluff prairies, grasslands, and open woods. Woodland margins and field edges are the preferred summer habitat. During winter months, North American racers hibernate in mammal burrows, caves, rock crevices, gravel banks, stone foundations, and old wells. North American racers have relatively large home ranges, making long-distance movements to and from their hibernacula each year. The North American racer emerges from hibernation in late April. Given the presence of these rare snakes, the DNR recommends that the use of erosion control mesh, if any, be limited to wildlife-friendly materials.

- The Natural Heritage Information System (NHIS) tracks bat roost trees and hibernacula plus some acoustic data, but this information is not exhaustive. Even if there are no bat records listed nearby, all seven of Minnesota's bats, including the federally endangered northern long-eared bat (*Myotis septentrionalis*), can be found throughout Minnesota. During the active season (approximately April-November) bats roost underneath bark, in cavities, or in crevices of both live and dead trees. Tree removal can negatively impact bats by destroying roosting habitat, especially during the pup rearing season when females are forming maternity roosting colonies and the pups cannot yet fly. To minimize these impacts, the DNR recommends that tree removal be avoided from June 1 through August 15.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts. For further assistance with these species, please contact the appropriate DNR Regional Nongame Specialist or Regional Ecologist.

Federally Protected Species

- The area of interest overlaps with a Rusty Patched Bumble Bee *High Potential Zone*. The rusty patched bumble bee *(Bombus affinis)* is federally listed as endangered and is likely to be present in suitable habitat within *High Potential Zones*. From April through October this species uses underground nests in upland grasslands, shrublands, and forest edges, and forages where nectar and pollen are available. From October through April the species overwinters under tree litter in upland forests and woodlands. The rusty patched bumble bee may be impacted by a variety of land management activities including, but not limited to, prescribed fire, tree-removal, haying, grazing, herbicide use, pesticide use, land-clearing, soil disturbance or compaction, or use of non-native bees. The USFWS rusty patched bumble bee guidance provides guidance on avoiding impacts to rusty patched bumble bee and a key for determining if actions are likely to affect the species; the determination key can be found in the appendix. If applicable, the DNR also recommends reseeding disturbed soils with native species of grasses and forbs using BWSR Seed Mixes or MnDOT Seed Mixes. Please visit the USFWS Rusty Patched Bumble Bee Map for the most current locations of *High Potential Zones*.

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be provided so the DNR can determine whether a takings permit will be needed for any of the above protected species.

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Heritage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

James Drake

James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Cc: Melissa Collins

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

August 2, 2024

Abraham Ledezma
In Situ Archaeological Consulting
7630 Executive Drive
Eden Prairie, MN 55344

RE: Holcim MWR, Inc. - Larson Quarry East Expansion and Road Realignment
T27 R22 S24, Grey Cloud Island, Washington County
SHPO Number: 2024-1830

Dear Abraham Ledezma:

Thank you for consulting with our office during the preparation of an Environmental Assessment Worksheet for the above-referenced project.

We have reviewed the cultural resources survey report, *Phase I Archaeological Investigation of the Larson Quarry Expansion and County Road Realignment Project, Washington County, Minnesota,* (June 24, 2024) that was prepared for this project. Based on the results of the survey, we conclude that there are no properties listed in the National or State Registers of Historic Places and no known or suspected archaeological resources in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

Please contact Kelly Gragg-Johnson, Environmental Review Program Specialist, at 651-201-3285 or kelly.graggjohnson@state.mn.us if you have any questions regarding our review of this project.

Sincerely,

Amy Spong
Deputy State Historic Preservation Officer

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

July 3, 2023

Tyler Dahm
Sunde Engineering
10830 Nesbitt Ave S
Bloomington, MN 55437

RE: Holcim MWR, Inc. - Larson Quarry Expansion
Expansion of an existing quarry at the Larson Mine – in addition to expanding the quarrying activities, the project may also include:

- Option 1: Possible relocation of Co Rd 75 around the proposed mining limits
- Option 2: Possible construction of an overhead conveyor system or underground tunnel system

T27 R22 S24, Grey Cloud Island Twp, Washington County
SHPO Number: 2023-2037

Dear Tyler Dahm:

Thank you for consulting with our office during the preparation of an Environmental Assessment Worksheet for the above-referenced project.

Based on the location of the proposed project as well as information contained in the 2004 report, *Report on Archaeological Reconnaissance Survey Conducted for the Proposed Expansion of Aggregate Industries Larson Quarry, Grey Cloud Island Township, Washington County Minnesota* (September 2004, Archaeological Research Services), we recommend that a Phase I archaeological survey be conducted to current standards. Based on information included in the report, there are possible remains of a historic cabin within the quarry expansion area or within the proposed relocation of County Road 75. Additionally, according to the 2004 report, the consultant did not conduct any shovel testing based on the shallow soils and exposed bedrock on the surface. Based on the presence of the Shakopee Formation near the surface on Grey Cloud Island, this location may have been a possible source for a quarry prior to European contact. Therefore, additional archaeological survey, in the form of shovel testing, may be warranted in some areas consistent with the current SHPO survey guidelines. Finally, nearly 20 years have passed since the previous archaeological survey was conducted. Due to the passing of time since that survey, cultural materials that may not have been historic (50 years old or older) then may be historic now. The Phase I archaeological survey must meet the requirements of the Secretary of the Interior's Standards for Identification and Evaluation and should include an evaluation of National Register eligibility for any resources that are identified. For a list of consultants who have expressed an interest in undertaking such surveys, please visit the website **www.mnhs.org/preservation/directory** . To search the directory, use Ctrl + F as a search function and enter “archaeologists” in the text box that pops up. The consultants in this category will be highlighted; you will need to scroll down to see them all.

According to the Office of the State Archaeologist's site inventory portal, there is a reported Native American burial site identified in the project vicinity. We recommend that you consult with the Office of the State Archaeologist (OSA) and the Minnesota Indian Affairs Council (MIAC) due to the presence of this site, per Sec. 307.08 of the Minnesota Private Cemeteries Act.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

If you have any general questions regarding our review of this project, please contact Kelly Gragg-Johnson, Environment Review Program Specialist, at (651) 201-3285 or kelly.graggjohnson@state.mn.us. For questions regarding archaeology, please contact Lucy Harrington, Environmental Review Archaeologist, at (651) 201-3283 or lucy.harrington@state.mn.us.

Sincerely,

Sarah J. Beimers
Environmental Review Program Manager

cc: Jennifer Tworzyanski, Office of the State Archaeologist
Dylan Goetsch, Minnesota Indian Affairs Council
Melissa Cerda, Minnesota Indian Affairs Council

Phase I Archaeological Investigation of the Larson Quarry Expansion and County Road Realignment Project, Washington County, Minnesota SHPO Number: 2023-2037

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June 24, 2024

Phase I Archaeological Investigation of the Larson Quarry Expansion and County Road Realignment Project, Washington County, Minnesota SHPO Number: 2023-2037

Prepared by:
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Regulatory Agency:
Minnesota State Historic Preservation Office

June 24, 2024

ABSTRACT

On behalf of Holcim MWR, Inc, Sunde Engineering commissioned In Situ Archaeological Consulting, LLC (In Situ) to provide cultural resource services in support of the Larson Quarry Expansion and County Road 75 Realignment Project (Project). This report presents the results of the intensive Phase I cultural resource investigation conducted by In Situ for the Project.

The Project consists of the proposed expansion of an existing quarry that is located on Upper Grey Cloud Island. The cultural resource review for the Project consisted of background literature review and field survey of approximately 125 acres. This cultural resource assessment is being completed as part of an Environmental Assessment Worksheet (EAW) for the Project.

A previous EAW was completed for the Project in 2005 (2005 EAW). A Phase 1 Archaeological Survey was conducted in conjunction with the 2005 EAW by Archaeological Research Services (SHPO File Number 2004-1260). The results were negative with respect to identification of any archaeological resources. However, based on the location of the Project, lack of shovel testing in the 2004 field work and report, and the length of time that has elapsed, SHPO recommend that a Phase 1 survey be conducted in accordance with current standards as part of the current environmental review.

The Project will not make use of federal funds. However, this investigation was conducted to identify any sites or properties and to evaluate them for the National Register of Historic Places (NRHP) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]). The Project is located in Section 24 of Township (T) 27 North (N), Range (R) 22 West (W) in Washington County, Minnesota. The project area is located on privately owned land within Grey Cloud Island Township, Minnesota. The western portion of the Project area is along the eastern edge of the current phase of the existing Larson Quarry, west of Grey Cloud Island Drive S, and south of an existing driveway that is north of the current phase of the existing Larson Quarry. The eastern portion of the project area is located south and west of Gray Cloud Channel, east of Grey Cloud Island Drive, and north of 99th Street South. The Project is located within areas consisting of heavily wooded vegetation and mixed grasses. The Phase I investigation included a background literature review within and surrounding the proposed Project area along with an intensive field survey of the proposed Project.

During the field survey, a total of 125 acres were inventoried for the Project. A total of 2,016 shovel test units were conducted during this survey, all of which were negative for cultural resources and no cultural resources 50 years or older were observed during this investigation. Therefore, In Situ recommends a finding of No Historic Properties Affected within the surveyed Project area and no further cultural resource work is recommended for the Project.

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INTRODUCTION

On behalf of Holcim MWR, Inc, Sunde Engineering commissioned In Situ Archaeological Consulting, LLC (In Situ) to provide cultural resource services in support of the Larson Quarry Expansion and realignment of County Road 75 Project (Project). This report presents the results of the intensive Phase I cultural resource investigation conducted by In Situ for the Project.

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The Project is located in Section 24 of Township (T) 27 North (N), Range (R) 22 West (W) in Washington County Minnesota (Figures 1-2). The western portion of the Project area is along the eastern edge of the current phase of the existing Larson Quarry, west of Grey Cloud Island Drive S, and south of an existing driveway that is north of the current phase of the existing Larson Quarry. The eastern portion of the project area is located south and west of Gray Cloud Channel, east of Grey Cloud Island Drive, and north of 99th Street South. The Project is located within areas consisting of heavily wooded vegetation and mixed grasses (Figure 3). The Phase I investigation included a background literature review within and surrounding the proposed Project area along with an intensive field survey of the proposed Project.

The literature review was conducted on September 18, 2023, and the Phase I cultural resource investigation was conducted on November 20, November 30, December 2, December 4-6, and December 8, 2023. The Phase I investigation included a background literature review within and surrounding the proposed Project area along with an approximate 125-acre intensive survey of the proposed Project.

Abraham Ledezma served as Principal Investigator for the archaeological investigation. Mr. Ledezma meets the requirements for the Secretary of the Interior's Guidelines for Professional Qualifications in Archaeology. Mr. Ledezma has over 17 years of experience and received an M.S. in Applied Anthropology from Missouri State University in 2012 and a B.A. in Anthropology, with an emphasis in Archaeology from Minnesota State University Moorhead in 2008. Fieldwork was completed by the field crew consisting of Abraham Ledezma, Craig Picka, Benjamin W.

Schweer, Sylvia M. Sandstrom, Jack Peterburs, John Seidl, and Tou Chang. Literature review data was compiled by Abraham Ledezma and report figures were completed by Santos Ledezma. All field notes and photographs are maintained on file at In Situ's office located in Eden Prairie, Minnesota.

ENVIRONMENTAL AND GEOMORPHOLOGICAL CONTEXT

At the time of survey, the topography of the Project area consisted of undulating terrain. Vegetation consisted of mixed grasses and wooded vegetation. Impacts include natural erosion, rural development, agricultural practices, and mining activities.

ECOLOGICAL SETTING

The Project area is located within the North Central Hardwood Forests (51) Level III ecoregion, and more specifically, the St. Croix Stagnation Moraines (51a) Level IV ecoregion. The St. Croix Stagnation Moraines is defined as "rolling hills interspersed with depressions of small lakes and wetlands, extensively covered by urban and suburban development, but also pasture, and some crops and woodland" (U.S. Environmental Protection Agency 2007).

Prehistoric and historic vegetation within the regions known as the Floodplain Forest and the Upland Prairie within the St. Paul-Baldwin Plains and Moraines, consisted of silver maple, elm, cottonwood, willow, bluestems, Indian grass, needle and grama grasses, composites, and other forbs. Currently, urban development is the primary land use within the region (Minnesota Department of Natural Resources 1988; 2024).

Hundreds of wildlife species are resident or seasonal visitors to the region along with hundreds of native fish species which live in the surrounding rivers and tributaries. Some of the fauna that would have been common and available for historic and prehistoric human use in the Minnesota region include white-tail deer, black bear, elk, opossum, raccoon, cottontail rabbit, squirrel, gray fox, bobcat, mountain lion, wolf, mink, otter, beaver, muskrat, and woodchuck (Gibbon 2012).

CLIMATE

The climate of Minnesota is a continental-type climate that is marked by seasonal variations. The average annual temperatures in Minnesota range from 36 degrees Fahrenheit (ºF) in the extreme north to 49°F in the southeastern corner. The average winter temperature is 17 ºF and the average summer temperature is 70ºF (National Climatic Data Center 2017). Washington County winters are very cold, and the summers are warm. Most of the precipitation occurs during spring and summer when 71 percent of the annual precipitation is received between April and September. The average annual precipitation is about 28.41 inches in the county. The average snowfall in the county is about 46 inches. The average winter temperature in the county is 17ºF and the average summer temperature is 70ºF (U.S. Department of Agriculture, SCS 1980).

This undertaking was conducted on November 20, November 30, December 2, December 4-6, and December 8, 2023. The weather ranged from warm to cool and from sunny to cloudy, typical for the region at that time of year.

PHYSIOGRAPHY AND HYDROLOGY

The physiography of the project area is located within the Rochester Till Plain. This area is characterized as nearly featureless till plain with areas of thick loess and drainages to provide some changes in relief (Wright 1972). The highest elevation in Washington County is about 1,104 ft. above sea level with the lowest elevation at about 675 ft. above sea level (U.S. Department of Agriculture, SCS 1980).

In Washington County, the major drainages are the Mississippi River, the St. Croix River, and their tributaries (U.S. Department of Agriculture, SCS 1980). The proposed Project area is south and west adjacent to Grey Cloud Channel.

GEOLOGY

The geology of the Project area is characterized by Lower Ordovician rocks, undivided, dating to the Lower Ordovician. The Lower Ordovician rocks, undivided consists of "Shakopee and Oneota Formations of the Prairie du Chien Group in the Hollandale embayment of southeastern Minnesota. Unit consists dominantly of dolostone and dolomitic limestone. The Shakopee also contains intervals of quartz arenite, including a pronounced basal unit named the New Richmond Member" (Morey and Meints 2000).

SOILS

The Project area is located within the Copaston-Sparta soil association, these are "soils formed dominantly in a sandy or loamy mantle over bedrock and in sandy alluvium" (U.S. Department of Agriculture, SCS 1980). Copaston-Sparta soils are described as "nearly level to moderately step, well drained and excessively drained, medium textured and coarse textured soils; on uplands" (U.S. Department of Agriculture, SCS 1980). Three specific soil series are present in the Project area, with the most prevalent soil type consisting of Copaston loam (100B) (Natural Resources Conservation Service 2024). During the field survey, the soils within the Project area were typically shallow with limestone bedrock present, which was most prevalent within the Copaston loam soils which comprise approximately 67 percent of the soils within the Project area. The limestone bedrock depth within Copaston loam, at its approximate maximum depth, is located at approximately 46 cm below the ground surface (University of California Davis 2024). Table 1 summarizes the soils within the Project area.

Table 1: Summary of Soil Series within the Project area.

Soil Series	Parent Material	Drainage	Slope	Landform
Copaston loam (100B)	Loamy sediment over bedrock	Well drained	0–6%	Hills, terraces
Dorerton-Rock outcrop complex (1819F)	**Dorerton:** Loamy sediment over limestone bedrock	Well drained	25-65%	Hills, escarpments on terraces
Sparta loamy sand, bedrock substratum (1848B)	Sandy glaciofluvial deposits over bedrock	Excessively drained	0–6%	Outwash terraces

Source: Natural Resources Conservation Service (2024).

CULTURAL CONTEXT

The Project location is situated in Washington County, Minnesota and within Archaeological Region 4 – Central Deciduous Lakes region. The Central Lakes Deciduous region encompasses Anoka, Benton, Cass, Chisago, Crow Wing, Hennepin, Isanti, Mille Lacs, Morrison, Ramsey, Sherburne, Stearns, Todd, Wadena, Washington, and Wright counties with portions of Becker, Dakota, Douglas, Hubbard, Kandiyohi, Kanabec, Meeker, Otter Tail, Pine, Pope, and Swift counties. This region could also be extended eastward into central Wisconsin (Anfinson 1990, Gibbon 2012, Gibbon et al. 2002). The topography of the Central Lakes Deciduous Region is characterized by a patchwork of moraines, till plains, and outwash plains. The Mississippi River flows through the central and eastern area of the region with the Lower St. Croix River on the eastern border (Anfinson 1990, Gibbon 2012; Gibbon et al. 2002).

During the contact period, the southern and western areas of the Central Lakes Deciduous Region were dominated by Big Woods flora (elm, maple, and basswood) with large inclusions of prairie and oak forests. Oak forests likely dominated the region during the Late Holocene with the eastern part of the region still dominated by oak forests until approximately the 1850s. The northern region was a mix of deciduous and coniferous forests. Deer was the dominant fauna throughout the region with small numbers of bison and elk to the south and west, with beaver, black bear, and moose in the northern and eastern portions of the region (Anfinson 1990; Gibbon 2002).

The following narrative presents condensed pre-contact, contact, and post-contact cultural overviews of the survey area.

PALEOINDIAN (11,500–7,500 BC)

The Paleoindian period in North America dates between approximately 11,500–7,500 BC. This is the period in which the first human populations came to North America and corresponds with the last retreat of the Wisconsin glacial period. The defining characteristics of the Paleoindians were:

- extensive use of exotic cherts,
- specialized lithic technologies,
- small and extremely mobile societies, and
- primary subsistence on large game mammals (J. Morrow 1996; Schermer et al. 1995).

During this period, the environment in Minnesota continually changed from an "open boreal coniferous forest dominated by grasses and scattered conifer trees" (Gibbon 2012:38) to open prairie in the southwest, deciduous forest in center-southeast, and a coniferous forest in the north.

Early Paleoindian (11,500–10,500 BC)

The main characteristic that distinguishes the Early Paleoindian period from the Late Paleoindian period are the use of fluted lanceolate points, and subsistence hunting of large, extinct animals including mammoths, mastodons, and giant bison varieties (Gibbon 2012; J. Morrow 1996; Schermer et al. 1995). As of 2012, only about seventy-three projectile points, and possibly a scraper and drill have been identified within Minnesota (Gibbon 2012).

The lithic technology of the Early Paleoindian period is characterized by fluted lanceolate points. The fluted styles found in Minnesota include Clovis, Gainey, Folsom, and Holcombe Points (T.

Morrow 2016). Fluting is the removal of a flake from the base of the projectile. The earliest known point type in North America is the Clovis, which dates from circa 9,500 to 8,650 BC (T. Morrow 2016). Clovis points are broad, thin, well-made lanceolate points with concave bases and basal flutes that extend one-half to one-fifth the length of the point. Folsom is the second oldest recorded lithic technology and overlaps with Clovis, dating between 8,900 to 8,400 BC (J. Morrow 1996; Schermer et. al. 1995). Folsom points are "thin, finely made, medium sized lanceolate points with a flattened to bi-concave cross-section, parallel to convex sides, and broad flutes that cover at least 60 percent of each face" (T. Morrow 2016:128). Gainey points are fluted points that have a "lanceolate outline, deep and rounded basal concavities, and well-defined primary flutes" (T. Morrow 2016:124). Holcombe points are "small, thin lanceolate points with shallow concavities with broadly convex sides and high midpoint above the center" (T. Morrow 2016:132).

