WHITE LAKE TOWNSHIP
PLANNING COMMISSION

REPORT OF THE
COMMUNITY DEVELOPMENT DEPARTMENT

TO: **Planning Commission**

FROM: **Sean O'Neil, AICP, Community Development Director**

Justin Quagliata, Staff Planner

DATE: **October 14, 2022**

RE: **Section 61 Reviews**

The Township Board plans to authorize construction and financing of a Public Safety Building to house both the Police and Fire departments, as well as a Civic Center (Township Hall) for municipal offices on Parcel Number 12-22-351-006 ("Township Property"). Additionally, Stanley Park development is slated to commence Spring/Summer of 2023 at 10785 Elizabeth Lake Road (Parcel Number 12-27-100-014). The ability of the Township to maintain acceptable levels of service and quality of life for existing and new residents is the focus of these development efforts. While the Township Board is committed to pursuing the aforementioned projects on its Elizabeth Lake Road properties, a Section 61 review must be completed by the Planning Commission. At its October 18, 2022 meeting the Township Board will consider referring these projects to the Planning Commission to review the location, character, and extent of the properties.

Section 61 of the Michigan Planning Enabling Act (the "MPEA," Public Act 33 of 2008) requires Planning Commission review and approval of the location, character, and extent for the construction/purchase of new public streets, parks, open space, buildings, and other public facilities. This process is called a Section 61 Review. The MPEA does not require a public hearing for Section 61 reviews. If the Planning Commission denies a request and the Township Board disagrees with the decision, it can overrule the Planning Commission by a 2/3 majority vote. If the Planning Commission fails to act within 35 days after submission of the proposal to the Planning Commission, the project(s) are considered to be approved by the Planning Commission.

Master Plan

The Future Land Use Map from the Master Plan designates both properties in the Planned Community category, which is characterized by a mix of uses including higher residential densities and a variety of housing product types as well as a core area with retail, dining, entertainment, governmental, recreational, institutional, office, and personal service establishments. Residential elements of a Planned Community may take the form of a freestanding neighborhood, or may be permitted on the upper floors of nonresidential development in the community core area. Multi-use/story buildings are expected to have two or three stories, however open space must be provided. Connections to and segments of the Township community-wide pathway system are required as an integral part of all developments.

The Master Plan includes the following guidelines for physical form in the Lakes Town Center Focus Area:

- Higher density residential, often in the form of upper floors in mixed use retail or office development.

- Unifying visual development features, such as: special pedestrian pavements, light fixtures, landscaping, way-finding sign systems, highest quality architecture, timeless design that avoids "theme" concepts, and the like.

- Unique and attractive roadway features that also promote pedestrian safety, such as: landscaped boulevards, special crossing features, refuge areas in the center of wide crossings, mast-arm signals incorporating lighting and signage systems, and on-street parking.

- Terminated Vistas that provide attractive locations for civic anchors, such as major retailers or institutional, civic, museum, or religious uses.

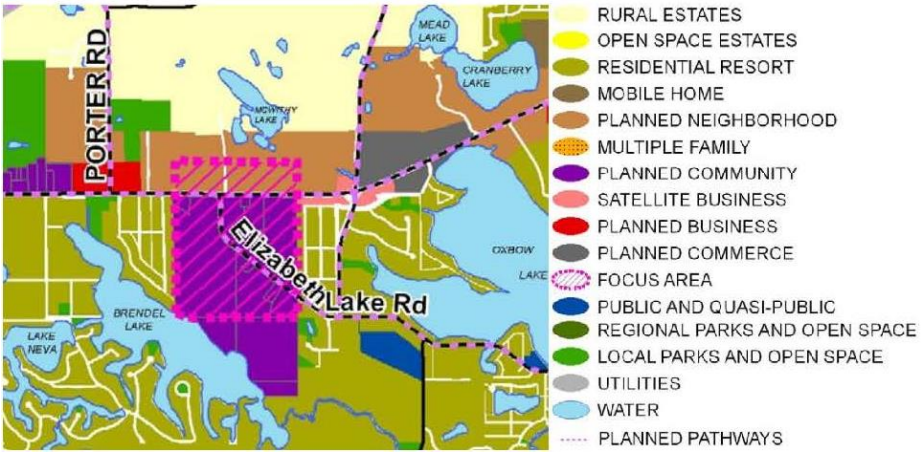
- Terminated Vistas also can be used to: screen less attractive elements, such as parking lots; and draw residents and visitors toward a destination, thereby encouraging pedestrians to walk and enjoy all that Lakes Town Center has to offer.

- Parking should be provided both on-street, to enhance the appearance of convenience and improve safety for pedestrians, and in convenient but thoughtfully-screened parking lots or parking structures that include landscaping for beauty and to provide shade, thereby reducing the "heat island" effect.

- Compact development allows buildings to be concentrated into a form that is more walkable.

- Sidewalk, alleys, and mid-block connections all contribute to a walkable area that is easy to navigate.

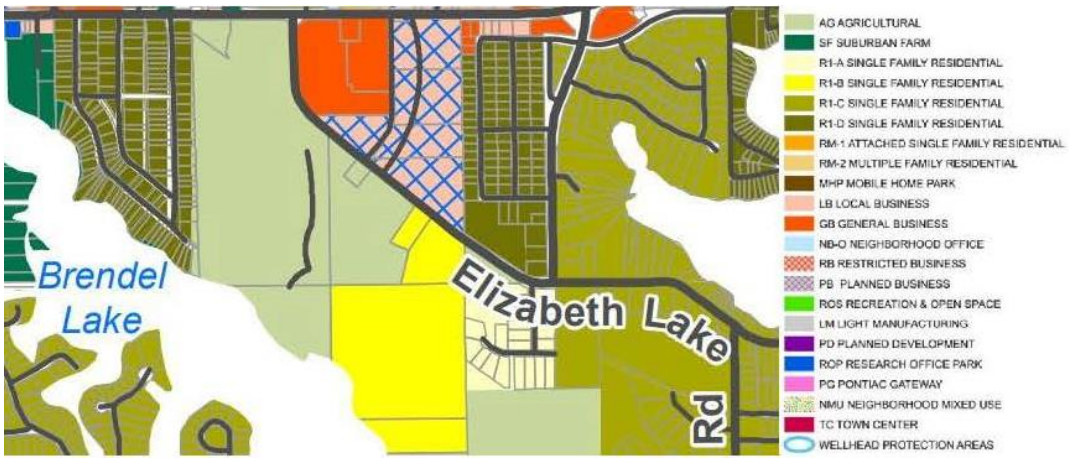
FUTURE LAND USE MAP



Zoning

The Stanley Park property is zoned R1-B (Single-Family Residential) and the Township Property has split zoning; a majority of the site is zoned AG (Agricultural) and approximately an acre at the southeast side of the site is zoned R1-B. Outdoor recreation uses, other public and private parks and similar outdoor recreation uses are permitted principal uses in the R1-B zoning district. Government (Township only) offices, buildings and uses without service or storage yards is a special land use in the AG and R1-B zoning districts. The Township Board intends to rezone both properties in the future. Stanley Park will be rezoned to ROS (Recreation and Open Space). The Township Property will likely be rezoned to TC (Town Center) and/or PD (Planned Development) or PB (Planned Business), or a combination of the districts. Note at its meeting on February 15, 2022 the Township Board approved the final adoption for the rezoning of the parcels west of the park property and Township Property from AG to RM-2 (Multiple-Family).

ZONING MAP



Physical Features

Both properties are currently undeveloped. Stanley Park is the site of the former Brendel Lake Campground. According to previous natural features inventory of the park, significant hardwood trees are located on the property. There are also a number of wetlands on the park property. The Township Property is also encumbered by a wetland complex on the west side of the site.

Staff Analysis

It is anticipated the Township Board will refer to the Planning Commission the construction of a Public Safety Building and Civic Center (Township Hall) on Parcel Number 12-22-351-006, as well as the development of Stanley Park at 10785 Elizabeth Lake Road (Parcel Number 12-27-100-014). Section 61 of the MPEA requires Planning Commission review and approval of the location, character, and extent for the construction/purchase of new public streets, parks, open space, buildings, and other public facilities. **Location** refers to a site's placement in the Township and its surroundings. **Character** includes a site's distinguishing features. **Extent** includes the dimensions of a site; Stanley Park is approximately 59 acres in size (32.42 acres of wetland) and the Township Property is approximately 26 acres in size (15.25 acres of developable area).