Late Paleoindian (10,500–7,500 BC)

The Late Paleoindian period is characterized by the disappearance of fluted lanceolate styles and replaced with non-fluted lanceolate point types. Stemmed points, some heavy stone tools, and the use of Hixton quartzite from western Wisconsin are also characteristics of the Late Paleoindian period in Minnesota (Gibbon 2012). The majority of Late Paleoindian artifacts have been found as surface finds in plowed fields, which have been removed from their original context. This makes any inferences between the associations between the artifacts of this period difficult. The point types found in Minnesota from this period are Agate Basin, Alberta, Angostura, Browns Valley, Eden, Frederick, Hell Gap, Midland, Plainview, and Scottsbluff. These artifacts tend to be well made with high-quality craftsmanship (Gibbon 2012; T. Morrow 2016).

ARCHAIC PERIOD (10,500–500 BC)

The Archaic Period within Minnesota dates between 10,500–500 BC. Within Minnesota, that Early Archaic period coexisted with the Late Paleoindian period with little definable timeframe. The Archaic Period in Minnesota is characterized by the:

- expansion of a subsistence strategy that relied on a variety of modern game fauna (deer, moose, bison, rabbits, beavers, birds, and fish) and wild flora resources,
- absence of pottery manufacturing,
- appearance of a variety of notched and stemmed projectile points,
- emergence of pecked and groundstone tools, and
- appearance of native copper artifacts, and some exotic materials such as marine shell (Florin et al. 2016; Gibbon 2012; Stoltman 1997).

During this period, the climate was continuously changing toward a warm and dry climate, a change known as the Altithermal. The dry and hot weather continued for approximately 1,000 years before changing to a cooler, wetter climate that lead to a more modern ecology by 3,000 BC (Florin et al. 2016). Deciduous forests dominated the southern area of Minnesota while pine forests replaced the boreal spruce forests in the north. By 8,000 BC, the tallgrass prairie had spread from west to east across the state, pushing the forests east and then receding back to their present position (Gibbon 2012).

Early Eastern Archaic (10,500–7,500 BC)

The Early Eastern Archaic period was contemporaneous with the Late Paleoindian. The Early Eastern Archaic describes the Archaic complexes that derived from the eastern woodlands instead of the western prairie. The Early Eastern Archaic dates between 10,500–7,500 BC (Gibbon 2012). This was a transitional period for cultures, with less reliance upon large game mammals to more reliance upon foraging subsistence (T. Morrow 1996; Schermer et al. 1995). The Early Eastern Archaic points are notched or stemmed styles such as Dalton, Hi-Lo, Quad, Thebes, St. Charles, Graham Cave Side Notched, and Kirk Corners Notched points (Florin et al. 2016; Gibbon 2012). These points are often associated with sparse scatters of non-diagnostic artifacts like scrapers, blades, and point blanks. As with the Paleoindian period, it is likely that organic artifacts like wooden artifacts, cords/textiles, and bone tools have not lasted until modern times (Florin et al. 2016; Gibbon 2012).

Middle Archaic (7,500–3,000 BC)

The Middle Archaic dates approximately between 7,500–3,000 BC. The driest and warmest post-glacial period, the Altithermal, occurred during this period. Due to large climatic changes during this period, many sites may have either been buried or eroded away (Florin et al. 2016; Gibbon et al. 2002). The lithic technology of the Middle Archaic is characterized by a wide range of medium-sized stemmed and notched projectile point types. The projectile points of the Middle Archaic tend to be smaller and poorly made compared to Early Archaic and Late Paleoindian points. This may have been due to an emphasis on using and possibly heat-treating poor quality local lithic resource material rather than the use of higher quality, exotic lithic materials.

Middle Archaic points are smaller than Paleoindian points, with side notches and beveled, re-sharpened edges. These edges seem to be used for both penetration and cutting. The points were used as projectile points for atlatl darts, which first appeared during the Archaic Period. The site types from this period in Minnesota include base camps, short-term camps, kill sites, lithic scatters, burials, lithic quarries, and workshops.

The points of the Middle Archaic are divided into two broad categories, the Plains and the Eastern Woodlands. Projectile point types found in the Eastern Woodlands include LeCroy Bifurcated Stemmed, Fox Valley Truncated Barb, Osceola, Raddatz Side Notched, Eva I, Morrow Mountain I and II, Matanzas Side Notched, Etley, Benton Stemmed, and Elk River Stemmed. The point types found in the Plains are Simonsen, Graham Cave Side Notched, Oxbow, McKean, and Table Rock Stemmed. During this period, ground stone tool technology appears such as grooved stone axes, boatstones, bannerstones, and gorgets (Florin et al. 2016; Gibbon 2012; T. Morrow 1996; Schermer et al. 1995).

Late Archaic (3,000–500 BC)

The Late Archaic in Minnesota, dating between 3,000–500 BC, is characterized by the appearance of different sets of diagnostic points styles; presence of raw exotic materials (e.g., native copper and marine shell); appearance of "unusual" artifacts including birdstones, gorgets, and Turkey Tail bifaces; presence of communal burials sites; lack of ceramics; and an increasingly modern Late Holocene environment (Gibbon 2012:78).

During the Late Archaic, intergroup interactions increased due to an increase in population growth. This increase in population and group interactions created similar subsistence strategies over large areas, which in turn increased each groups' territory size, and increased the number of local, distinctive artifact styles. Trade networks were also developed and established between different communities. The Altithermal ended during this period, causing increased resource stability in areas that were previously inhabitable by humans. A more sedentary lifeway was practiced, as is evidenced by the construction of large communal cemeteries, an increase in wild rice harvesting, and the use of gardens in which were cultivated sunflower, amaranth, and squash (Gibbon 2012; Schermer et al. 1995).

The point types from the Late Archaic are divided into five regional areas: Upper Mississippi River Valley, Northeast, Central Mississippi River Valley, Northern Plains, and Southeast. The Upper Mississippi River Valley consists of the Large Side Notched Cluster (Godar, Madison Side Notched, Osceola, and Raddatz Side Notched), Durst Cluster (Durst Stemmed) Late Archaic Stemmed Cluster (Karnak Stemmed), Turkey Tail Cluster (Turkey Tail), Terminal Archaic Barbed Cluster (Delhi and Buck Creek Barbed), Early Woodland Straight Stemmed Cluster (Fox Valley Stemmed, Kramer, Robbins), and Motley Expanding Stem Cluster (Motley, Atalissa, and Tipton). The Northeast consists of the Matanza Cluster (Matanzas Side Notched and Brewerton Eared Notched). The Central Mississippi River Valley consists of the Table Rock Cluster (Table Rock Stemmed) Etley Cluster (Etley), Nebo Hill Cluster (Nebo Hill Lanceolate and Sedalia Lanceolate), and Wadlow Cluster (Wadlow). The Northern Plains consists of the McKean Cluster (McKean, Duncan, and Hanna), and the Oxbow Cluster (Oxbow). The Southeast consists of the Eva Cluster (Eva II), Benton Cluster (Benton Stemmed and Elk River Stemmed), Ledbetter Cluster (Ledbetter stemmed), and Dickson Contracting Stemmed Cluster (Gary and Little Bear Creek) (Gibbon 2012; T. Morrow 2016).

WOODLAND PERIOD (500 BC–AD 700)

The timeframe for the Woodland Period in Minnesota varies. In southeastern Minnesota, this period dates between 500 BC–AD 700. In central and northern Minnesota, the Woodland Period dates between 200 BC–AD 700. During this period, the environment stabilized and allowed for the development of greater regional variations.

The two main characteristics of the Woodland Period in Minnesota are the appearances of pottery and earthen burial mounds (Johnson 1988). The appearance of these two cultural developments may suggest an increase in social complexity. Hunting and gathering continues within the Woodland period with the "intensification of food resource activities initiated in the Late Archaic period" (Gibbon 2012:93). However, there is also an increasing reliance on domesticated plants and wild rice, which indicates an increase in population growth and sedentism (Johnson 1988; Radford et al. 2015). This document will concentrate on the Initial and Terminal–Woodland periods in southeastern Minnesota.

Initial Woodland in Southeastern Minnesota (500 BC–AD 500)

The Initial Woodland Period in southeastern Minnesota describes the Woodland Period (500 BC-AD 500) in the area east and south of St. Cloud, Minnesota. It is divided by Gibbon (2012) into Early Woodland, Havana-Related Middle Woodland, and Late Middle Woodland.

Early Woodland (500–200 BC)

The most identifiable diagnostic artifact from the Early Woodland period in southeastern Minnesota is the appearance of the La Molle Thick pottery and Black Sand series of pottery. La Molle Thick Pottery has walls ranging between 1-1.5 centimeters thick and has a cordmarked surface with "distinct vertical to oblique cordmarking on the exterior surface and horizontal to oblique cordmarking on the interior surface" (Anfinson 1979; Gibbon 2012). La Molle Thick could be associated with a variety of straight-stemmed points, most commonly the Kramer points. Black Sand series of pottery are decorated with incised lines (Black Sand incised), or with finger or fingernail impressions (Sisters Creek Punctate), although the latter is less common. Waubesa Stemmed points are associated with finger/fingernail impressed pottery. Other point types associated with the Early Woodland of southeastern Minnesota are Adena, Robbins, and Dickson (Florin et al. 2016; Gibbon 2012; T. Morrow 2016).

Havana-Related Middle Woodland. (200 BC–AD 200)

The Havana-Related Middle Woodland period dates from 200 BC–AD 200 and consists of three phases: Howard Lake, Sorg and Malmo. The Howard Lake phase is not well understood nor well investigated. This phase is the northernmost regional variant of the Havana Hopewell from Central Illinois River valley and the Hopewell Interaction Sphere. The Hopewell Interaction Sphere was the propagation of ideas about social organization and relationships, technology, and economic activities from the Hopewellian culture centers in Illinois and Ohio (Perry 1996; Schermer et al. 1995). The Howard Lake phase is centered on many major rivers, lakes, and wetlands of southeastern Minnesota. The greatest site concentration of this phase is within southern Anoka County, where there are large mound concentrations with some small habitation sites. The Sorg phase is concentrated around Spring Lake, south of St. Paul, Minnesota. The Malmo phase is the most common phase of the Havana-Related Middle Woodland period. Sites from this phase are found across much of central and eastern Minnesota (Arzigian 2008; Florin et al. 2016; Gibbon 2012).

The ceramics of the Havana-Related Middle Woodlands are wide-mouthed jars with thick vessel walls (6–12 mm), straight rims, slightly constricted necks, fairly rounded shoulders, and subconoidal bases. They are grit-tempered and are decorated with punctuates, bosses, incised lines, slashes, cordwrapped-stick impressions, and dentate stamping. The point types associated with this period are the Hopewell luster, which includes Snyders, Manker, and Gibson points (Arzigian 2008; Gibbon 2012).

Havana burials within the south of Minnesota were typically grouped from two, three, or 15 conical burial mounds. The mounds varied in size, with the larger mounds measuring 30 feet in height. Mounds over five ft. high almost always contained diagnostic Havana-Hopewell burial items including copper earspools, pan pipes, celts, perforated bear canines, platform pipes, pearl beads, and elongated, nonutilitarian bifaces (Arzigian 2008; Gibbon 2012).

Late Middle Woodland (AD 200–500)

The Late Middle Woodland dates from AD 200–500. The change from the Havana-Related Middle Woodlands to the Late Middle Woodlands appeared to be a gradual process among the local populations. The archaeological record of this period in southeastern Minnesota is largely unknown. Gibbon (2012) assumes Allamakee and Millville cultural phases of northeastern Iowa

and southwestern Wisconsin extended into southeastern Minnesota. This period is characterized by the replacement of the widespread use of Havanna ceramic with more spatially restricted imitations, less elaborate cultural practices, and the significant change in ceramic technology (Arzigian 2008; Florin et al. 2016; Gibbon 2012).

Burial practices are still dominated by the use of burial mounds, however, these practices become more simplified with grave goods becoming rarer and with no associated diagnostics. The most notable ceramic type is the Linn wares. The Linn wares of this region are thin-walled diagnostic ceramics that retain some Havana-related decoration (dentates, cordmarking). Ceramic technology also changes with vessels having more globular shapes, complex rims, thinner walls, and much finer tempers. The lithic assemblages consist of side-notched Steuben points and smaller Ansell points (Arzigian 2008; Florin et al. 2016; Gibbon 2012).

Terminal Woodland in Southeastern Minnesota (AD 500–1200)

The Terminal Woodland period in southeastern Minnesota dates from AD 500–1200, just before the first European contact. This period is characterized by changes in ceramic and lithic technologies. One of the most notable changes is the development of the bow and arrow, effigy mounds, elaborate mortuary rituals, increase in long-distance trade networks, acquisition of exotic materials, elaborate smoking-pipe tradition, and the development of socially ranked societies. The human population also increased with a gradually greater dependence on domesticated plants and a more sedentary lifeway. However, not much is known since the archaeological record within the region and period is lacking. Archaeologists have to rely on information from sites in Wisconsin, Illinois, and Iowa. The Woodland Period ends with the introduction of corn farming and the appearance of the Mississippian and Plains Village cultures (Florin et al. 2016; Gibbon 2012; Johnson 1988).

Initial Late Woodland (AD 500–700)

The Initial Late Woodland dates between AD 500–700 and is a transitional period between the Late Middle Woodland and the Mature Late Woodland. This period includes two closely related archaeological phases known as the Mill phase in southwestern Wisconsin and Lane Farm phase in northeastern Iowa. The characteristic of both phases is the presence of Lane Farm Cord-impressed ceramic wares. These wares have a somewhat rounded base, constricted neck, are relatively thin, and have a fine, grit temper. They typically have cord-impress decoration on the exterior rim, and rocker stamping over some of the body below the rim. The projectile points associated with this period are small corner-notched points, which are the first arrow points in the region. These may have included the Stueben Stemmed, Maker Corner Notched, Scallorn, Klunk Side-Notched, and Koster Corner-Notched types. Other traits of the period are the appearance of small conical mounds and some elongated linear mounds with limited burial goods (Arzigian 2008; Florin et al. 2016; Gibbon 2012).

Mature Late Woodland (AD 700 – 1000)

During the Mature Late Woodland period, mound construction became more widespread and complex known as the Effigy Mound Complex. In southeast Minnesota, the Effigy Mound Culture appeared between AD 700–1000. This culture is characterized by the creation of groups of linear mound complexes, effigy mounds, and conical mounds. The effigy mounds resemble several animals including bears, deer, panthers, turtles, and birds. The mounds rarely exceed two to three

feet in height and are about 500 feet or more in length. The mounds are typically located on ridgetops or elevated areas bordering major lakes and rivers. Altogether, there are about 13 to 15 sites in Minnesota that contain effigy mounds or possible effigy mounds (Arzigian 2008; Florin et al. 2016; Gibbon 2012).

Besides the mounds, the most common diagnostic trait of this period are the Madison Ware ceramics. The general characteristics of the vessels are globular shaped, thin walls, fine grit temper, cordmarking on the exterior surface, a constricting neck, and an out-flaring rim. They are typically decorated with cord impressions with geometrical patterns on the exterior rim surface. Angelo Punctate is another ceramic style found in the latter part of this period. They are thin walled and cordmarked, often decorated with punctuates and fine incised lines. The points from this period are small stemmed, side-notched, and unnotched triangular arrow points. This includes Scallorn, Koster Corner Notched, Klunk Side Notched, and Madison point types (Florin et al. 2016; Gibbon 2012).

Final Late Woodland (AD 1000–1200)

The Final Late Woodland period in Minnesota dates between AD 1000–1200. This period marks profound changes in the archaeological record in southeastern Minnesota and the Upper Mississippi Valley south of the Twin Cities. These changes include a significant reduction in "pure" Late Woodland sites, effigy mounds are no longer being constructed (approximately by AD 1050), stockade sites with Mississippian traits become common in southeastern Wisconsin, northeastern Iowa, and possibly in the Red Wing locality of Minnesota, and large portions of the driftless areas are abandoned. Corn horticulture is found with the Grant series of ceramic wares in western Wisconsin, southeastern Minnesota, northern Iowa, and northern Illinois. Grant ware is grit-tempered, cord-roughened globular jars with prominent castellation, collars, squared orifices, or other special rim treatments that raise the rim height. The most common projectile points from this period include the Madison Triangular, Cahokia, Reed, Harrel, and Des Moines types of the Cahokia Side Notched cluster (Gibbon 2012).

LATE PREHISTORIC (AD 1000–1650)

The Late Prehistoric period dates between AD 1000–1650 and is characterized by the use of earthlodge dwellings, crop surplus, improved storage techniques, and the development of complex social organization within villages. Corn became a staple in the native diets along with bison meat. There is also the increased appearance of bison bone tools within the archaeological record of this period. This is most likely due to less time in the ground with which the bone can deteriorate (Radford et al. 2015; Schermer et al. 1995).

Mississippian (AD 1000–1650)

The Mississippian period dates from AD 1000–1650. The Mississippian Culture was agriculturally intense, depending heavily on maize, beans, sunflowers, and tobacco. There were two major Mississippian centers in Minnesota. One center was located at the junction of the Cannon and Mississippi rivers, just north of Red Wing, Minnesota and the other along the central and upper Minnesota River. These centers seem to have evolved from the great Middle Mississippian center at Cahokia, Illinois. These cultural centers developed different adaptations associated with their environment. The Red Wing locality was adapted to forests and tall grass prairies in the east and the Minnesota River locality was adapted to the timbered river bottoms and grassland in the west.

There are four main phases from this period in Minnesota: Silvernale, Great Oasis, Cambria, and Big Stone (Gibbon 2012; Johnson 1988).

Villages in this period were large, possibly housing between 600 and 800 people. Some of these villages had palisades and were frequently located on easily defendable flat river terraces. Deep storage pits were dug throughout the villages. Gardens were planted in the river bottoms while hunting and fishing remained important, with some Mississippian sites depending on bison as a food staple. A large number of burial mound complexes are associated with this culture (Johnson 1988).

Oneota (AD 1225-1650)

The Oneota is the name given to several post-Woodland groups living on the Prairie Peninsula. This cultural complex appears in Minnesota from AD 1225–1650. This culture complex is most commonly identified by their pottery, which is a shell-tempered globular jar that has a constricted mouth and a round bottom. The shoulder is often decorated with incised, geometric patterns. A common decoration motif on Oneota ceramics are chevrons and other variations. Other artifacts that were common, but not unique to Oneota are bison scapula hoes, deer mandible sickle; small, unnotched triangular projectile points; end scrappers; sandstone abraders; mauls; catlinite disc and elbow pipes; and village areas with numerous storage pits. They also lived in a variety of house shapes including oval, square, and long rectangle. There are two Oneota phases in Minnesota: Blue Earth Phase and Orr Phase (Fishel 1996; Gibbon 2012).

CONTACT PERIOD (AD 1630–1837)

Before the native population made contact with early French Explorers, European trade goods started to appear within Minnesota. Glass beads, iron knives, brass kettles, finger rings, and firearm parts appear within the archaeological record, which were from early French traders. The local native tribes were also indirectly affected by Europeans by the spread of foreign disease, which decimated their populations. At one point or another, parts of Minnesota were claimed by the French, Spanish, British, and United States. Minnesota was first claimed by the French as part of New France (Blegen 1963; Folwell 1956).