When reviewing a proposed project, the Planning Commission should at a minimum consider the following issues:

- Is the project consistent with adopted plans?
- Is the project consistent with the adopted Capital Improvement Plan (CIP)?
- Is the project consistent with other Township governmental management plans?

The Planning Commission should conduct a formal review of the proposed projects and act by adoption of a motion that include findings of fact, recitation of reasons, and the action.

Construction of a new Public Safety Building and Civic Center is consistent with the Public Services goal of the Master Plan, which states, "Provide efficient public services that adequately and safely support the existing and future population of White Lake Township." Strategy #2 listed in the Master Plan to achieve the aforementioned goal is, "Analyze the number and size of Township fire, police, and EMS facilities and allocate new facilities to provide appropriate geographic coverage and response times." Strategy #3 listed in the Master Plan to achieve the aforementioned goal is, "Expand or relocate the Township Hall to provide the space and facilities necessary to administer Township business and properly serve residents and businesses." It is not feasible to expand and renovate existing facilities to support operations of the Township. The CIP has included new facilities in some form since 2010.

The Parks and Recreation Master Plan identified the acquisition of the Brendel Lake Campground property as a high priority since 2009. Goal 2 of the current 5-Year Recreation Plan is, "Pursue the acquisition or expansion of local land for park and recreation facilities." The Brendel Lake Campground acquisition was in the CIP since 2010 and in 2018 the Township received a grant from the Michigan Natural Resources Trust Fund (MNRTF) to acquire the property (the property ownership transferred to the Township in 2019). Stanley Park construction has been in the CIP since 2021, and in 2021 the Township received a $500,000 Land and Water Conservation Fund (LWCF) grant for development of Phase 1.

Planning Commission Options

The Planning Commission may approve or deny the Section 61 Reviews. **Staff recommends approval of the Section 61 Reviews for both projects.**

Attachments

1. Stanley Park Conceptual Master Plan.
2. Stanley Park Conceptual Site Plan – Phase 1.
3. Stanley Park Survey.
4. Stanley Park Wetland Delineation Report.
5. Township Property Concept Plan.