The first recorded exploration was by French explorers Daniel Greysolon, Sieur du Lhut; Father Hennepin; and Pierre Charles le Sueur. Greysolon was sent out from Quebec and Montreal to open trade with the Dakota in AD 1679, and for the next 11 years explored the triangle between the Mississippi and St. Croix rivers. Father Hennepin along with Michel Accault and Antonie Aguell were also sent out to explore in the Upper Mississippi River Valley circa AD 1679, where they discovered and named St. Anthony Falls. In 1731, Canadian-born French explorer Pierre Gaultier de Varennes, Sieur de La Verendrye set out to explore lands west of Lake Superior. In August of 1831, he sailed into Grand Portage and passed over the Canada-United States Border Lakes to establish a trading post at Lake of the Woods. At this post, trading could be conducted with the local tribes. In AD 1763, the Treaty of Paris gives all the land east of the Mississippi to the British, and eventually the new United States of America. In 1797, Pembina in North Dakota was established by Charles Baptiste Chaboillez of the Northwest Fur Company. Also, the Hudson Bay and American Fur Companies were positioned at Pembina as the fur trade increased and expanded. There were a few native tribes within the southeastern area of Minnesota including the Ioway and

the Dakota (Blegen 1963; Folwell 1956; Merry 1996; Radford et al. 2015; Schermer et al. 1995; Schwieder 2000).

Ioway

The Ioway are a Siouan group that resided in Missouri and the Mississippi River Valley. The Ioway, Oto, and Missouri were once part of a larger tribe with ancestral roots in Oneota culture from the Plains Village period. The first recorded contact with the Ioway was in AD 1676 by Father Louis Andre in Green Bay, Wisconsin (Anderson 1973b). The Ioway were a semi-sedentary horticultural tribe that spent much of the year away from permanent villages during the summer hunting excursions. The villages were located on terraces above rivers' floodplains. They lived in different types of dwellings including earthlodges, wattle-and-daub houses, and tipis. The annual bison hunt took place from May to August in order to stockpile meat for winter. During the fall and winter, they supplemented their diet with smaller hunting parties for bison, elk, and deer. They also grew beans, corn, squash, pumpkins, and other native crops (Anderson 1973a; Anderson 1973b; DeMallie 2001; Malinowski et al. 1998).

Dakota

The Dakota originally lived in Minnesota before the Contact Period and are part of the Oceti Sakowin, or Seven Council Fires. This council included the Mdewakanton, Wahpekute, Sisseton, Wahpeton, Yankton, Yanktonai, and Teton tribes. Their first contact with Europeans was with the French traders and Jesuit missionaries in the 1650s. The Dakota were a nomadic people relying on hunting and gathering subsistence strategy. They hunted buffalo, deer, and waterfowl and fished using spears and nets. They also foraged for wild flora resources including fruit, acorns, nuts, wild rice, and maple sap. During the 19th century, the Dakota practiced horticulture but planted at irregular intervals. They planted corn, squash, beans, and tobacco. Their crop yields were small and would only last a few weeks (DeMallie 2001; Malinowski et al. 1998).

POST-CONTACT (POST–AD 1837)

Disclaimer: The following discussion is written with a lens of Euro-American bias. The area that includes all of Minnesota and western Wisconsin was considered "Indian Territory" and settlements were not allowed. Although the French, British, and Americans established trading posts in Minnesota, the first official white settlements were established after AD 1837. This was due to the signing of two treaties, one with the Ojibwe and one with the Dakota. The 1837 treaties had the Ojibwe and Dakota ceding all their lands east of the Mississippi, which included the Golden Triangle, the land between Mississippi and St. Croix Rivers. The treaties were ratified by Congress in 1838 and the land was open to American settlement. In 1849, Minnesota officially became a territory and on May 11, 1858, was admitted as a State into the United States. In 1862, Congress passed the Homestead Act which allowed up to 160 acres of land to be claimed provided that the person was head-of-household or person over 21 years of age, was a United States citizen, or filed a declaration to become a citizen and stayed on the land and worked the land for five years and paid any administration fees (Blegen 1963; Folwell 1956).

Railroad Development

In the mid-1800s, the construction of railroads was started throughout the United States beginning with the first railroad built near Baltimore, Maryland in 1831 (Schwieder 2000). The railroad

system in Minnesota began in 1862, with the construction of the St. Paul and Pacific Railroad, connecting St. Paul and St. Anthony. This resulted in the construction and expansion of major railway lines to the southwest and west, including the Chicago; St. Paul, Minneapolis, and Omaha Railway; Chicago, Milwaukee & St. Paul Railway; and the Chicago & Northwestern Railway. The railroad helped to create the current settlement pattern and economic developments in Minnesota. They are an efficient, inexpensive way to transport goods and people. Also, for the first time, people could travel at any time of the year (Quivik and Martin 1988; Schwieder 2000).

Washington County

Washington County is located in the eastern area of Minnesota on the Minnesota/Wisconsin Border at the St. Croix River. It was established and organized on October 27, 1849. The county seat is the city of Stillwater. Washington County is named after George Washington, President of the United States (1789-1797). Before Europeans visited and settled the area, the Dakota and Ojibwe had been living in area that became Washington County. The first Europeans, or people of European descent, to visit the area that is now Washington County was Daniel Greysolon, Sieur du Luth (Duluth), in 1679. The first settlers of Washington County were lumbermen at a Marine-on-St. Croix in 1839 and were shortly followed by other pioneers, such as farmers. The first railroad to be constructed in Washington County was the Lake Superior and Mississippi Railroad, which was opened for traffic in August 1870. By 1905, the population of Washington County had grown to 28,884 residents (Easton 1909; Foote et al. 1881; Gannett 1905; U.S. Department of Agriculture, SCS 1980).

The lumber industry was one of the first industries in the county and one of the reasons people settled in the area. For the most part, lumbering in the county was typically confined to cutting and processing northern pine was processed along the St. Croix and Mississippi Rivers. However, by the early 1900s the lumber industry declined, and agriculture became the dominant industry in the county (U.S. Department of Agriculture, SCS 1980).

Agriculture had been the main industry in the county but has become much more urban. In 2017, there were 612 farms averaging 124 acres. Corn, soybeans, and forage (hay/haylage) are the most extensively frown crops. cattle, poultry, horses, and goats are the most extensively raised livestock within the county. Publishing, communications, merchandising, recreation, and education have become the main industries within Washington County (U.S. Department of Agriculture, NASS 2017; U.S. Department of Agriculture, SCS 1980).

Grey Cloud Island Township

Gery Cloud Island Township is located on the Mississippi River on the southern border of Washington County between St. Paul and Hastings. The island is named after Margaret Aird Mooers, whose Dakota name "*Mar-pi-ya-ro-to-win*" means Grey Cloud Woman. The name of the island is shortened version "*Mar-pi-ya-ro-to"* meaning Grey Cloud. Grey Cloud Island has a long history of settlement. The first people to settle on the island were Native Americans during the Woodland Period and the island continued to be an important place for Native Americans of the Mississippian Culture as the island has the highest concentration of mounds in Washington County (Case 1915; Grey Cloud Island Township 2024; Washington County Historical Society 2024).

The only known Native village to have existed in Washington County was located on the island in the 1830s. The village was a Mdewakanton village headed by Medicine Bottle, the village was located on the island until the Treaties of 1837, in which the Dakota ceded all lands east of the Mississippi to the United States. In 1838, after Medicine Bottle and his band moved across the river to Pine Bend. The bark houses left behind were taken over by the families of Hazen Mooers and Andrew Robertson. That same year, Joseph R. Brown moved his family onto the southern part of the island to a spot called "*Chanwakan*" meaning Medicine Wood in Dakota. From there Brown and his family traded furs and cultivated farms, they were joined later by former voyagers of French-Canadian descent and employees of the American Fur Company, many of whom were married to Dakota women. The Dakota and French-Canadian presence continues to be very strong on the island (Case 1915; Grey Cloud Island Township 2024; Washington County Historical Society 2024).

In 1856, Joseph R. Brown, Truaman Smith, and William Gallagher platted Gray Cloud City on the site of Brown's farm, however the Panic of 1857 put an end to the endeavor and the townsite became part of Oliver Ames farm in the 1860s. There is an industrial site on the island. The Grey Cloud Lime Kiln dates to ca. 1846 and was used to burn limestone rock to produce quicklime, which was used in plaster, mortar, and fertilizer. From the time of its earliest settlement, there wer two roads connecting the island to Newport and Cottage Grove. These roads would accommodate wagons carrying wheat to Afton for milling. By 1882, a timber bridge was erected on one of the roads from the island which was replaced by a steel bridge in 1946. Since the 1950s, a gravel mine has been in operation on Lower Grey Cloud Island and a rock quarry has been in operation on Upper Grey Cloud Island (Grey Cloud Island Township 2024; Kircher 1976; Washington County Historical Society 2024).

When Minnesota became a state in 1858, the island was part of Newport Township along with Newport and St. Paul Park. After the construction of the Hastings Lock and Dam in 1931, the water level of the Mississippi rose and split Grey Cloud Island into two islands, Upper Grey Cloud and Lower Grey Cloud. When Newport and St. Paul Park became their own cities in the 1960s, the remainder of Newport Township became Grey Cloud Island Township. This Township consists of Upper Grey Cloud Island. Lower Grey Cloud Island was annexed to Cottage Grove in the 1980s. Since the creation of Grey Island Township from the remnants of Newport Township, the area has remained rural with a population of about 300 in 2010 (Warner and Wiski 1994; Washington County Historical Society 2024).

RESEARCH DESIGN AND METHODOLOGY

The Phase I archaeological investigation was conducted in accordance with the SHPO Manual for Archaeological Projects in Minnesota (Anfinson 2005).

LITERATURE REVIEW

A literature search was conducted within a 1-mile study area (Study Area) of the proposed Project area. The task was completed using site data files and previous inventory files maintained at the Minnesota Office of the State Archaeologist (OSA) and Minnesota SHPO. In addition, background research was completed by reviewing publicly available National Register of Historic Places (NRHP) data, historic maps, cemetery/burial records, atlases, current aerial photographs, soil maps, topographic and geomorphic data, and other sources that might provide information for the locations of historic-era sites, areas of prior disturbance, etc.

PHASE I ARCHAEOLOGICAL INVESTIGATION

The Phase I cultural resource identification survey for this Project was completed to guidelines of the Minnesota SHPO (Anfinson 2005). The survey conducted within the Project area used two methods of sampling and testing to identify and evaluate cultural resources: visual inspection and shovel testing.

- *Visual Inspection* – Locations where cultural resources were not expected, such as disturbed areas, areas with a slope greater than 20 degrees, and low/wet areas were walked over and visually inspected. This method was used to verify the absence or likelihood of any cultural resources within these areas. This method was also utilized to document the general terrain and the surrounding area.
- *Shovel Testing* – This method was used to sample subsurface contexts in areas with slopes less than 20 degrees and ground visibility of less than 25%. A typical shovel test was 40 cm in circular diameter. The shovel tests were excavated on a grid at 15 m intervals, with additional radial shovel tests conducted at 5 m intervals when any artifacts were discovered. Shovel tests were excavated in 10 cm levels. All shovel tests were documented using a sub-meter GPS unit. Excavated soil was screened through 0.25-inch mesh. Shovel tests were excavated no deeper than 1 m or 10 cm into sterile subsoils. Data gathered from the shovel tests included stratigraphy, soil texture, Munsell color, and the presence or absence of cultural materials. All excavated soils were immediately backfilled upon completion.

The crew was directly supervised in the field by a qualified archaeologist who meets the requirements for the Secretary of the Interior's Guidelines for Professional Qualifications in Archaeology. A sub-meter GPS unit utilizing Geographic Information System (GIS) data as well as field maps were used to collect spatial data and to ensure field personal maintain accurate survey grid. This ensured that the crew did not extend the survey outside the Project survey area. All field notes, maps, and photos will be maintained at the In Situ's Eden Prairie, MN office.

SITE EVALUATION CRITERIA

The purpose of the archaeological investigation was to identify and record previously undocumented cultural resources located within the Project area. Sites were evaluated for their

significance as defined by criteria established in Title 36 Code of Federal Regulations 60.4 (National Park Service 1991), which states:

> The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. That have yielded, or may be likely to yield, information important in prehistory or history.

A site may meet one or more of the eligibility criteria listed above, but if the site is considered to not retain sufficient integrity then it may be recommended not eligible for inclusion in the National Register of Historic Places (NRHP).

ARTIFACT ANALYSIS AND CURATION

Artifacts are processed in accordance with the Guidelines for Archaeological Investigations in Minnesota (Anfinson 2005). However, no artifacts 50 years or older were collected during this investigation.

RESULTS

BACKGROUND RESEARCH

A literature search was conducted within a 1-mile Study Area of the proposed Project area (Figures 4-6B). The task was completed using site data files and previous inventory files maintained at the Minnesota OSA and Minnesota SHPO. In addition, background research was completed by reviewing publicly available NRHP data, historic maps, cemetery/burial records, atlases, current aerial photographs, soil maps, topographic and geomorphic data, and other sources that might provide information for the locations of historic-era sites, areas of prior disturbance, etc. Background research was conducted on September 18, 2023. The records search revealed one previous cultural resource inventory/survey, four previously recorded archaeological sites, two geographic features of cultural and historical significance, and nine previously recorded architectural resources within the Study Area.

The records search revealed one previous cultural resource inventory/survey completed within the Study Area in 2004 (Table 2). The survey was completed in support of a mining project. The previous survey is not shown in the literature review figures.

Table 2: Previous Cultural Resource Inventories/Surveys within the Study Area.

Manuscript Number	Title	Authors	Year	Overlap with Project area
WA-2004-05	Report on an Archaeological Survey Conducted for the Proposed Expansion of Aggregate Industries Larson Quarry, Grey Cloud Island Township, Washington County, Minnesota	C. Harrison	2004	Yes

The data gathered revealed four previously archaeological sites resources within the study area (Table 3). Of the previously recorded cultural resources, all four are *unevaluated* for the NRHP. None of the previously recorded cultural resources are located within the direct APE of the Project area.

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The records search revealed two geographic features of cultural and historic significance within the Study Area (Table 4). The features are *unevaluated* for the NRHP and do not overlap with the direct APE of the Project area.

Table 4: Geographic Features of Cultural and Historic Significance within the Study Area.

Site Number	Site Name	Legal Location	NRHP Eligibility	Within Project area
DK-IVG-00017	Pine Bend	Sections 22, 23, 26, 27, 34, and 35, T27N, R22W;	Unevaluated	No
WA-CGC-00205	Lower Grey Cloud Island	Sections 5, 6, T26N, R21W; Sections 30, 31, 32, T27N, R21W; Sections 25, 26, 35, 36, T27N, R22W	Unevaluated	No

The data gathered revealed nine previously recorded architectural resources within the Study Area (Table 5). Of these resources, there is one resource that has been determined *not eligible* for the NRHP and eight resources that are *unevaluated* for the NRHP. None of the previously recorded architectural resources are within the proposed project area.

Table 5: Previously Recorded Architectural Resources within the Study Area.

Site (NRHP #)	Site Name/Type	Address	NRHP Eligibility	Within the Project Area
WA-CGC-00100	Dammer House	9790 Grey Cloud Trail	Unevaluated	No
WA-CGC-00101	Anthony Fritz Farmstead	9962 Grey Cloud Trail	Unevaluated	No
WA-CGC-00102	Caldwell Farmstead	9988 Grey Cloud Trail	Unevaluated	No
WA-CGC-00103	Matczynski House	10300 Grey Cloud Trail	Unevaluated	No
WA-CGC-00163	Frank Tibbets Farmstead	9451 Grey Cloud Trail	Unevaluated	No
WA-CGC-00172	Pete Tibbets Barn	6500 103rd St. S.	Unevaluated	No
WA-CGC-00212	Chicago Burlington & Quincy Railroad Line	Sections 19, 30, 29, 32, 33, 34, 35, and 36, T27N, R21W	Not Eligible	No
WA-GCI-00001	Farmstead	Off Co. Hwy. 75	Unevaluated	No
WA-GCI-00004	Grey Cloud Island Cemetery	NE NW Section 25, T27N, R22W	Unevaluated	No

CULTURAL RESOURCE INVESTIGATION RESULTS

A Phase I cultural resource investigation was conducted on November 20, November 30, December 2, December 4-6, and December 8, 2023, for the proposed Project (Figures 7-9). The survey area of the Project is located east and northeast of the existing Larson Quarry site, within an area consisting of heavily wooded vegetation and mixed grasses (Figures 10-33). Ground surface visibility (GSV) consisted of 0% throughout the survey area. Shovel testing was completed in areas of poor GSV (less than 25%), except within areas with slope, wetlands, and previous disturbance, in which visual inspection was conducted. Existing disturbance within the Project area includes natural erosion, rural development, and mining activities. During the field survey, no cultural resources 50 years or older were observed during this investigation.

Approximately 125 acres were subject to survey during the cultural resource field assessments for the Project. Of the 125 acres that were surveyed:

- 119.4 acres were within heavily wooded vegetation and mixed grasses and were subject to shovel testing;
- 4 acres were within a disturbed context (agricultural/rural/pipeline infrastructure) and were visually inspected (Figure 34).
- 1.6 acres were within a sloped context and were visually inspected (Figure 35).

Shovel Testing

The shovel test units are classified as negative, positive, sloped, wet, and disturbed. "Negative" shovel tests have intact soils that contained no cultural material. "Positive" shovel tests have intact soils that contained cultural material. "Sloped" shovel tests were located in areas with greater than a 20-degree slope. "Wet" shovel tests have undisturbed soils and contain a shallow water table and/or hydric soils. "Disturbed" shovel tests have mottled soils and/or have been greatly disturbed due to land development. A total of 2,016 shovel test units were conducted during this survey, all of which were negative for cultural resources. The soils within the Project area were typically shallow with limestone bedrock present (bedrock location ranging from the ground surface to 50cmbs). No cultural materials were observed or recovered.

A typical shovel test within the survey area consisted of a very dark brown (10YR2/2) clay loam soil over a dark grayish brown (10YR3/4) sandy loam with limestone bedrock at the bottom of the unit, as demonstrated in Figure 36. Shovel tests were terminated at least 10 cm into the sterile subsoil.

Notable Items

A number of push piles, rock outcroppings, and piles of building materials were also present within the project area and were determined by In Situ to not be archaeological resources. In addition, In Situ recorded six soil pile anomalies (two groups of three soil pile anomalies) within a wooded area located next to a two-track path. However, after further assessments and research, these soil pile anomalies were found to be the result of past clearing activities and are not cultural. This is evident through the use of contemporary aerial, historic (1957) aerial, and LiDAR imagery (Figures 37-39). These images reveal that the location was subject to previous earth moving and tree clearing activities associated with trails/two tracks on the property. These soil pile anomalies may have resulted from these previous earth moving activities, limestone outcropping/rock features, tree-throw effects, and/or are soil push piles. In addition, the soil pile anomalies do not exhibit qualities of a typical mound feature. The soil pile anomalies are not uniform, irregularly shaped, are spaced erratically, there is little tree growth with the trees adjacent to the anomalies are younger which do not match with the surrounding vegetation, and with the shallow soils over bedrock in the area, it would be difficult to gather enough soil needed for mound construction (Figures 40-45). At the time of the initial recording these soil pile anomalies were treated as if they were potential mounds, and due to the potentially sensitive nature associated with mounds, no shovel tests were conducted within or surrounding this area; however, this area has undergone previous disturbances in the form of previous earth moving and tree clearing activities, leaving a nominal potential for intact archaeological resources and no further work is recommended for this area. No artifacts or other features were observed or collected within these areas. Based on these considerations, In Situ recommends that these anomalies are not mounds, nor an archaeological site, and are not cultural. Therefore, no further work is recommended. However, even though these

soil pile anomalies were found not to be cultural, if requested or deemed necessary, Holcim has agreed to have an archaeologist on site to monitor the disturbance and removal of the piles.

MANAGEMENT RECOMMENDATIONS

An intensive Phase I cultural resource investigation was conducted on November 20, November 30, December 2, December 4-6, and December 8, 2023, for the proposed Project. The cultural resource review for the Project consisted of background literature review and field survey of approximately 125 acres.

The Project is located in Section 24 of T27N, R22W in Washington County, Minnesota. The project area is located on privately owned land within Grey Cloud Island Township, Minnesota. The western portion of the Project area is along the eastern edge of the current phase of the existing Larson Quarry, west of Grey Cloud Island Drive S, and south of an existing driveway that is north of the current phase of the existing Larson Quarry. The eastern portion of the project area is located south and west of Gray Cloud Channel, east of Grey Cloud Island Drive, and north of 99th Street South. The Project is located within areas consisting of heavily wooded vegetation and mixed grasses. The Phase I investigation included a background literature review within and surrounding the proposed Project area along with an intensive field survey of the proposed Project.

During the field survey, a total of 125 acres were inventoried for the Project. A total of 2,016 shovel test units were conducted during this survey, all of which were negative for cultural resources and no cultural resources 50 years or older were observed during this investigation. Therefore, In Situ recommends a finding of *No Historic Properties Affected* within the surveyed Project area and no further cultural resource work is recommended for the Project.

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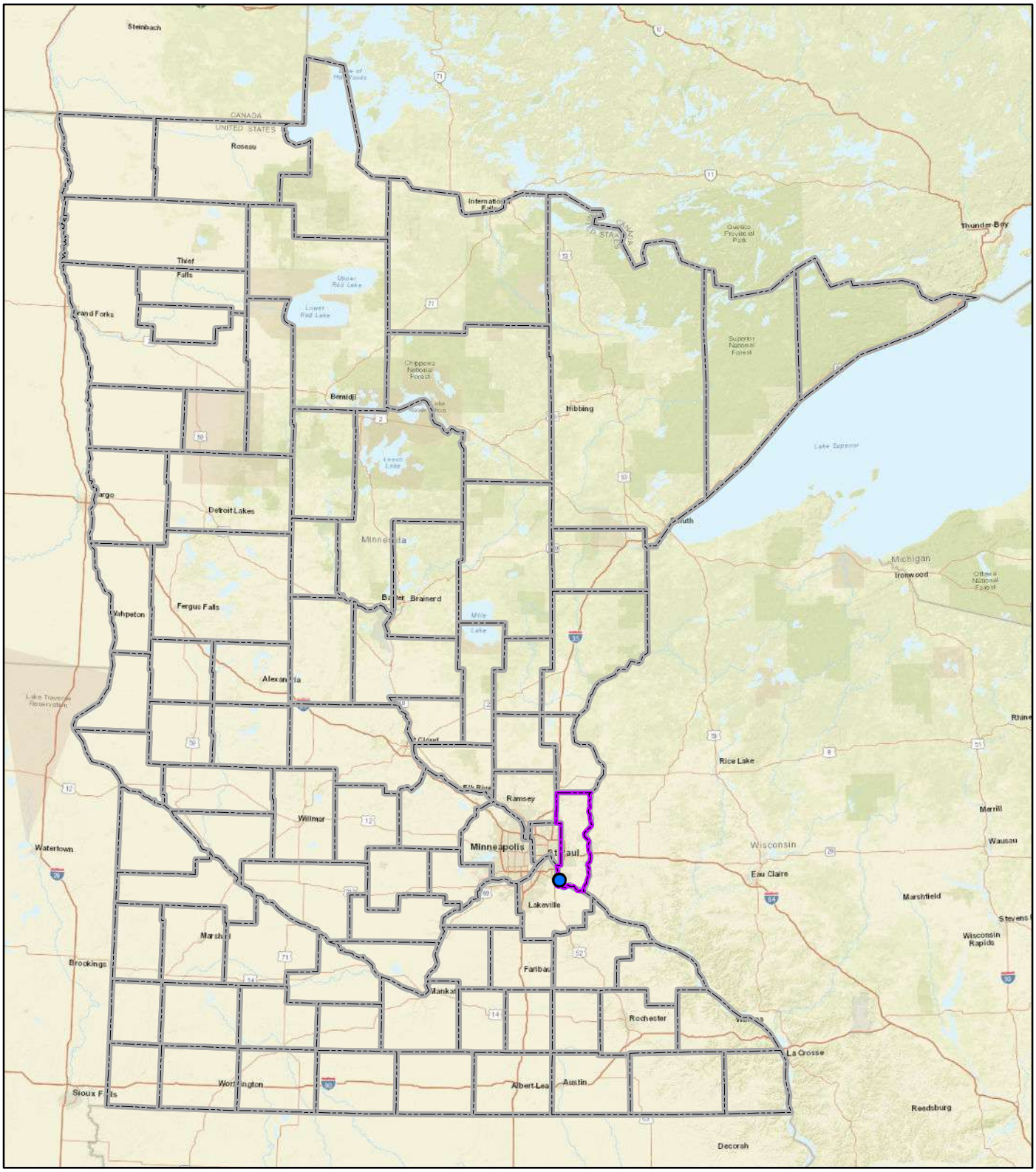
FIGURES



Legend

- Project Location
- Washington County
- County Boundary

N
W E
S

1:3,456,623 1 inch equals 288,052 feet

Approximate Scale in Feet

0 460,000 920,000

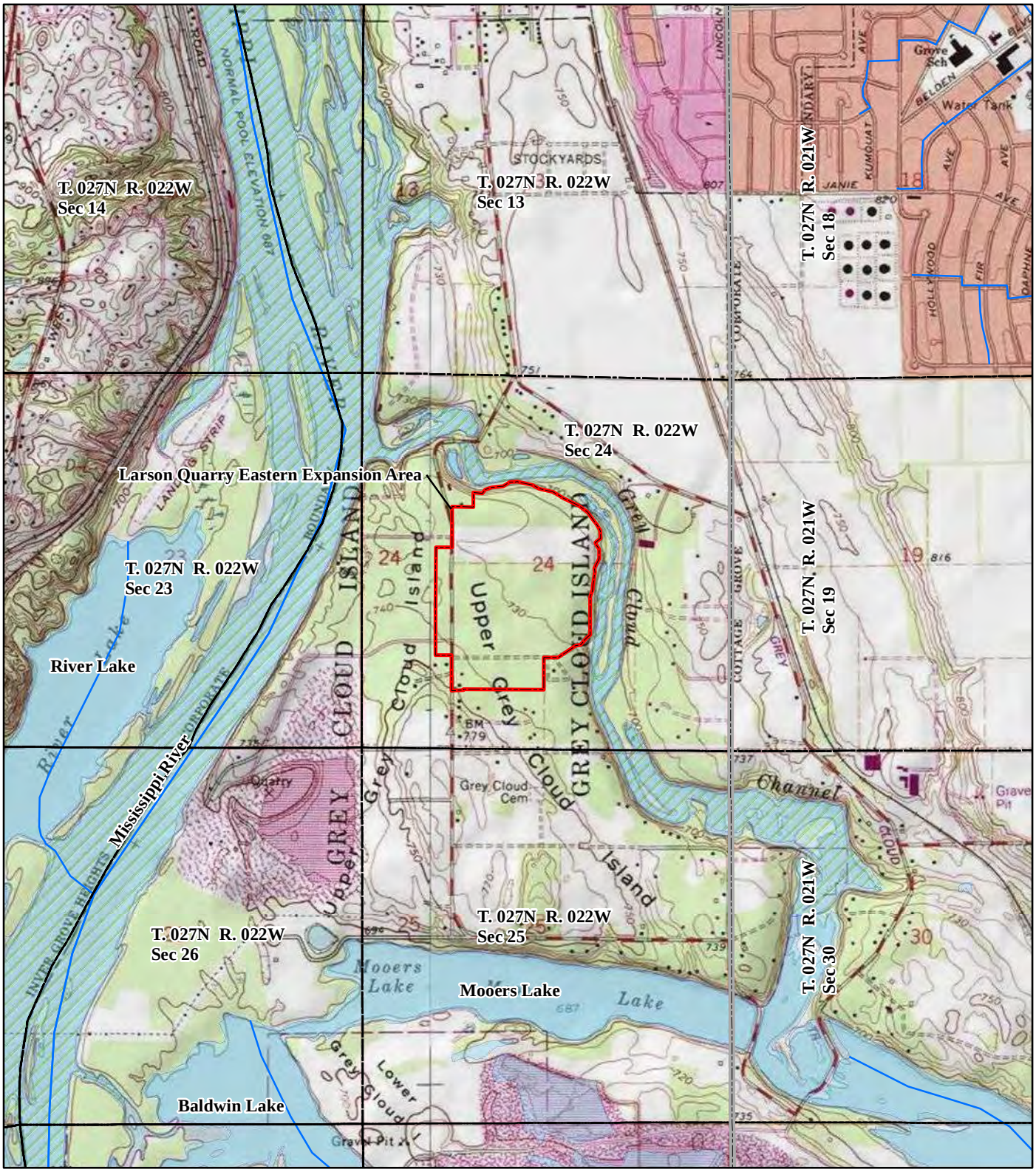
POLITICAL MAP

Larson Quarry Eastern Expansion Area
Washington County, Minnesota

Note: Imagery courtesy of ESRI

Figure 1. Political map showing project location.

N



Legend

- Project Area
- Township Boundary
- Township/Range/Section
- Stream/River
- Large River Course
- Waterbody

N
W E
S

1:24,000 — 1 inch equals 2,000 feet

Approximate Scale in Feet

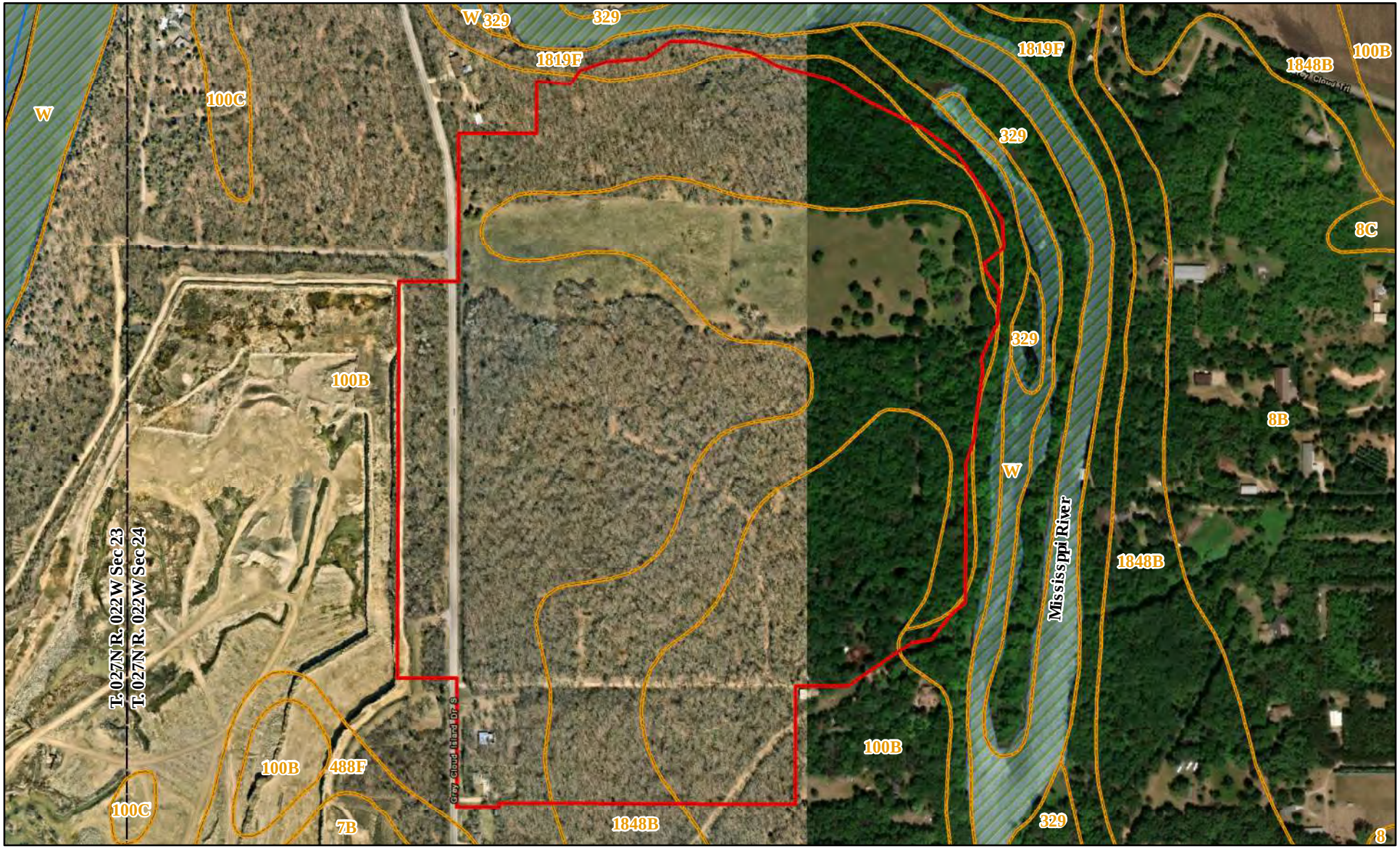
0 — 3,200 — 6,400

TOPOGRAPHIC MAP

Larson Quarry Eastern Expansion Area
Washington County, Minnesota

Note: Imagery courtesy of ESRI

Figure 2. Project location on the USGS *1993 Saint Paul PArk, MN* 7.5 minute series topographic map.



Legend

- Project Area
- Soils
- Township Boundary
- Township/Range/Section
- Stream/River
- Large River Course
- Waterbody

N W E S

AERIAL MAP

Larson Quarry Eastern Expansion Area
Washington County, Minnesota

Note: Imagery courtesy of ESRI

Figure 3. Project location on an aerial map.

N

1:6,416 — 1 inch equals 535 feet

Approximate Scale in Feet

0 — 800 — 1,600

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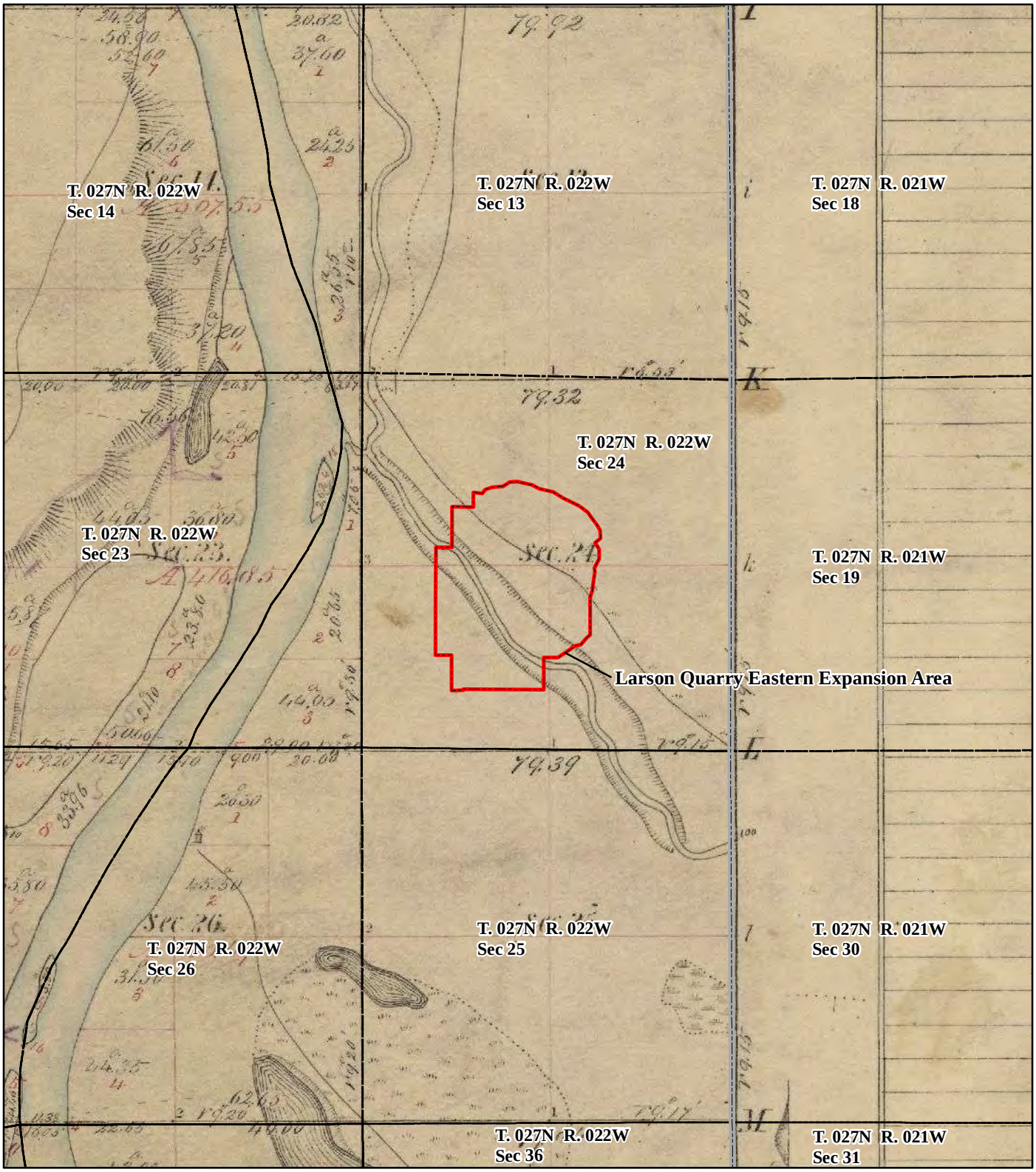


Legend

- Project Area
- Township Boundary
- Township/Range/Section

N
W E
S

1:24,000 1 inch equals 2,000 feet

Approximate Scale in Feet

0 3,200 6,400

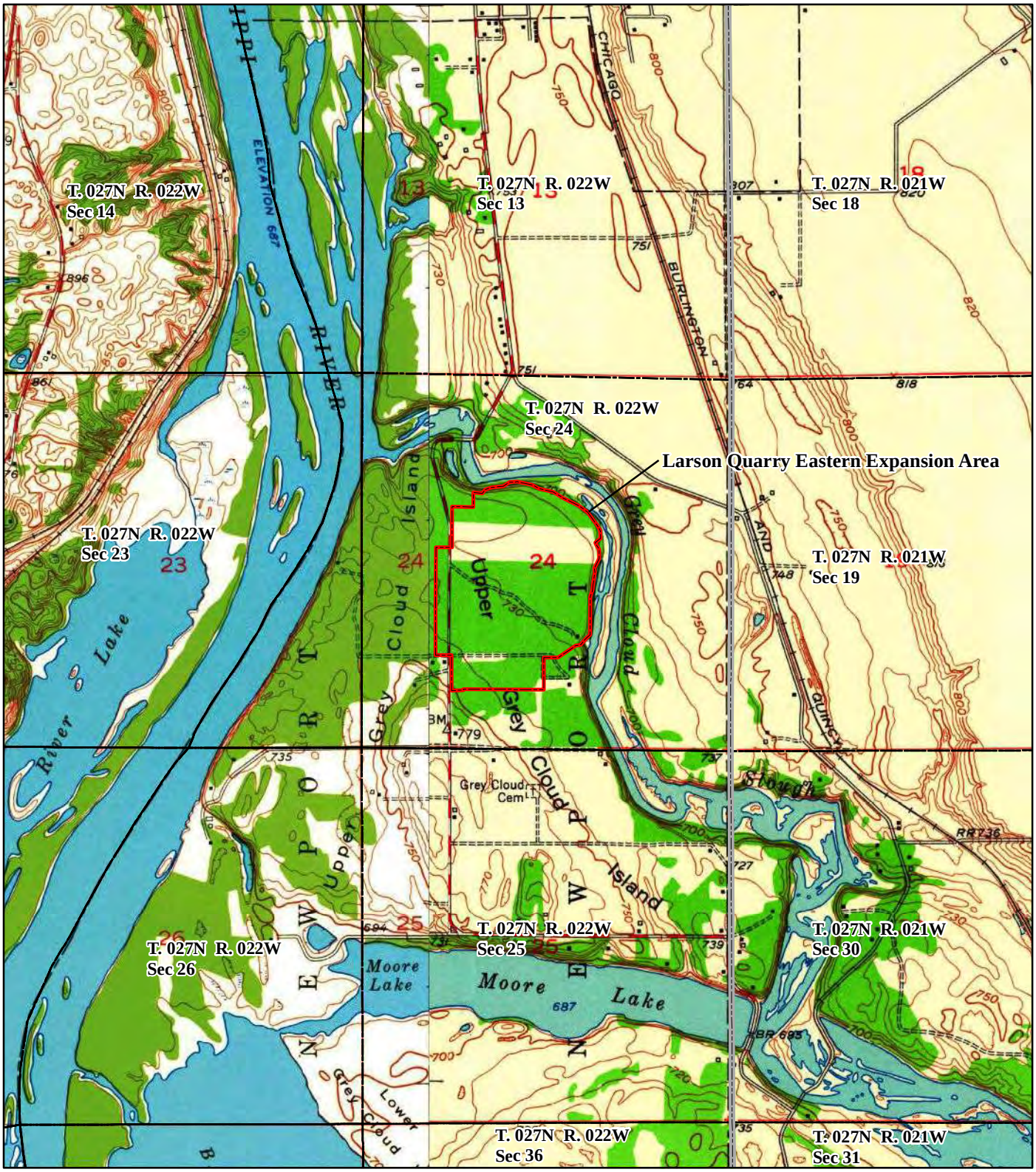
HISTORICAL BLM GLO PLAT MAP

Larson Quarry Eastern Expansion Area
Washington County, Minnesota

Note: Imagery courtesy of the U.S. Department of the Interior Bureau of Land Management.