White Lake Township

Stanley Park Conceptual Master Plan

Draft January 2021

Beckett&Raeder

ELIZABETH LAKE ROAD

POROUS PAVEMENT
PARK ENTRANCE SIGN
HALF-COURT BASKETBALL STRIPING
BERM W/ EVERGREEN BUFFER

FUTURE CIVIC CENTER DEVELOPMENT

UPPER PARKING LOT

PICNIC SHELTER W/ PICNIC TABLES

FUTURE AMPHITHEATER SEATING FOR +/- 240

STAGE
BAND SHELL

CONNECTION TO CIVIC CENTER

CONCRETE SIDEWALK, TYP.
UNOBSTRUCTED HILLSIDE FOR SLEDDING (CLOSE PARK ROAD FOR SAFETY)
PARK SECURITY GATE

BITUMINOUS PAVEMENT W/ CURB & GUTTER

RENOVATE EXISTING BUILDING FOR RESTROOMS AND STORAGE

BITUMINOUS TRAIL, TYP
WOODEN BOLLARDS
GRAVEL PAVEMENT

PICNIC SHELTER W/ PICNIC TABLES & 2 PICKLEBALL COURTS

FUTURE CONNECTION TO TRAILS

INTERPRETIVE SIGN

BOARDWALK TRAILS
AGGREGATE TRAILS
FUTURE NORTH TRAIL LOOPS

FITNESS STATION

EXISTING WETLANDS

BENCH

VEGETATIVE BIOSWALE

PICNIC POD W/ TABLE AND GRILL

PLAYGROUND W/ POURED-IN-PLACE SAFETY SURFACING AND FENCE

EXISTING WETLANDS

PICNIC SHELTER W/ PICNIC TABLES & SPLASH PAD

PICNIC SHELTER BUILDING

ACCESSIBLE CANOE/KAYAK LAUNCH

FUTURE RESTROOM BUILDING

PICNIC SHELTER W/ PICNIC TABLES

INTERPRETIVE SIGN

OBSERVATION/ FISHING PIER

PICNIC SHELTER W/ PICNIC TABLES

DROP-OFF

TURN-AROUND

MOBI-MAT FOR UNIVERSAL BEACH ACCESS

SAND SWIMMING BEACH

AGGREGATE TRAIL

BOARDWALK TRAIL THROUGH WETLANDS

FUTURE SOUTH TRAIL LOOP

BRENDEL LAKE

INTERPRETIVE SIGN

BRENDEL LAKE OVERLOOK W/ BENCHES

CONCRETE SURFACE
BITUMINOUS SURFACE
AGGREGATE WALK
GRAVEL PAVEMENT
BOARDWALK SURFACE
POURED-IN-PLACE PLAYGROUND SURFACE

0 60 120 240

White Lake Township

Stanley Park Improvements
Conceptual Site Plan

February 2021

Beckett&Raeder

PARK ENTRANCE SIGN

ELIZABETH LAKE ROAD

FUTURE CIVIC CENTER DEVELOPMENT

CONNECTION TO CIVIC CENTER

CONCRETE SIDEWALK, TYP.

UNOBSTRUCTED HILLSIDE FOR SLEDDING (CLOSE PARK ROAD FOR SAFETY)

PARK SECURITY GATE

EXISTING BUILDING REMNANT

BITUMINOUS PAVEMENT W/ CURB & GUTTER

BITUMINOUS TRAIL, TYP

WOODEN BOLLARDS

GRAVEL PAVEMENT

INTERPRETIVE SIGN

FITNESS STATION

EXISTING WETLANDS

EXISTING WETLANDS

VEGETATIVE BIOSWALE

INTERPRETIVE SIGN

OBSERVATION/ FISHING PIER

DROP-OFF

TURN-AROUND

BRENDEL LAKE

CONCRETE SURFACE
BITUMINOUS SURFACE
AGGREGATE WALK
GRAVEL PAVEMENT
BOARDWALK SURFACE

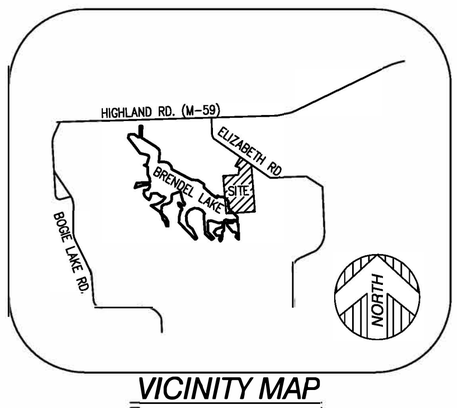
0 60 120 240

6 (f) (3) BOUNDARY MAP

WHITE LAKE TOWNSHIP
STANLEY PARK IMPROVEMENTS
GRANT NUMBER LW21-0037
OAKLAND COUNTY
PARCEL NUMBER 12-27-100-014
T[illegible]L ACRES: 59.31

3/12/21

SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE



VICINITY MAP
(NOT TO SCALE)

NORTH

120 0 120 240 480
(IN FEET)
1 inch = 120 ft.

PARCEL AREA

PARCEL A – 524,410± SQUARE FEET = 12.04± ACRES
PARCEL B – 1,754,353± SQUARE FEET = 40.27± ACRES
PARCEL C – 304,943± SQUARE FEET = 7.00± ACRES
TOTAL – 2,583,706± SQUARE FEET = 59.31± ACRES

BASIS OF BEARING

NORTH 90°00'00" WEST, BEING THE SOUTH LINE OF THE SOUTHWEST 1/4 OF SECTION 22, TOWN 3 NORTH, RANGE 8 EAST, PER PROPERTY DESCRIPTION OF PARCEL C.