Figure 6A. Project location on the 1854 BLM GLO Plat map.

N



Legend

- Project Area
- Township Boundary
- Township/Range/Section

N
W E
S

1:24,000 Approximate Scale in Feet 1 inch equals 2,000 feet

0 3,200 6,400

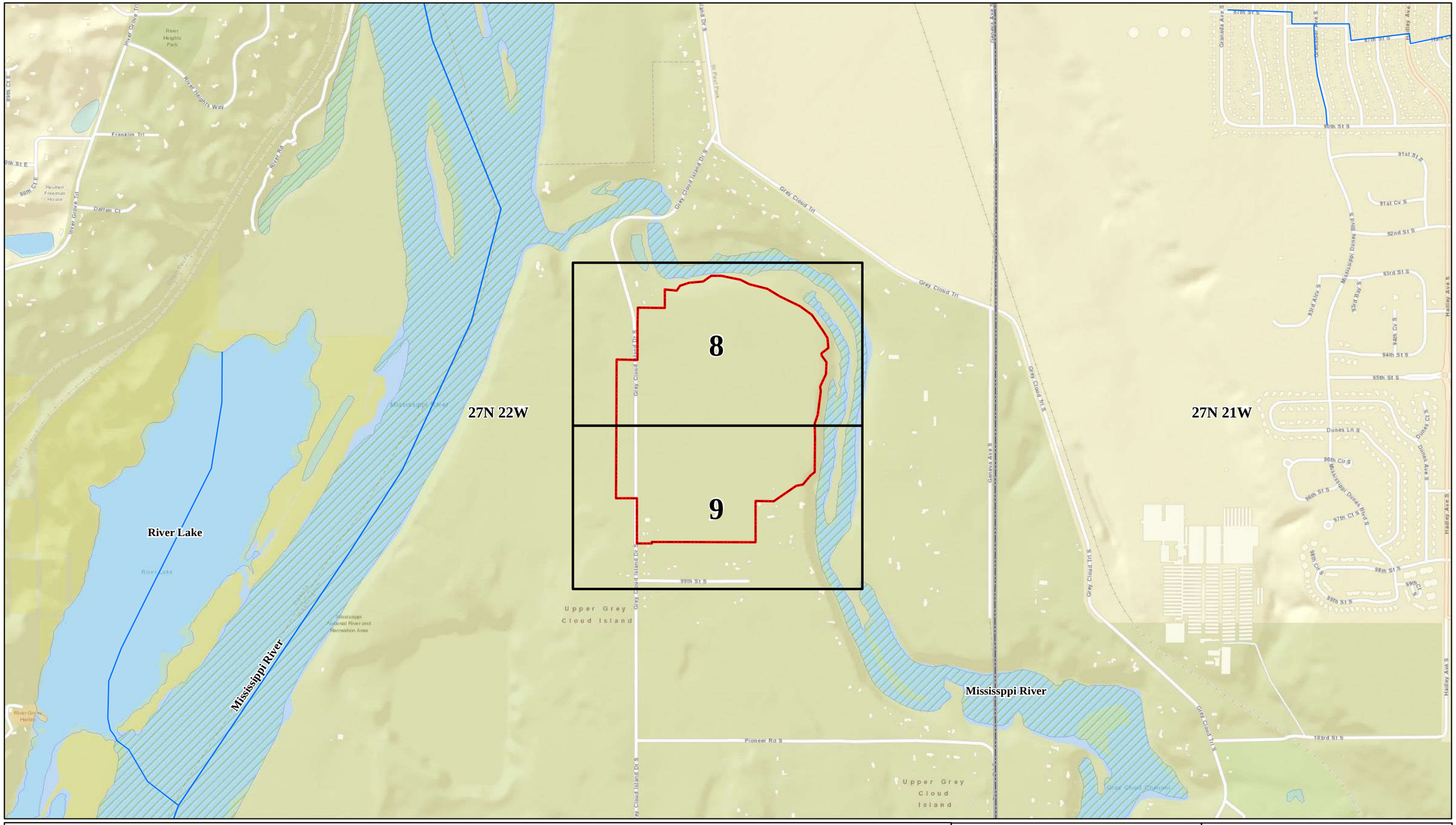
HISTORICAL TOPOGRAPHIC MAP

Larson Quarry Eastern Expansion Area
Washington County, Minnesota

Note: Imagery courtesy of the USGS.

Figure 6B. Project location on the *1951 St. Paul Park, MN* 24,000 series topographic map.

N



Legend

- Mapbook Pages
- Project Area
- Township Boundary
- Stream/River
- Large River Course
- Waterbody

N W E S

PROJECT LOCATION

Larson Quarry Eastern Expansion
Washington County, Minnesota

0 265 530 1,060 1,590 2,120
Approximate Scale in Feet

1:12,000 1 inch equals 1,000 feet

Note: Imagery courtesy of ESRI

Figure 7. Political map showing page layout for the fieldwork results maps.

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Figure 10: Overview facing north within the project area (DSCN0684).

Figure 11: Overview facing east within the project area (DSCN0685).

Figure 12: Overview facing south within the project area (DSCN0686).

Figure 13: Overview facing west within the project area (DSCN0687).

Figure 14: Overview facing south within the project area (DSCN7418).

Figure 15: Overview facing north within the project area (DSCN1448).

Figure 16: Overview facing south within the project area (DSCN1450).

Figure 17: Overview facing north within the project area (DSCN1534).

Figure 18: Overview facing east within the project area (DSCN1535).

Figure 19: Overview facing south within the project area (DSCN1536).

Figure 20: Overview facing west within the project area (DSCN1537).

Figure 21: Overview facing north within the project area (DSCN1561).

Figure 22: Overview facing east within the project area (DSCN1562).

Figure 23: Overview facing south within the project area (DSCN1563).

Figure 24: Overview facing west within the project area (DSCN1564).

Figure 25: Overview facing southwest within the project area (DSCN1565).

Figure 26: Overview facing east within the project area (DSCN1567).

Figure 27: Overview facing north within the project area (DSCN0676).

Figure 28: Overview facing east within the project area (DSCN0677).

Figure 29: Overview facing south within the project area (DSCN0678).

Figure 30: Overview facing west within the project area (DSCN0679).

Figure 31: Overview facing north within the project area (DSCN11616).

Figure 32: Overview facing east within the project area (DSCN1618).

Figure 33: Overview facing northwest within the project area (DSCN1601).

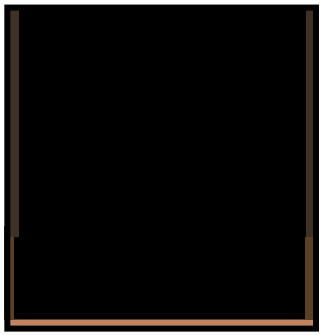
Figure 34: View of typical disturbed conditions within the project area (DSCN1618/1599).

Figure 35: View of typical sloped conditions within the project area (DSCN1538/DSCN1472).

Representative soil shovel test photo.

Representative soil profile photo.

Representative Soil Shovel Test Profile
Dorerton-Rock outcrop complex (1819F)



Depth to Subsoil: 30 cm
Excavator: BWS
Date: 11/20/2023

A 10YR2/2 Very dark brown clay loam (0-30 cm)

B 10YR3/4 Dark yellowish brown sandy loam (30-42 cm) limestone bedrock at bottom of unit

Figure 36. A typical shovel test unit excavated within the project area.

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Figure 40: Overview facing south towards a soil pile anomaly (DSCN1527).

Figure 41: Overview facing north towards a soil pile anomaly (DSCN1530).

Figure 42: Overview facing west towards a soil pile anomaly (DSCN1516).

Figure 43: Overview facing southeast towards a soil pile anomaly (DSCN1486).

Figure 44: Overview facing east towards a soil pile anomaly (DSCN1453).

Figure 45: Overview facing west-northwest towards a soil pile anomaly (DSCN1495).

MINNESOTA POLLUTION CONTROL AGENCY

AIR EMISSION GENERAL PERMIT NO. 03700352-101

IS ISSUED TO

Holcim - MWR Inc - Nonmetallic
2815 Dodd Road - Suite 101
Eagan, MN 55121

The emission units, control equipment and emission stacks at the stationary source authorized in this general permit are as described in the Permit Applications Table.

This general permit supersedes Air Emission General Permit No. 03700352- 001 and authorizes the Permittee to construct, modify, and operate nonmetallic mineral processing stationary sources at multiple locations in Minnesota under the conditions set forth herein as long as all conditions of this general permit are always met at each stationary source covered by the Permittee's general permit. (Portable crushing spreads or aggregate processing plants in some situations may be stationary sources themselves, or in other situations parts of another stationary source). If the construction, modification, or operation of a nonmetallic mineral processing stationary source by the Permittee would not comply with all conditions of this general permit, the Permittee must apply for and obtain an individual Part 70, state, or registration permit before beginning actual construction of the modification or change. Terms used in this general permit are as defined in the state air quality rules unless the term is explicitly defined in this general permit.

Unless otherwise indicated, all the Minnesota rules cited as the origin of the permit terms are incorporated into the State Implementation Plan under 40 CFR § 52.1220 and as such are enforceable by the U.S. Environmental Protection Agency (EPA) Administrator or citizens under the Clean Air Act.

Permit Type: State General, Limits to Avoid Pt 70/Limits to Avoid NSR

Issue Date: July 28, 2022

Expiration: Non-expiring
Title I Conditions do not expire

Signature: Toni Volkmeier

This document has been electronically signed.

for the Minnesota Pollution Control Agency

for Steven S. Pak, P.E., Manager
Air Quality Permits Section
Industrial Division

Permit Applications Table

Permit Type	Application Date(s)	Permit Action
Nonmetallic Mineral General Permit – Administrative (Ownership Change)	7/21/2022	03700352-101

TABLE OF CONTENTS

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	651-296-6300
Outside Metro Area	1-800-657-3864
TTY	651-282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition.

Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

TABLE A: LIMITS AND OTHER REQUIREMENTS

Table A contains the limits and other requirements with which your nonmetallic mineral processing stationary source(s) must comply. These limits are located in the first column of the table (What to do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. An appendix is included in your general permit. Unless specifically indicated otherwise, requirements contained in the various parts of the appendix are enforceable conditions of this general permit. The limits and other requirements contained in Table A apply to each nonmetallic mineral processing stationary source constructed, modified, or operated by the Permittee which is covered by this general permit.

Stationary Source: "Stationary source" has the meaning given in Minn. R. 7005.0100, subp. 42c. For there to be a nonmetallic mineral processing stationary source, one or more pieces of processing equipment (such as those listed in Table A.1, namely crushers, screens, transfer operations, etc.) must be present and operational (storage of equipment in an inoperative state does not constitute a stationary source). Stationary sources may contain portable, mobile, and stationary equipment.

Multiple-Party Site: A multiple-party site is a stationary source location where two or more equipment owners or operators operate nonmetallic mineral processing equipment on the same site and there exists a contractual or other similar relationship between them regarding processing of nonmetallic minerals or their nonmetallic mineral processing operations support each other at the site.

At a multiple-party site, the governing permit is the permit held by the nonmetallic mineral processing company that establishes the stationary source and hires others to perform part of the nonmetallic mineral processing there. This company, which is the holder of the governing permit, is the Permittee responsible for the multiple-party site. If you are the Permittee of a stationary source location which is a multiple-party site, you shall require all parties to comply with the provisions of your permit.

Table A.1: Eligibility Requirements

What to do	Why to do it
Emission Units Allowed: Each nonmetallic mineral processing stationary source constructed, modified and operated under this general permit shall consist only of: Crushers (subject to the fines crushing production limitation described, below, under "Materials Allowed") Screens Wet screening operations and associated transfer operations downstream of the wet screening operation in the production line process up to, but not including, the next crusher in the production line of a nonmetallic mineral processing stationary source. A wet screening operation means a screening facility designed and operated to remove unwanted material from the product by a washing process whereby the product is completely saturated with water in a slurry Transfer operations (including belt conveyors, enclosed truck/railcar loading stations, bucket elevators, storage bins, stackers, ladders, chutes, classification screws, feeders, pneumatic systems, and bagging operations) Internal combustion engines Sand heaters Air separators (closed system) Storage piles Paved and unpaved roads and parking lots Bulldozers, loaders, and other related vehicles Insignificant activities as defined in Minn. R. 7007.1300, subp. 2 and 3 Conditionally insignificant activities listed in Minn. R. 7008.	Minn. Stat.§ 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
Emission Units Not Allowed: Although only the emission units listed in "Emission Units Allowed" are allowed under this general permit, the following emission units that are sometimes part of a nonmetallic mineral processing stationary source are specifically not allowed under this general permit: grinding mills, air conveying systems, air classifiers, calciners, and aggregate heaters/dryers.	Minn. Stat.§ 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
New Source Performance Standards: If applicable, the owner or operator shall comply with NSPS standards for nonmetallic mineral processing, volatile organic liquid storage vessels (storage tanks), compression ignition internal combustion engines and spark ignition internal combustion engines.	40 CFR pt. 60, subps. OOO, Kb, IIII and JJJJ; Minn. Stat.§ 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100

Table A.1. (Continued)

National Emission Standards for Hazardous Air Pollutions: If applicable, the owner or operator shall comply with the NESHAP standards for reciprocating internal combustion engines.	40 CFR pt. 63, subp. ZZZZ; Minn. R. 7007.0800, subp. 2
Revised New Source Performance Standards for Nonmetallic Mineral Processing: If 40 CFR 60, subp. OOO is revised after October 28, 2008, those changes shall be automatically applicable under this permit. The Permittee shall comply with any changes according to the schedule provided in Subpart OOO as allowed by US. EPA.	40 CFR pt. 60, subp. OOO; Minn. R. 7007.0800, subp. 2
Materials Allowed: Except as specifically provided below, a nonmetallic mineral processing stationary source constructed, modified, and operated under this general permit may produce or process only: Crushed and broken limestone Crushed and broken granite Crushed and broken stone Construction sand and gravel Recycled concrete Recycled asphalt pavement The initial steps in producing manufactured sand Exceptions: Other - De Minimis Quantities: A de minimis quantity is a quantity of materials, other than those listed above, that may be produced or processed such that the total amount of actual emissions from producing or processing of all de minimis quantities in any calendar year at any stationary source location is less than one ton (i.e., 1 ton/year per site) of Particulate Matter (PM). No pollutants other than PM, Particulate Matter less than 10 microns (PM_{10}) or Particulate Matter less than 2.5 ($PM_{2.5}$) may be emitted as a result of producing or processing the other material, except those emitted from the operation of associated internal combustion engines. Whenever the Permittee produces or processes de minimis quantities of other materials, calculations of the projected and actual PM, PM_{10} and $PM_{2.5}$ emissions from producing or processing de minimis quantities must be kept by the Permittee along with records of the dates, site, tons of material produced or processed and a description of the material. Fines Crushing: Crushing material to a maximum size of 3/16 inch or smaller in any calendar year at any stationary source location covered by this general permit is limited to less than 50,000 tons (i.e., 50,000 tons/year per site). Whenever the Permittee performs fines crushing, records must be kept by the Permittee indicating the dates, site, and tons of material produced or processed as well as a description of the material. Crushing material to a maximum size of 3/16 inch is referred to in this general permit as “fines crushing.” Fines crushing involve the production of manufactured sand and products of a similar size.	Minn. Stat.§ 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100

Table A.1. (Continued)

Control Equipment Allowed: A nonmetallic mineral processing stationary source constructed, modified, and operated under this general permit may contain add-on air pollution control equipment to capture and remove air pollutants from process air streams or have equipment located indoors provided that compliance with all emission limits in this general permit is maintained without considering the effect of such controls. Because no prescribed operation and maintenance and recordkeeping are required, reduced emissions due to such add-on control equipment will not be considered when calculating emissions for the annual emissions inventory.	Minn. Stat.§ 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
Geographic Areas of Operation Allowed: Under this general permit, provided all conditions are met at all stationary sources, the Permittee is authorized to construct, modify and operate multiple stationary sources simultaneously anywhere in Minnesota except any area designated as maintenance area for PM_{10}. If the Permittee wishes to operate at a location in an area that is or becomes reclassified nonattainment for PM_{10} after issuance of this general permit, the Permittee must submit an application for an individual part 70, state, or registration permit to cover that location before commencing operation or beginning actual construction or modification of a nonmetallic mineral processing stationary source.	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 12, and Minn. R. 7007.1100

Table A.2: Total Facility Requirements

What to do	Why to do it
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Fugitive Emissions: The owner or operator shall not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
Inspections: The owner or operator shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
General Conditions: The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16	Minn. R. 7007.0800, subp. 16
Performance Testing: Conduct all performance testing in accordance with Minn. R. ch. 7017 unless otherwise noted. The Commissioner may request additional performance testing under Minn. R. 7017.2020, subp. 1.	Minn. R. 7017.2001-7017.2060
Performance Test Notifications and Submittals: Performance Tests Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test. To be submitted on *form NM-TP* Performance Test Pretest Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Microfiche/CD Copy: due 105 days after each Performance Test The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4; and Minn. R. 7017.2035, subp. 1-2
Recordkeeping: Retain all records required by this general permit at each stationary source or at the Permittee's option, the Permittee's central office for a period of five years from the date of monitoring, emission calculations, sampling, measurement, or report. Records which must be retained include all calibration and maintenance records, all original chart recordings for continuous monitoring instrumentation, and copies of all reports and records required by this general permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(A) and 5(C)
Submittals: All submittals required by this general permit must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Submittals which must be provided on forms approved by the Commissioner are noted in Tables A and B. All submittals must be postmarked or received by the date specified in the tables.	Minn. R. 7007.0800, subp. 6

Table A.2 (Continued)

Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2

Table A.2 (Continued)

Semiannual Deviations Report: Due 30 days after the end of each calendar half-year. The first semi-annual report submitted by the Permittee shall cover the calendar half-year in which the permit was issued. The first report of each calendar year covers January 1 – June 30 due by July 30. The second report of each calendar year covers July 1 – December 31 due by January 30. If no deviations have occurred, the Permittee shall submit the report stating no deviations. *To be submitted on a form NM-DRF*.	Minn. R. 7007.0800, subp. 6(A)(2)
Annual Compliance Certification: Due 31 days after the end of each calendar year *(January 31)* following general permit issuance (for the previous calendar year). The report covers all deviations experienced during the calendar year. *To be submitted on a form NM-CR*.	Minn. R. 7007.0800, subp. 6(C)
Emissions Inventory Report: Due on or before April 1 of each calendar year following permit issuance. To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000-7019.3010
Emission Fees: Due 60 days after receipt of an MPCA invoice.	Minn. R. 7002.0005-7002.0095
Name Change of Ownership or Control of Stationary Source: The owner or operator shall submit to the MPCA the Air Emission General Permit *Administrative Changes Form (GP-01)* within 7 days of the name change in ownership or control of the stationary source. If the Commissioner determines that the new owner or operator meets the eligibility requirements of the general permit for general permit issuance, then the Commissioner shall issue the general permit to the new owner or operator. Issuance of a general permit to the new owner or operator of an eligible stationary source voids and supersedes the general permit of the previous owner or operator. If the Commissioner determines the new owner or operator does not meet the eligibility requirements, the new owner or operator shall submit a permit application for a registration, state, or part 70 permit within 120 days of the Commissioner's written request for the application.	Minn. R. 7007.1100, subp. 8; Minn. R. 7007.0800, subp. 2

Table A.3: Requirements and Limits that Apply to the Entire Stationary Source

What to do	Why to do it
Material Moisture Content: At each stationary source, the feed material moisture content shall be greater than or equal to 1.5 percent. This shall be demonstrated at each stationary source by either 1 or 2 below: 1. Test moisture content of each different feed material source (sampled at an area representative of the feed source and physically capable of being sampled), as follows: a. Use American Society for Testing and Materials (ASTM) method numbers D 2216-92 or D 4643-93 (or equivalent). b. Keep records of each moisture content test summarizing the method used, results, date, time, and initials of person performing test. c. Test weekly, when operating, unless three consecutive tests at the stationary source location show moisture contents of greater than or equal to 1.5 percent after which testing is no longer required until the source of the feed material changes. d. When testing indicates that feed material moisture content is less than 1.5 percent, or in situations where it is infeasible to sample and test, or where the Permittee elects not to sample and test, the Permittee must operate a moisture addition device at or immediately prior to the initial crusher(s) or initial screen(s) where unprocessed feed material is being fed to achieve a moisture content greater than or equal to 1.5 percent. Moisture addition during operation shall continue until subsequent moisture content testing demonstrates that feed material moisture content is greater than or equal to 1.5 percent. Daily, when operating, either: (i) keep records of the date, water flow rate, material throughput rate, and initials of the person making the record and the time the record was made; or (ii) conduct moisture content testing daily on the feed material after water application following a. and b. above, and if results show moisture content is less than 1.5 percent, increase water addition to insure moisture is 1.5 percent or greater and re-test to verify.	Title I Condition: To qualify for this general permit under Minn. R. 7007.1100; Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat.§ 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100

Table A.3 (Continued)

OR 2. Keep records indicating that feed material is being removed from below the water table - or from below the surface of a waterway (e.g., creek, river, lake) - or that the feed material is recycled asphalt pavement. Records shall include a description of the source (if recycled asphalt pavement, so indicate), the corresponding dates, and the initials of the person making the record.	
Stationary Source Designation and Capacity Limits: Only one option (Small, Medium, or Large) at a time shall apply at each stationary source covered by this general permit. The option that shall apply to a particular stationary source is selected by the Permittee from the Stationary Source Designation Matrix in Appendix I, either Table 1 or Table 2. The option, along with the limit on annual production (throughput), and the limit on the amount of equipment shall be indicated in a Location Notification submitted by the Permittee as required by this general permit on a form approved by the Commissioner. (Wet screening operations and associated transfer operations downstream of the wet screening operation in the production line process up to, but not including, the next crusher in the production line of a nonmetallic mineral processing stationary source shall not be counted towards the number of units or capacity levels indicated under the three site designation options. A wet screening operation means a screening facility designed and operated to remove unwanted material from the product by a washing process whereby the product is completely saturated with water in slurry.) To demonstrate compliance with the annual production limit at each stationary source location, the Permittee shall maintain daily record of the production, in tons. The Permittee shall also maintain record of the monthly calculation and the 12-month rolling sum (i.e., the current month plus the eleven preceding months). If a stationary source has less than 12 months of operational data, the Permittee shall determine compliance during the first 12 months under this general permit using the following formula: N = 0.95 x (Annual Production Limit) + 0.0045 x (Annual Production Limit) x (n-1) Where “n” is the number of months in operation, and “N” is the rolling sum limit for the current month. At its option, the Permittee may calculate and record individual monthly sums, in lieu of 12-month rolling sums, for a stationary source location such that the annual production limit divided by 12 is not exceeded. These calculations and records must be made by the 15th day of the following month. (At a multiple-party site, the number of pieces of equipment (Table 1) or the capacity of equipment (Table 2) of all parties operating at the site at the same time shall be added together by the Permittee to determine the stationary source designation and the appropriate non-process dust control option for that site. Likewise, the production of all parties shall be added together by the Permittee to determine compliance with the annual production limit from the Stationary Source Designation Matrix, in Appendix I.)	Title I Condition. To qualify for this general permit under Minn. R. 7007.1100; Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.1100, and Minn. R. 7011.0150

Table A.3 (Continued)

Non-Process Dust Control Options: The option (Small, Medium, or Large), and the associated non-process dust control requirements, that shall apply to each stationary source covered by this general permit is selected by the Permittee from the Stationary Source Designation Matrix as described above. **Small Stationary Source Non-Process Dust Control:** The Permittee shall comply with the requirements of Minn. R. 7011.0150. This means that all reasonable measures shall be taken to prevent avoidable amounts of particulate matter from becoming airborne. In a practical manner this refers to preventing avoidable visible dust emissions beyond the lot line surrounding the stationary source. Control of non-process dust emissions can be achieved through such measures as applying water or commercially available dust suppressant to stock piles, unpaved roads and handling areas. **Medium Stationary Source Non-Process Dust Control:** In addition to the requirements described in the "Small" option, the following requirements apply to the Permittee: 1. Record date and time of action and initials of person making the record. 2. Record amount of water or dust suppressant applied. 3. If a commercially available dust suppressant is used, it shall be applied in accordance with the manufacturer's guidelines. A copy of these manufacturer's guidelines must be kept by the Permittee. **Large Stationary Source Non-Process Dust Control:** In addition to the requirements described in the "Small" option, the following requirements apply to the Permittee: 1. Record date and time of action and initials of person making the record; 2. Record amount of water or dust suppressant applied; 3. If a commercially available dust suppressant is used, it shall be applied in accordance with the manufacturer's guidelines. A copy of these manufacturer's guidelines must be kept by the Permittee; 4. Record the location (e.g., on a site sketch) of water or dust suppressant application; 5. Install a rain gauge at the site and record the precipitation in the previous 24 hours for each day of operation at the site; 6. Make and record basic weather observations according to the Weather Summary Criteria listed in Appendix I that best characterize each operating day; 7. Unpaved roads at the site shall be posted with speed limit signs indicating a maximum speed of 10 miles per hour; and 8. Equipment to apply water or dust suppressant shall always be available at the site or on call for use at the site within a given operating day.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.1100, and Minn. R. 7011.0150

Table A.3 (Continued)

Equipment Inventory List: The Permittee shall maintain a written list of each piece of equipment on site, if applicable. The list shall include the type of equipment, serial number, dates of installation, modification and reconstruction, all applicable Standards of Performance for New Stationary Sources, subparts OOO, IIII and JJJJ records, and for the National Emission Standards for Hazardous Air Pollutants, subpart ZZZZ, if applicable. The list shall be updated to include any new, modified or changed equipment just before making a change. When the list is updated, the Permittee shall maintain copies of all previous equipment lists on site or the central office for a period of 5 years. Notation of the evaluation shall be done before making every modification or change. In the notation, the Permittee shall re-evaluate whether if the facility still qualifies for this general permit. If the answer is no, the Permittee must apply for a Part 70 permit that would authorize the modification or change that would allow to operate the facility before making the modification or change. *The Permittee may use Form NM-EQ as an equivalent for the equipment inventory list but must include the additional requirements listed above.*	To quality for this general permit under Minn. R. 7007.1100 and Minn. R. 7007.0800, subp. 2
Labeling Requirements: The Permittee shall permanently affix the manufacturer's serial number (or otherwise unique identifying number) to each piece of crushing, screening, transfer operation, heaters, air separators, and stationary internal combustion engine equipment for tracking purposes within 60 days of permit issuance, if applicable. The number shall be permanently affixed and maintained so that it is readable and visible at all times from a safe distance at each stationary source. This number shall correspond to the number contained in records regarding the piece of equipment.	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
Location Notification: Submit a Location Notification at least 48 hours prior to each change in location of a stationary source, establishment of a new stationary source location, or change in a capacity/dust control option at an individual stationary source. *To be submitted on a form NM-RE.*	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 12, and Minn. R. 7007.1100
Source Specific Requirements: Comply with the source-specific requirements in Appendix I of this permit	To qualify for this general permit under Minn. R. 7007.1100. See Appendix I

Table A.4: Limits that Apply to NSPS Crushers

(Those subject to 40 CFR pt. 60, subp. OOO.)

What to do	Why to do it
Opacity: less than 15 percent opacity.	40 CFR § 60.672(c) and Minn. R. 7011.3350

Table A.5: Limits that Apply to other Equipment Subject to NSPS

(Those subject to 40 CFR pt. 60, subp. OOO. Included here are, screens, belt conveyors, bucket elevators, bagging operations, storage bins, and enclosed truck or railcar loading stations.)

What to do	Why to do it
Opacity: less than 10 percent opacity.	40 CFR § 60.672(b) and Minn. R. 7011.3350

Table A.6: Limits that Apply to Equipment <u>not</u> Subject to NSPS

What to do	Why to do it
Opacity: For equipment put in operation on or after 7/9/69: less than 20 percent opacity.	Minn. R. 7011.0715, subp. 1(B)
Opacity: For equipment put in operation before 7/9/69: less than 20 percent opacity except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60-minute period and 40 percent opacity shall be permissible for four additional minutes in any 60-minute period.	Minn. R. 7011.0710, subp. 1(B)

Table A.7: NSPS Notification and Testing Requirements for Equipment Newly Subject to NSPS (Subpart OOO) and Submittal Requirements for Replacements

(If you are the Permittee responsible for a stationary source location which is a multiple-party site covered by your general permit you shall take all reasonable measures to insure that all equipment being operated at the stationary source has met these requirements in Table A.7. You are not required to repeat the notices and tests if they have already been done; however, you must be able to indicate where the documentation of the notices and tests can be found (e.g., the Air Quality file associated with a company you have hired).)

What to do	Why to do it
CONSTRUCTION OR RECONSTRUCTION: Notification of construction or reconstruction postmarked no later than 30 days after the start of construction as defined in 40 CFR§ 60.2 except for mass-produced (prefabricated) affected facilities.	40 CFR § 60.7(a)(1) and Minn. R. 7019.0100, subp. 1
ACTUAL INITIAL STARTUP: Notification of actual initial startup date postmarked within 15 days after such date.	40 CFR § 60.7(a)(3) and Minn. R. 7019.0100, subp. 1
INITIAL PERFORMANCE TESTING: Shall be completed within 60 days of achieving maximum production rate but no later than 180 days after initial startup date.	40 CFR § 60.8(a), 60.675, 60.676, Minn. R. 7017.2015, and Minn. R. 7011.3350
PERFORMANCE TEST NOTIFICATION: Performance test notification postmarked at least 30 days prior to conducting a performance test.	40 CFR § 60.8(d), and Minn. R. 7017.2015, subp. 2(A)
REPLACEMENT: Notification postmarked within 60 days after making the replacement.	40 CFR § 60.670(d), 60.676, and Minn. R. 7011.3350
NOTIFICATION OF ANY PHYSICAL CHANGE OR OPERATIONAL CHANGE: Notification postmarked 60 days or as soon as practicable before the change is commenced.	40 CFR § 60.7(a)(4); 40 CFR § 60.670 and Minn. R. 7019.0100, subp. 1

Table A.8: Requirements and Limits that Apply to Stationary Internal Combustion Engines at Each Stationary Source

(This includes generators as well as other stationary internal combustion engines (e.g., those which directly drive crushers or screens), but does not include mobile sources, such as loaders, haul trucks and other vehicles.)

What to do	Why to do it
Allowed Fuels: Diesel fuel, natural gas, liquefied petroleum gas (LPG)/propane, biodiesel and gasoline, subject to the limitation described below. No other fuels shall be used. For each stationary source location covered by this general permit, the Permittee shall monthly record the amount of each fuel used during the previous month and do the calculation on the Stationary Internal Combustion Engines Fuel Use *form (NM-EN*) in Appendix I by the 15th of the following month, if more than one fuel was used. The Permittee may elect to make and record this calculation in a different format, but it must include the same information. (At a multiple-party site, the fuel used by all parties operating at the site at the same time shall be added together by the Permittee to determine compliance for that site.)	Title I Condition. Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. R. 7011.2300, subp. 2; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
SO_2: less than or equal to 0.5 lbs/mmBtu heat input using a 3-hour rolling average	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained.	Minn. R. 7011.2300, subp. 1
Sitting Conditions: The Permittee shall maintain the sitting conditions for generators as listed in Appendix I.	Minn. R. 7007.1100; Minn. R. 7007.0800, subp. 2
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content does not exceed 0.50% by weight.	Minn. R. 7007.0800, subps. 4 & 5

Table A.9: Requirements and Limits that Apply to Stationary Emergency Internal Combustion Engines at Each Stationary Source

What to do	Why to do it
SO_2: less than or equal to 0.5 lbs/mmBtu heat input using a 3-hour rolling average	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained.	Minn. R. 7011.2300, subp. 1
Fuel type: Natural gas/propane/diesel/biodiesel only by design.	Minn. R. 7005.0100, subp. 35a
Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.	Minn. R. 7007.0800, subps. 4 & 5
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content does not exceed 0.50% by weight.	Minn. R. 7007.0800, subps. 4 & 5

Table A.10: Limits and Requirements that Apply to Volatile Organic Liquid Storage Tanks (Must be Insignificant Activities) Which are Subject to 40 CFR pt. 60, subp. Kb

Tanks *subject* to 40 CFR pt. 60, subp. Kb includes those meeting both of the following requirements:

- storage capacity is greater than or equal to 40 m^3 (10,568 gallons); ***and***
- tank construction, reconstruction, or modification commenced after July 23, 1984.

(If you are the Permittee responsible for a stationary source location which is a multiple-party site covered by your general permit, you shall take all reasonable measures to insure that all subject tanks meet these requirements in Table A.10.You are not required to repeat the recordkeeping requirement if it has already been met.)

What to do	Why to do it
Tank size: Any volatile organic liquid storage tank constructed, reconstructed, or modified after July 23, 1984, must have a design capacity less than 75 m^3 (19,815 gallons)	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
Records: For each tank, keep records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. Retain records for the life of the tank.	40 CFR § 60.116b(b) and 60.116b(a), and Minn. R. 7011.1520(C)

Table A.11: Limits and Requirements that Apply to New and Existing Sand Heaters

What to do	Why to do it
PM: less than or equal to 0.30 grains per dry standard cubic foot unless required to reduce emissions to less that or equal to either the amount allowed by Minn. R. 7011.0700 to 7011.0735	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20% opacity except for one-six minute period per hour of not more than 60 % percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
SO_2: less than or equal to 2.0 lbs/mmBtu using a 3-hour rolling average	Minn. R. 7011.0610, subp. 2 (A)
Maximum Capacity of Total Heaters: less than or equal to 10.0 mmBtu/hr	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
Fuel Type: Natural Gas and Propane only	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100

Table A.12: The following Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR pt. 60, subp. IIII) for Engines with less than 30 liters per cylinder that were constructed, modified, or reconstructed after July 11, 2005.

The date that construction commences is the date the engine is ordered by the owner or operator. Applies to owners and operators that commence construction after July 11, 2005, of the following engines:

1) *engines manufactured after April 1, 2006, and are not fire pump engines*
2) *engines manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.*

Engines modified or reconstructed after July 11, 2005, must meet the emission standards for the model year in which the engine was originally new, not the year that the engine was modified or reconstructed.

Emergency Stationary Internal Combustion Engine (ICE) is defined as an engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

HP- Horsepower
g/HP-hr- grams per horsepower-hour

Owners and Operators of Non-Emergency Engines (Pre-2007) and < 10 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
MAXIMUM ENGINE POWER LESS THAN 11 HP	hdr
***NMHC + NOx*:** less than 7.8 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
***CO*:** less than 6.0 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
***PM*:** less than 0.75 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP	hdr
***NMHC + NOx*:** less than 7.1 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
CO: less than 4.9 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
***PM*:** less than 0.60 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP	hdr
NMHC + NOx: less than 7.1 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
CO: less than 4.1 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
***PM*:** less than 0.60 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520

MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 175 HP	hdr
NOx: less than 6.9 g/HP-hr for engine power greater	40 CFR § 60.4204 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT GREATER THAN 750 HP	hdr
HC**:** less than 1.0 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
NOx*:* less than 6.9 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
CO: less than 8.5 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520
PM**:** less than 0.40 g/HP-hr	40 CFR § 60.4204 (a); Minn. R. 7011.3520

Owners and Operators of Non-Emergency Engines (Pre-2007) and ≥ 10 liters/cylinder and < 30 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
NOx: less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm)	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more.	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520

Owners and Operators of Non-Emergency Engines (2007 and later) and < 30 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
NOx: less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm)	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more.	40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520

B. **FUEL REQUIREMENTS FOR OWNERS AND OPERATORS OF NON-EMERGENCY ENGINES**	hdr
***Fuel Restriction*:** On October 1, 2007, the owners and operators that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR§ 80.510(a)	40 CFR § 60.4207; 40 CFR § 80.510(a); Minn. R. 7011.3520
Fuel Restriction: On October 1, 2010, the owners and operators of stationary CI internal combustion engines with a displacement of less than 30 liters per cylinder that use diesel fuel must use the requirements of 40 CFR§ 80.510(b) for nonroad diesel fuel	40 CFR § 60.4207; 40 CFR § 80.510(b); Minn. R. 7011.3520
Fuel Used Up: Owners and operators of pre-2011 model year stationary CI internal combustion engines may petition the EPA Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of 40 CFR§ 60.4207 (a) and (b) beyond the dates required for purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the EPA Administrator.	40 CFR § 60.4207; Minn. R. 7011.3520

C. COMPLIANCE REQUIREMENTS FOR OWNERS AND OPERATORS OF NON-EMERGENCY ENGINES	hdr
The owner or operator must comply with the emission standards specified in 40 CFR§ 60.4204, and must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner and operator must also meet the requirements of 40 CFR pts. 89, 94 and/or 1068, as they apply to you.	40 CFR § 60.4211; Minn. R. 7011.3520
For pre-2007 model year engines with a displacement < 30 liters per cylinder that are not fire pump engines, you must demonstrate compliance according to one of the methods specified below: (1) Purchasing an engine certified according to 40 CFR pt. 89 or 40 CFR pt. 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications; (2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly; (3) Keeping records of engine manufacturer data indicating compliance with the standards; (4) Keeping records of control device vendor data indicating compliance with the standards; or (5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in 40 CFR§ 60.4212, as applicable.	40 CFR § 60.4211(b)(1) through (5); Minn. R. 7011.3520
The owner or operator of a 2007 model year and later with a displacement < 30 liters per cylinder stationary CI internal combustion engine and must comply with the emission standards specified in 40 CFR§ 60.4204(b) or 40 CFR§ 60.4205(b). The engine must be installed and configured according to the manufacturer's specifications.	40 CFR § 60.4211(c) Minn. R. 7011.3520
D. MONITORING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES	hdr
The owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in 40 CFR § 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.	40 CFR § 60.4209(b); Minn. R. 7011.3520