BENCHMARK

BM #109 NAIL WITH BENCH TIE IN THE SOUTHWEST FACE OF UTILITY POLE ON THE NORTHEAST SIDE OF ELIZABETH LAKE ROAD, SOUTH OF OXBOW LAKE CHURCH PARKING LOT AS SHOWN ON WHITE LAKE MEIJER OFF-SITE SANITARY SEWER ENGINEERING PLANS PROVIDED FROM SPALDING DeDECKER ASSOCIATES, INC. ELEV.=981.02'

SURVEYOR'S NOTES

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURE INVENTORY SHOWN HEREON.

2. A CURRENT TITLE POLICY HAS NOT BEEN FURNISHED AT TIME OF SURVEY, THEREFORE EASEMENTS AND/OR ENCUMBRANCES AFFECTING SUBJECT PARCEL MAY NOT BE SHOWN.

PROPERTY DESCRIPTION (AS PROVIDED FROM CLIENT)

PARCEL A:

LAND SITUATED IN WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS:

THE NORTH 12 ACRES OF THE SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 27, TOWN 3 NORTH, RANGE 8 EAST.

PARCEL B:

LAND SITUATED IN WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS:

THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 27, TOWN 3 NORTH, RANGE 8 EAST.

PARCEL C:

LAND SITUATED IN WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS:

PART OF THE WEST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 22, TOWN 3 NORTH, RANGE 8 EAST, BEGINNING AT THE SOUTHEAST CORNER THEREOF; THENCE WEST ALONG SOUTH SECTION LINE 627.00 FEET; THENCE NORTH 13 DEGREES 19 MINUTES 50 SECONDS EAST 341.06 FEET; THENCE NORTH 34 DEGREES 09 MINUTES 00 SECONDS EAST 419.41 FEET; THENCE SOUTH 50 DEGREES 58 MINUTES 00 SECONDS EAST ALONG THE CENTER OF HIGHLAND ROAD (NOW ELIZABETH LAKE ROAD) 403.67 FEET; THENCE SOUTH 00 DEGREES 05 MINUTES 00 SECONDS WEST 424.75 FEET TO THE POINT OF BEGINNING.

LEGEND

●	SET 1/2" REBAR WITH CAP P.S. 47976
◉	FOUND MONUMENT (AS NOTED)
◕	FOUND SECTION CORNER (AS NOTED)
(R&M)	RECORD AND MEASURED DIMENSION
(R)	RECORD DIMENSION
(M)	MEASURED DIMENSION
×000.0	GROUND POINT
○	UTILITY POLE
———	PARCEL BOUNDARY LINE
———	ADJOINER PARCEL LINE
———	PLATTED LOT LINE
——— — — ———	SECTION LINE
——— ——— ———	RIGHT-OF-WAY
———	BUILDING
———	EDGE OF CONCRETE (CONC.)
———	EDGE OF ASPHALT (ASPH.)
— — — — —	EDGE OF GRAVEL
——— · · ——— · · ———	OVERHEAD UTILITY LINE

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY THAT I HAVE SURVEYED THE PROPERTY HEREIN DESCRIBED. THE ELEVATIONS SHOWN HEREON ARE BASED ON A FIELD SURVEY AND THE DRAWING HEREON DELINEATED IS A CORRECT REPRESENTATION OF THE SAME.

ANTHONY T. SYCKO, JR., P.S.
PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 47976

REVISED 3/11/22 – PER REVIEW COMMENTS

KEM-TEC & ASSOCIATES
PROFESSIONAL SURVEYORS
22556 GRATIOT AVE * EASTPOINTE, MICHIGAN 48021.
(586)772-2222 * (800)295-7222 * FAX (586)772-4048

PREPARED FOR: WHITE LAKE TOWNSHIP	
DATE: FEBRUARY 22, 2006	JOB #: 19-00141
SCALE: 1" = 120'	SHEET: 1 OF 1
DRW. BY: JRA/MRJ	REV.: JANUARY 18, 2019

Wetland Delineation & Water Resource Identification

Brendel Lake Campground
10785 Elizabeth Lake Road
White Lake Township
Oakland County, Michigan

Project Number 221016

Prepared for:

Kem-Tec, Inc.
22556 Gratiot Avenue
Eastpointe, Michigan 48021

Prepared by:

111 W. Berry Street, Suite 211
Fort Wayne, Indiana, 46802

April 25, 2022

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EXECUTIVE SUMMARY

Brendel Lake Campground is commonly known to be located at 10785 Elizabeth Lake Road in White Lake Township, Oakland County, Michigan (Project Site); and, the coordinates of the approximate center are 42.640848, -83.498577.