E. NOTIFICATIONS AND REPORTING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES	**hdr**
Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the following requirements: Submit an initial notification as required in 40 CFR § 60.7(a)(1). The notification must include the following information : 1) Name and address of the owner or operator; 2) The address of the affected source; 3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; 4) Emission control equipment; and 5) Fuel used.	40 CFR § 60.4214(a)(1); Minn. R. 7011.3520
F. RECORDKEEPING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES	hdr
Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the following requirements: Keep records of the following information: 1) All notifications submitted and all documentation supporting any notification; 2) Maintenance conducted on the engine; 3) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards; and 4) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.	40 CFR § 60.4214(a)(2); Minn. R. 7011.3520
Records of Any Corrective Actions: If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.	40 CFR § 60.4214(c); Minn. R. 7011.3520

Owners and Operators of Emergency Engines Except Fire Pump Engines (Pre-2007) and < 10 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
MAXIMUM ENGINE POWER LESS THAN 11 HP	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
CO: less than 6.0 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
PM: less than 0.75 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP	hdr
NMHC + NOx: less than 7.1 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
CO: less than 4.9 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP	hdr
NMHC + NOx: less than 7.1 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
CO: less than 4.1 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 175 HP	hdr
NOx: less than 6.9 g/HP-hr for engine power greater	40 CFR § 60.4205 (a); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT GREATER THAN 750 HP	hdr
HC: less than 1.0 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
NOx: less than 6.9 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
CO: less than 8.5 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520
PM: less than 0.40 g/HP-hr	40 CFR § 60.4205 (a); Minn. R. 7011.3520

Owners and Operators of Emergency Engines Except Fire Pump Engines (Pre-2007) and ≥ 10 liters/cylinder and < 30 liters/cylinder

What to do	Why to do it
NOx: less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm)	40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm	40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520
NOx: less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more.	40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520

Owners and Operators of Emergency Engines Except Fire Pump (2007 and later) and < 30 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
MAXIMUM ENGINE POWER LESS THAN 50 HP (Model Year 2007). Shall comply with the certification emission standards for new nonroad CI engines.	hdr
NMHC+NOx: less than 3.5 g/HP-hr (4.7 g/kW-hr)	40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520
CO: less than 3.7 g/HP-hr (5.0 g/kW-hr)	40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr (0.40 g/kW-hr)	40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520
Opacity: shall not exceed the following: (1) 20 percent during the acceleration mode; (2) 15 percent during the lugging mode; and (3) 50 percent during the peaks in either the acceleration or lugging modes.	40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.113; Minn. R. 7011.3520
MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2008+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2 ; Minn. R. 7011.3520
CO: less than 6.0 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25 HP (Model Year 2008+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
CO: less than 4.9 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520

PM: less than 0.30 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS THAN 50 HP (Model Year 2008+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
CO: less than 4.1 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
PM: less than 0.22 g/HP-hr	40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL 50 HP (Model Year 2007). Shall comply with the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR§ 89.112 and 40 CFR§ 89.113 for all pollutants beginning in model year 2007	hdr

Owners and Operators of Fire Pump Engines (All years 2007 and after) and < 30 liters/cylinder

What to do	Why to do it
A. EMISSION STANDARDS	hdr
MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2010 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
CO: less than 6.0 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.75 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2011+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP (Model Year 2010 and earlier)	hdr
NMHC + NOx: less than 7.1 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
CO: less than 4.9 g/HP-hr	40 CFR § 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP (Model Year 2011+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP (Model Year 2010 and earlier)	hdr
NMHC + NOx: less than 7.1 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 4.1 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP (Model Year 2011+)	hdr
NMHC + NOx: less than 5.6 g/HP-hr	40 CFR§ 60.4205 (c)
PM: less than 0.22 g/HP-hr	40 CFR§ 60.4205 (c)
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 75 HP (Model Year 2010 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 3.7 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520

PM: less than 0.60 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 75 HP (Model Year 2011+)[1]	hdr
NMHC + NOx: less than 3.5g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 75 HP BUT LESS than 100 HP (Model Year 2010 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 3.7 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 75 HP BUT LESS than 100 HP (Model Year 2011+)[1]	hdr
NMHC + NOx: less than 3.5 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.30 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 100 HP BUT LESS than 175 HP (Model Year 2009 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 3.7 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.60 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 100 HP BUT LESS than 175 HP (Model Year 2010+)[2]	hdr
NMHC + NOx: less than 3.0 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.22 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT LESS than 300 HP (Model Year 2008 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 2.6 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.40 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT LESS than 300 HP (Model Year 2009+)	hdr
NMHC + NOx: less than 3.0 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.15 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 300 HP BUT LESS than 600 HP (Model Year 2008 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520

CO: less than 2.6 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.40 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 300 HP BUT LESS than 600 HP (Model Year 2009+)	hdr
NMHC + NOx: less than 3.0 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.15 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 600 HP BUT LESS OR EQUAL TO 750 HP (Model Year 2008 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 2.6 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.40 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 600 HP BUT LESS OR EQUAL TO 750 HP (Model Year 2009+)	hdr
NMHC + NOx: less than 3.0 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.15 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN 750 HP (Model Year 2007 and earlier)	hdr
NMHC + NOx: less than 7.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
CO: less than 2.6 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.40 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
MAXIMUM ENGINE POWER GREATER THAN 750 HP (Model Year 2008+)	hdr
NMHC + NOx: less than 4.8 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520
PM: less than 0.15 g/HP-hr	40 CFR§ 60.4205 (c); Minn. R. 7011.3520

[1] For model years 2011-2013, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,560 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines

[2] For model years 2010-2012, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,560 rpm may comply with the emission limitations for 2009 model year engines

B. MONITORING, REPORTING AND RECORDKEEPING FOR OWNERS AND OPERATORS OF EMERGENCY ENGINES	hdr
The owner or operator is not required to submit an initial notification. Starting with the model year 2013 for engine power less than 75 HP; model year 2012 for engine power less than 175 HP; and model year 2011 for engine power greater than and equal to 175 HP. If the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.	40 CFR§ 60.4214 (b); Minn. R. 7011.3520
Starting with the model year 2013 for engine power less than 75 HP; model year 2012 for engine power less than 175 HP; and model year 2011 for engine power greater than and equal to 175 HP, stationary CI internal combustion engine manufacturers must add a permanent label stating that the engine is for stationary emergency use only to each new emergency stationary CI internal combustion engine greater than or equal to 19 KW (25 HP) that meets all the emission standards for emergency engines in 40 CFR§ 60.4202 but does not meet all the emission standards for non-emergency engines in 40 CFR§ 60.4201. The label must be added according to the labeling requirements specified in 40 CFR§ 1039.135(b). Engine manufacturers must specify in the owner's manual that operation of emergency engines is limited to emergency operations and required maintenance and testing.	40 CFR§ 60.4210 (f); Minn. R. 7011.3520

Table A.12: The following Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40 CFR pt. 60, subp. JJJJ) for Engines with less than or equal to 500 brake horsepower. These engines can use gasoline fuel only.

The engines that are constructed, modified or reconstructed after June 12, 2006, are subject to these rules. The date that construction commences is the date the engine is ordered by the owner or operator.

1. Non-emergency engines with a maximum engine power less than 500 HP, manufactured on or after July 1, 2008;
2. Emergency engines with a maximum engine power greater than 25HP, manufactured on or after January 1, 2009;
3. Engines than are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other requirements.

Owners and Operators of Non-Emergency Engines (Manufactured after July 1, 2008)

What to do	Why to do it
Owners and operators use gasoline must use gasoline that meets the per gallon sulfur limit in 40 CFR § 80.195.	40 CFR§ 60.4235
After July 1, 2010, owners and operators may not install stationary SI ICE with a maximum engine power of less than 500 HP that do not meet the applicable requirements in 40 CFR § 60.4233.	40 CFR§ 60.4236(c)
The owner or operator must operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, and must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required.	40 CFR§ 60.4243(a)
Owners and operators of all stationary SI ICE must keep records of the information in (1) through (4). (1) All notifications and all documentation supporting any notification as described in 40 CFR §§ 60.7 and 60.19. (2) Maintenance conducted on the engine. (3) If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90 and 1048. (4) If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR§ 60.4243(a)(2), documentation that the engine meets the emission standards.	40 CFR§ 60.4245 (a); 40 CFR§ 60.7 and 60.19.
For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter.	40 CFR§ 60.4243(d)

Owners and Operators of Emergency Engines (Manufactured after July 1, 2008)

What to do	Why to do it
The owner or operator of an emergency stationary SI internal combustion engine that is less than 130 HP, was built on or after July 1, 2008, and does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter upon startup of your emergency engine.	40 CFR§ 60.4237
Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.	40 CFR§ 60.4243(d)
Emergency stationary SI ICE with a maximum engine power of greater than 19 KW (25 HP), owners and operators may not install engines that do not meet the applicable requirements in *40 CFR§ 60.4233 after January 1, 2011.*	40 CFR§ 60.4236(a)
For all stationary SI emergency ICE greater than 25 HP and less than 130 HP manufactured on or after July 1, 2008, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation.	40 CFR§ 60.4245(b)

Table A.14: The following are the requirements of the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (40 CFR pt. 63, subp. ZZZZ)

Owners and operators of new and reconstructed stationary engines located at area sources of HAP emissions must meet the requirements of 40 CFR pt. 60, subps. IIII or JJJJ, as appropriate. If the owners and operators are in compliance with either 40 CFR pt. 60, subps. IIII or JJJJ, as appropriate, they would be in compliance with 40 CFR pt. 63, subp. ZZZZ, for new and reconstructed engines.

Existing Source: Constructed or reconstructed before June 12, 2006
New Source: Constructed or reconstructed on or after June 12, 2006

Reconstructed must meet the definition of reconstruction in 40 CFR§ 63.2 and reconstruction is commenced on or before June 12, 2006.

TABLE B: SUBMITTALS

Table B lists the submittals you must send to the Commissioner. Table B is divided into two sections, for source-specific submittal requirements and for submittals required of all Permittees. Source-specific submittals are further organized as either one-time only or recurrent requirements.

Return complete permit application to:

Minnesota Pollution Control Agency
Air Quality Permit Coordinator
520 Lafayette Road North,
St. Paul, Minnesota 55155-4194

Send all other submittals to:

Minnesota Pollution Control Agency,
Air Quality Compliance Tracking Coordinator
520 Lafayette Road North,
St. Paul, Minnesota 55155-4194.

New Source and Equipment One-Time Submittals			
What to Send	**When to Send**	**What is affected**	**Citation**
Location Notification on a form approved by the Commissioner	At least 48 hours prior to each change in location of a stationary source, establishment of a new stationary source location, or a change in capacity/dust control option at an individual stationary source	Each stationary source (plant location) to be covered by your general permit	Minn. R. 7007.0800, subp. 12
NSPS Equipment Description and Notification of commencement of construction (defined in 40 CFR§ 60.2) on a form approved by the Commissioner Notifying	No later than 30 days after start of construction	Equipment newly subject to NSPS except for mass-produced (i.e., prefabricated) facilities	40 CFR §. 60.7(a)(1); Minn. R. 7019.0100
NSPS Equipment Description and Notification of initial startup date on a form approved by the Commissioner	Within 15 days after initial startup	Equipment newly subject to NSPS	40 CFR §. 60.7(a)(3); Minn. R. 7019.0100
NSPS Equipment Description and Notification of equipment replacement on a form approved by the Commissioner (With information required in 40 CFR§ 60.676)	**Within 60 days after making the replacement**	An existing facility (piece of equipment not subject to NSPS) being replaced by a piece of equipment of equal or smaller size or capacity)	40 CFR § 60.676(a) and 60.670(d); Minn. R. 7011.3350

Routine Submittals

What to Send	When to Send	What is affected	Citation
Semiannual Deviations Reporting on a form approved by the Commissioner with a summary of *all* instances of deviations from permit conditions (or indicating none occurred). Submit the report for the second half-year report with your annual Compliance Certification. Use Form NM-DRF	Semiannually: due July 30, covering January 1 through June 30, and due January 31, covering July 1 through December 31	All stationary sources (plant locations) covered by your general permit (A single form may be submitted supplying necessary information for all stationary sources covered by this general permit during the reporting period)	Minn R. 7007.0800, subp. 6(A)(2)
Annual Compliance Certification on a form approved by the Commissioner. Submit with the second half-year semiannual deviations report. Use Form NM-CR	Annually, by January 31 for the previous calendar year		Minn. R. 7007.0800 subp. 6(C)
Emissions inventory report A form will be sent for you to complete and return	Annually, by April 1 for the previous calendar year		Minn. R. 7019.3000-7019.3100
Emission fees	Annually, within 60 days of receipt of an MPCA invoice		Minn. R. 7002.0005-7002.0085
Periodic Submittals (required as necessary)			
Oral notification of deviation endangering human health or the environment	Immediately after discovery	Stationary source (plant location) covered by your general permit (A single notification and/or submittal may be submitted supplying necessary information for all stationary sources covered by this general permit if events coincide. Otherwise, each requirement applies separately to each stationary source for each individual event.)	Minn. R. 7019.1000, subp. 1
Written description of deviation endangering human health or the environment	Within 2 days of discovery		Minn. R. 7019.1000, subp. 1
Shutdown notification	At least 24 hours before a planned shutdown of process or control equipment if it would cause an increase in the emission of air pollutants and again when the shutdown is over		Minn. R. 7019.1000, subp. 3
Breakdown notification	Immediately for a breakdown of more than one hour duration of any process or control equipment if the breakdown causes an increase in the emission of air pollutants and again when the breakdown is over		Minn. R. 7019.1000, subp. 2

Notification and Test Plan on a form approved by the Commissioner	At least 30 days before performance test date	Affected facility (piece of equipment) as defined in 40 CFR § 60.676 and any other equipment required to be tested	Minn. R. 7017.2030
Pre-test meeting	At least 7 days prior to performance test date		Minn. R. 7017.2030, subp. 4
Test report	Within 45 days after performance test date	Affected facility (piece of equipment) as defined in 0 CFR § 60.676 and any other equipment tested	Minn. R. 7017.2035, subp. 2
Microfiche or CD copy of test report	Within 105 days after performance test date		Minn. R. 7017.2035, subp. 2

APPENDIX I: SOURCE-SPECIFIC REQUIREMENTS

Stationary Source Designation Matrix

Stationary Internal Combustion Engines Fuel Use

Weather Summary Criteria

Generator Sitting Conditions

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NONMETALLIC MINERAL PROCESSING GENERAL PERMIT, STATIONARY SOURCE DESIGNATION MATRIX

TABLE 1 - Annual Production versus Numbers of Units

Table 1. Stationary Source Category Annual Production (tons) - Up to:													
	Number of Units			Stationary Source Annual Production (tons)									
Category	Crushers	Screens	Transfer Operations	500,000	1,000,000	1,250,000	1,500,000	1,750,000	2,000,000	2,250,000	2,500,000	2,750,000	3,000,000
A	1	1	10	small	small	small	small	medium	medium	medium	medium	medium	large
B	2	2	20	small	small	small	small	medium	medium	medium	large	large	large
C	3	3	30	small	small	small	medium	medium	medium	large	large	large	not allowed
D	4	4	40	small	small	small	medium	medium	large	large	not allowed	not allowed	not allowed
E	5	5	50	small	small	medium	medium	large	large	not allowed	not allowed	not allowed	not allowed
F	6	6	60	small	small	medium	medium	large	not allowed	not allowed	not allowed	not allowed	not allowed
G	7	7	70	small	small	medium	large	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed
H	8	8	80	medium	medium	medium	large	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed

TABLE 2 - Annual Production versus In-Place Capacity

Table 2. Stationary Source Category Annual Production (tons) Versus In-Place Capacity													
	Cumulative In-Place Capacity (tph)			Stationary Source Annual Production (tons) Up to:									
Category	Crushers	Screens	Transfer Operations	500,000	1,000,000	1,250,000	1,500,000	1,750,000	2,000,000	2,250,000	2,500,000	2,750,000	3,000,000
I	750	750	7500	small	small	small	medium	medium	medium	large	large	large	not allowed
II	1250	1250	12500	medium	medium	medium	medium	medium	large	large	not allowed	not allowed	not allowed
III	2500	2500	25000	large	large	large	large	large	large	not allowed	not allowed	not allowed	not allowed

Stationary sources, using Table 2, with cumulative capacities above 2,500 tons per hour (tph) for crushers or for screens or above 25,000 tph for transfer operations are not allowed under this general permit.

If Table 2 is used for determining the stationary source designation, in order to demonstrate compliance with the cumulative capacity limitation, the Permittee must keep an up-to-date record (e.g., a site plan or process flow diagram) showing the cumulative in-place capacity of each equipment type at the stationary source. This record does not need to identify specific unique identifying numbers for pieces of equipment. It may be generic in nature, but must be sufficiently detailed to determine the cumulative capacity of all equipment types at the stationary source. Wet screening operations are excluded from counting toward the number of units in the matrix above.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

NM-EN

STATIONARY INTERNAL COMBUSTION ENGINES FUEL USE
Air Quality Permit Program - General Permit Nonmetallic Mineral Processing

1) AQD File No.: _____

2) AQD Permit No.: _____

3) Company Name: _____

4) Stationary Source Name/Location: _____

5) Dates of period covered by calculation _____

6) Printed name of person recording calculation: _____

7) Date (must be done by 15th of following month): _____

Fuel Type	**Amount Burned in Previous 12-Month Period at Stationary Source Location ***	**Units**	**Multiplying Factor**	**Subtotal**
Diesel Fuel		Gallons	x 3.09 ÷ 10,000	
Diesel Fuel with up to 20% Biodiesel		Gallons	x 2.83 ÷ 10,000	
Natural Gas		Cubic Feet	x 1.70 ÷ 1,000,000	
Liquefied Petroleum Gas (LPG) / Propane		Gallons	x 6.95 ÷ 100,000	
Gasoline		Gallons	x 4.24 ÷ 1,000	
Calculation Total	(Sum subtotals)		Must be less than 90 *	

* If a stationary source has less than 12 months of operational data, the Permittee shall determine compliance during the first 12 months under this general permit using the following formula:

N = 0.95 x (Annual Limit)
+ 0.0045 x (Annual Limit) x (n-1)

Where “n” is the number of months in operation, and “N” is the rolling sum limit for the current month.

At its option, the Permittee may calculate and record individual monthly sums, in lieu of 12-month rolling sums, for a stationary source location such that the annual production limit divided by 12 is not exceeded. Also at its option, if only one fuel is used, the Permittee may record and sum the quantity of fuel used directly, in which case the annual limits are as follows: 291,545 gallons for diesel fuel, 317,851 gallons for diesel fuel with up to 20% biodiesel, 53 million cubic feet for natural gas, 1.3 million gallons for propane, and 21,221 gallons for gasoline.

WEATHER SUMMARY CRITERIA
FOR
LARGE STATIONARY SOURCE NON-PROCESS DUST CONTROL OPTION
NONMETALLIC MINERAL PROCESSING GENERAL PERMIT

Sky Conditions

CLR	<1/10 cloud coverage
SCT (Ptly Cldy)	1/10-5/10 cloud coverage (opaque)
BKN (Mstly Cldy)	6/10-9/10 cloud coverage (opaque)
OVC (Cloudy)	10/10 cloud coverage (opaque)
THN OVC	Sky is completely covered with high thin clouds and <5/10 cloud coverage is opaque

Note: The cloud coverage is a cumulative total of all cloud layers.

Weather Conditions

Fog	May also be associated with drizzle and may obstruct sky
Drizzle	Small particles of rain many times associated with fog
Lt Rain	Continuous falling at a light rate (good horizontal visibility)
Mod Rain	Continuous falling at a mod. rate (horiz. visibility decreased)
Hvy. Rain	Continuous falling at heavy rate; in sheets (horizontal visibility low)
T-Stm	Thunderstorm -- thunder, lightning, and usually mod. to hvy. rain
Hail	Associated with thunderstorms
Frz Rain	Rain that freezes on contact of cold objects; glazing
Sleet	Mixture of rain and ice pellets
Ice Pellets	Clear/mostly translucent pellets of ice -- not easily broken/crushed
Snw Grns/Snw Pellets	Hard/crunchy opaque (white) pellets of snow -- easily crushed
Lt Snow	Falling at a light rate; flurries (good horizontal visibility)
Mod Snow	Falling at a moderate rate (horizontal visibility decreased)
Hvy Snow	Falling at a heavy rate (poor horizontal visibility)

Wind Scale

0-10 MPH	Light Breeze	Leaves rustle
10-20 MPH	Light Wind	Small tree branches move; wind extends light flag
20-30 MPH	Mod. Wind	Large branches in motion; umbrella used with difficulty
30-40 MPH	Mod. Gale	Whole trees in motion; difficulty walking against wind
40-50 MPH	Strong Gale	Twigs break off of trees

Temperature

Approximate using a range of 5 degrees Fahrenheit if the actual temperature is not known.

GENERATOR/ENGINE SITTING CONDITIONS

Capacity Allowed to Operate Simultaneously horsepower	Minimum Stack Height Feet (meters)	Minimum Distance Between Engines and Property Boundaries Feet (meters)
500	14(4.27)	60 (18.30)
750	14(4.27)	135(41.15)
1000	14(4.27)	210(64.0)
1500	14(4.27)	330(100.0)

Construction Related Emissions					
Option 1	CR 75 realignment				
	From Minnesota Infrastructure Carbon Estimator Version 2.1				
		Annualized GHG Emissions			
		US ton CO2e			
	Aggregate	1.03			
	Bitumen (Asphalt Binder)	1.84			
	Cement	3.08			
	Steel	1.58			
	Transportation Fuel	1.00			
	Construction Fuel	7.53			
	land use conversion	22.50			
	Total	38.55			
	Materials	7.53			
	Transportation	1.00			
	Construction	30.03			
	Total	38.56			
	Includes conversion of 6 acres of wooded area to roadbed/right of way				

Construction Related Emissions				
Option 2	Bridge/underpass and temporary bypass			
	From Minnesota Infrastructure Carbon Estimator Version 2.1			
	Annualized Greenhouse Gas Emissions			
1	Bridge Construction			
	20 year Annualized Results	GHG Emissions (short tons CO2e/yr)		
	Aggregate	0.07		
	Cement	3.41		
	Steel	0.44		
	Water	0.00		
	Transportation Fuel	0.11		
	Construction Fuel	0.74		
	Total	4.78		
	Materials subtotal	3.93		
	Transportation subtotal	0.11		
	Construction subtotal	0.74		
	Total	4.78		
2	Temporary two lane bypass	GHG Emissions (short tons CO2e/yr)		
	Aggregate	0.58		
	Bitumen (Asphalt Binder)	1.05		
	Cement	1.75		
	Steel	0.90		
	Transportation Fuel	0.57		
	Construction Fuel	4.28		
	Total	9.12		
	Materials	4.28		
	Transportation	0.57		
	Construction	4.28		
	Total	9.12		

Scope 1 Emissions from Mobile Sources

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- Select "On-Road" or "Non-Road" from drop down box to determine the Vehicle Types available. **Must select before picking vehicle type.**
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
- If mileage or fuel usage is unknown, estimate using approximate fuel economy values (see **Reference Table** below).
- Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units	Miles Traveled
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*	*12,065*
	Two Loaders	NonRoad	Construction/Mining Equipment - Diesel		46,497	gal	
	Two Haul Trucks	OnRoad	Heavy-Duty Trucks - Biodiesel		24,712	gal	
	Various light duty	OnRoad	Light-Duty Trucks - Gasoline		977	gal	

GHG Emissions

Total Organization-Wide Mobile Source Fuel Usage and CO_2 Emissions (On-Road and Off-Road Vehicles)

Fuel Type	Fuel Usage	Units	CO_2 (kg)	
Motor Gasoline	977	gallons	8,578.1	
Diesel Fuel	46,497	gallons	474,734.4	
Residual Fuel Oil	0	gallons	0.0	
Aviation Gasoline	0	gallons	0.0	
Kerosene-Type Jet Fuel	0	gallons	0.0	
Liquefied Petroleum Gas (LPG)	0	gallons	0.0	
Ethanol	0	gallons	0.0	
Biodiesel	24,712	gallons	201,847.6	*Note: emissions here are only for the diesel portion of the fuel, biogenic CO2 emissions are reported below*
Liquefied Natural Gas (LNG)	0	gallons	0.0	
Compressed Natural Gas (CNG)	0	scf	0.0	

Total CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**698.3**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**46.7**
Total CO_2 Equivalent Emissions (short tons) - Mobile Sources	**768.1**

Notes:

1. Average mpg values from the U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2019 (December 2021), Table VM-1.

Scope 2 Emissions from Purchase of Electricity

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

The Indirect Emissions from Purchased Electricity Guidance document provides guidance for quantifying two scope 2 emissions totals, using a **location-based method** and a **market-based method**. The organization should quantify and report both totals in its GHG inventory. The location-based method considers average emission factors for the electricity grids that provide electricity. The market-based method considers contractual arrangements under which the organization procures electricity from specific sources, such as renewable energy.

(A) Enter total annual electricity purchased in kWh and each eGRID subregion for each facility or site

(B) If electricity consumption data are not available for a facility, an estimate should be made for completeness.

(C) Select "eGRID subregion" from drop box and enter "Electricity Purchased."

- Use map (Figure 1) at bottom of sheet to determine appropriate eGRID subregion. If subregion cannot be determined from the map, find the correct subregion by entering the https://www.epa.gov/egrid/power-profiler#/

the first four types of

emission factors are applicable, enter the factors in the yellow cells marked as "<enter factor>". If not, leave the

yellow cells as is, and eGRID subregion factors will be used for market-based emissions.

Example entry is shown in first row (*GREEN Italics*) for a facility that purchases RECs for 100% of its

Help - Market-Based Method

Tips: Enter electricity usage by location and then look up the eGRID subregion for each location.

If you purchase renewable energy that is less than 100% of your site's electricity, see the example in the market-based method Help sheet.

Table 1. Total Amount of Electricity Purchased by eGRID Subregion

Source ID	Source Description	Source Area (sq ft)	eGRID Subregion *where electricity is consumed*	Electricity Purchased (kWh)	Location-Based Emissions: CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)
Bldg-012	*East Power Plant*	*12,517*	*HIMS (HICC Miscellaneous)*	*200,000*	*228,640.0*	*22.0*	*3.4*
	Shop Service		MROW (MRO West)	249,601	244,484.2	26.0	3.7
	Plant / Waterfront		MROW (MRO West)	998,404	977,936.7	103.8	15.0
	Office		MROW (MRO West)	49,920	48,896.6	5.2	0.7
	Scale House		MROW (MRO West)	74,880	73,345.0	7.8	1.1
	Pit Pumps		MROW (MRO West)	249,601	244,484.2	26.0	3.7
	Pit Conveyors		MROW (MRO West)	249,601	244,484.2	26.0	3.7
	Lokotrak		MROW (MRO West)	624,000	611,208.0	64.9	9.4
Total Emissions for All Sources				2,496,007	2,444,838.9	259.6	37.4

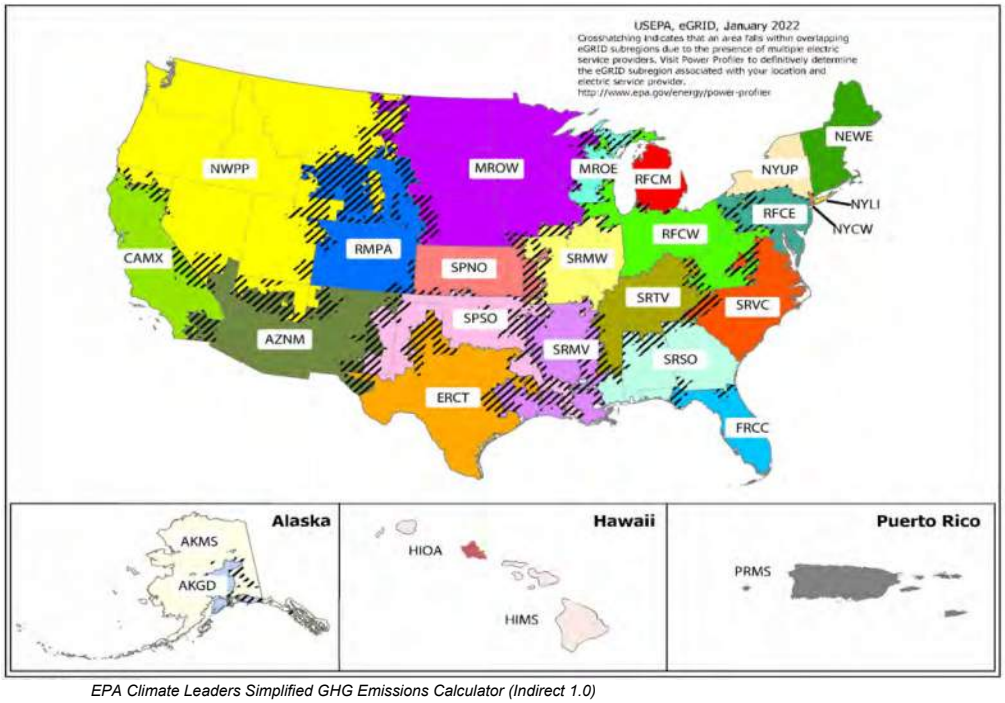
GHG Emissions

CO_2 Equivalent Emissions (metric tons)	
Location-Based Electricity Emissions	**1,117.0**

CO_2 Equivalent Emissions (short tons)	
Location-Based Electricity Emissions	**1,228.7**

Notes:

1. CO_2, CH_4 and N_2O emissions are estimated using methodology provided in EPA's Center for Corporate Climate Leadership Greenhouse Gas Inventory Guidance - Indirect Emissions from Purchased Electricity (January 2016).



EPA Climate Leaders Simplified GHG Emissions Calculator (Indirect 1.0)

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BARR

Technical Memorandum

To: Robert Bieraugel, Aggregate Industries

From: Andrew Skoglund

Subject: County Road 75 Realignment Noise Assessment - Larson Quarry Expansion EAW

Date: June 8th, 2020

c: Evan Christianson, Ray Wuolo, Shanna Braun; Barr Engineering

Aggregate Industries ("Aggregate") retained Barr Engineering (Barr) to perform a noise assessment of the proposed realignment of County Road 75 from its existing route to loop eastward around the proposed Larson Quarry site. This memorandum summarizes the noise modeling associated with that effort.

Introduction

The realigned county road is not subject to Minnesota Pollution Control Agency (MPCA) noise standards, nor does it appear to have a federal nexus resulting in a Type-I project, therefore the detailed assessment requirements of Minnesota Department of Transportation (MnDOT) and Federal Highway Administration (FHWA) guidance do not apply. To provide additional information for review, a screening-level modeling assessment was performed. Screening modeling of current and realigned road impacts was performed to assess the potential for impact to nearby residences.

Basics of Noise

Noise levels are usually measured in units of decibels ("dB"). For applications where human hearing is the prime consideration, A-weighting is applied to yield A-weighted decibels ("dBA"). This weighting serves to better replicate the way the human ear perceives sound. A level of 0 dBA is nominally the threshold of hearing, below which a healthy human ear cannot detect the sound. Most situations never yield levels this low, with a quiet bedroom falling around 40 dBA. Decibels are on a logarithmic scale, thus an increase in dB of 10 is perceived as a doubling of the noise level. A just barely perceptible change is 3 dB.

Applicable Noise Standards

Minnesota noise standards apply at the nearest receptor and are specific to the type of land use at the receptor location. Household units fall under the most stringent MPCA noise area classification – NAC 1. Daytime noise levels in an NAC-1 area may not exceed 60 dBA for more than 30 minutes in any given hour (L_{50}) nor exceed 65 dBA for more than six minutes in a given hour (L_{10}). Nighttime noise levels in an NAC-1 area may not exceed 50 dBA for more than 30 minutes in any given hour (L_{50}) nor exceed 55 dBA for more than six minutes in a given hour (L_{10}). (MN Rule 7030.0040). Minnesota Statute 116.07 Subd. 2a specifically exempts city and county roadways from these regulations. The proposed county 75 realignment is exempt from MPCA standards under this criteria.

For roadways in MN, the MnDOT guidance generally parallels FHWA guidelines for assessment of noise impacts. FHWA defines noise abatement criteria for a variety of land uses, using the L_{eq} metric. For

residential land uses (Category B), the federal L_{eq} noise abatement criterion is 67 dBA. For locations where noise levels are approaching or exceeding the criterion level, the feasibility of noise abatement must be evaluated. The FHWA Noise abatement criteria are detailed in Table 1.

Table 1. FHWA Noise Abatement Criteria

Category	L_{eq} (dBA)	Land Use
A	57	Special areas requiring serenity
B & C	67	Residential and recreational areas
D	52*	Auditoriums, Hospitals, Libraries, Places of Worship, etc.
E	72	Hotels, Motels, Offices, other development not in A-D or F
F	NA	Agriculture, Industrial, Retail, etc.

* Applies to indoor noise levels, all other categories apply to exterior levels

Assessment Methodology

MnDOT provides a flowchart for the assessment of noise impacts in the EA-EAW process. For projects not considered 'Type I' a detailed assessment is not required. The proposed realignment does not appear to involve any of the criteria to be classified as a Type I federal project, and therefore MnDOT guidelines would not require assessment of anything beyond construction noise associated with the project. For completeness and to provide a sense of potential impacts, a screening level modeling review was performed using the FHWA low-volume road screening tool.

Aggregate provided Barr with traffic survey data for activity on County 75, monitored at both the southern edge of St. Paul Park, as well as at the bridge. The bridge counts are less recent, but are more specific to the traffic on the proposed realignment portion. The count at the southern edge of St. Paul Park could potentially include traffic that instead follows Grey Cloud Trail, providing a conservatively high potential traffic flow. Projected sound levels were determined based on the peak flow traffic hour observed at both points for comparison. Changes in traffic level are not part of this analysis, as no change in access, road type, road capacity, or additional destinations are served by the realignment. Aggregate has indicated that the future mining which is driving the realignment will not result in increased truck traffic on the realigned roadway. No change in road usage is expected to result from the realignment.

The FHWA Traffic Noise Model (TNM) low-volume road tool provides screening-level assessment of noise impacts out to 500 feet from a roadway. Using review of aerial photos and property maps, nearby residences were identified and the potential impacts of the existing and proposed alignments were determined. Several residences are outside of 500 feet from the current and/or realigned route. The screening levels modeled at the 500 foot outer limit of the tool provides a conservative assessment of potential levels at those more distant residences.

Monitored Background

Daytime and nighttime monitoring was performed in the region in 2010 near residences approximately 3 miles southeast of the proposed project to provide baseline levels for environmental assessment of other activity in the area. Given that the project does not require a full Type I noise assessment with accompanying monitoring, the existing noise data was utilized to provide an assessment of baseline conditions. L_{eq} levels in the area were found to be in the 45 dBA (night) to 49 dBA (day) range during prior study. Additional detail of the prior monitoring is available upon request.

Predicted Levels and Impacts

The modeling of the predicted impacts was performed using the FHWA TNM low-volume road tool. Receptors were identified through review of aerial imagery and project layout maps.

The worst-case hourly traffic flow rates were used from the county's traffic data, as provided. The peak hour from the studies was 166 vehicles per hour. Traffic mix was unavailable for the studies of the area. Modeling utilized an assumed 85% of traffic as cars and light trucks, 5% medium trucks and 10% heavy trucks. Traffic was modeled at the posted speed limit of 40 mph.

Modeling results of the existing layout and the proposed project are detailed in Table 2. The maximum modeled level at the residences experiencing a change in distance is L_{eq} of 53.7 dBA. In general, modeled levels decay below 'significant levels' within approximately 300 feet of the roadway ('significant levels' per FHWA guidelines being 54 dBA assuming a 49 dBA daytime baseline L_{eq} throughout the area). Levels during non-peak hours would be even lower and not expected to yield a significant impact.

Table 2. Modeling Results Summary

Location Description	Distance to Current/Proposed route (feet)	Regional Monitored Baseline Level (L_{eq} dBA)	Modeled Current/No-build Route (L_{eq} dBA)	Modeled Build: Realigned (L_{eq} dBA)	Modeled Current vs Realigned (dBA)
Residences along County 75 just south of bridge onto Grey Cloud Island	No change	49	No change	No change	No change
Residences Across Channel, along Grey Cloud Trail S	1700+ / 600+	49	51.1 dBA @ 500' (outer limit of screening tool)	51.1 dBA @ 500' (outer limit of screening tool)	No Significant Change, Modeled levels ~2 dBA above baseline
Residence to immediate SE of proposed realignment	1700 / 330'	49	51.1 dBA @ 500'	53.7dBA @ 300'	+2.6 dBA. Peak hour is a just barely noticeable increase

Consideration of Potential Traffic Noise Impact

The modeled levels of impact are below and not approaching (within 1 dB) the FHWA criteria level of 67 dBA, and would not warrant abatement analysis on those grounds. Additionally, the net increase from current conditions (based on background data from the region) to the final design condition is not in excess of 5 dBA, which were this a Type-I project, would also not require an abatement analysis.

Construction Noise Impacts

The construction activities associated with the proposed project may result in temporarily increased noise levels relative to existing conditions. The bulk of the proposed alignment passes through what is currently undeveloped land, with the only close-by sensitive receptors being the residences to the SSE of the alignment. These impacts will primarily be associated with construction equipment.

The following table (Table 3) shows peak noise levels monitored at 50 feet from various types of construction equipment. This equipment is primarily associated with site grading/site preparation, which is generally the roadway construction phase associated with the greatest noise levels.

Table 3 – Typical Construction Equipment Noise Levels at 50 feet

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

Source: United States Environmental Protection Agency and Federal Highway Administration

Elevated noise levels are, to a degree, unavoidable for this type of realignment project. The county is expected to require that construction equipment working on the project be properly muffled and in proper working order. Advanced notice will be provided to affected sensitive receptors of any planned abnormally loud construction activities. It is anticipated that night construction may sometimes be required to minimize traffic impacts and to improve safety. However, construction will be limited to daytime hours as much as possible. The realignment project is expected to be under construction for a single construction season. If necessary, a detailed nighttime construction mitigation plan will be developed during the project final design stage.

Summary and Conclusions

Detailed modeling of the realignment noise levels for an EAW is not required under MnDOT guidelines. The screening modeling performed to help evaluate the proposed realignment indicate that future levels are expected to fall below FHWA noise criteria guidelines, and will not approach abatement thresholds. Receptors are not expected to experience a significant increase in peak hour L_{eq} noise level compared to current conditions. During construction, noise impacts to nearby residences will be minimized by maintaining equipment in good condition and limiting construction to daytime hours where practicable.

Technical References

- MnDOT Noise Requirements for MnDOT and other Type I Federal-aid Projects, July 2017