Kem-Tec, Inc. (Client) hired nuInventa, LLC (nuI) to identify and delineate wetlands, streams, and other kinds of water resources that may exist with the limits of the Project Site. nuI's activities pertaining to this project focused on identifying potentially regulated wetlands, watercourses, and floodplains within the boundaries of the Project Site.

The wetland delineation and water resources identification involved a desktop review of publicly-available background information and data, which included U.S. Geological Survey USGS 7.5-Minute Topographic Quadrangle maps, U.S. Fish and Wildlife Service National Wetlands Inventory data, and Natural Resources Conservation Service soils data. Such information is routinely assessed to gain a perspective of where wetlands, streams, and other waters may be expected to occur on a site, which helps in planning fieldwork. A review of Federal Emergency Management Agency Flood Insurance Rate Maps was also conducted to determine the locations of floodplains.

Following completion of the desktop review, nuI conducted fieldwork at the Project Site April 6 and 7, 2022 to determine the presence and delineate the boundaries of wetlands using methodologies of the *Corps of Engineers Wetland Delineation Manual* (1987 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Midwest, Version 2.0*. For an area to support wetlands, three criteria must be present, which include a.) a dominance or prevalence of hydrophytic vegetation, b.) hydric soils, and c.) wetland hydrology. During the site visit, nuI also evaluated the Project Site for watercourses.

In general, wetlands in Michigan may fall under the jurisdiction of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) by Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA), as amended, and/or the U.S. Army Corps of Engineers (USACE). USACE authority is often associated with the Great Lakes and their connecting waterways and is authorized by Section 404 of the Federal Water Pollution Control Act of 1972 (Clean Water Act). A wetland is considered regulated by the EGLE if it is five acres in size or larger, and/or if it is connected to or located within 500 feet of a lake, pond, river, or stream. A Part 303 permit is required by the EGLE for any proposed work (e.g., filling, dredging, construction, draining, and/or other development) that takes place within the boundaries of a regulated wetland, watercourse, or floodplain. Most construction activities that take place outside of these boundaries do not require a permit from the EGLE.

Watercourses (e.g., streams, rivers, drains, ditches) that meet the requirements of Part 301, Inland Lakes and Streams, of the NREPA, and floodplains that meet the requirements of Part 31, Water Resources Protection, of the NREPA, fall under the jurisdiction of the EGLE.

Four wetlands and one intermittent stream that is hydrologically connected to the wetlands were identified within the limits of the Project Site. The wetlands, which were all likely historically a single wetland prior to the time site was developed as a campground, extend offsite to the east, south, and west. The wetland complex is, for all practical purposes, connected to Brendel Lake, which is located in the southwest corner of the Project Site.

It is nuI's opinion that all identified wetlands meet the requirements of Part 303, Wetlands Protection, of the NREPA, as amended, because:

- The wetlands are connected to an inland lake, Brendel Lake; and,
- with and/or without offsite acreages considered, the individual sizes of Wetlands B, C, and D exceed five acres; and,
- Wetlands B, C, and D are located within 500 feet of an inland lake, Brendel Lake.

Part 31, Water Resources Protection, of NREPA regulates activities within the 100-year floodplain and floodway of a river, stream, or drain, and within the floodplain of any watercourse with an upstream drainage area of two square miles or larger. Federal Emergency Management, Flood Insurance Rate Map data indicate Brendel Lake is located in Zone AE, a "zone with a one percent chance of annual flooding".

Please be advised that EGLE has the final authority on the extent, shape, size, location, and regulatory statuses of regulated wetlands, lakes, streams, and designated natural areas in the State of Michigan. White Lake Township and Oakland County should be contacted to determine if ordinances exist that affect activities conducted in wetlands and watercourses and their buffers.

1.0 INTRODUCTION

Brendel Lake Campground is commonly known to be located at 10785 Elizabeth Lake Road in White Lake Township, Oakland County, Michigan (Project Site); the location of the Project Site is shown in **Figure 1**, **Project Site Location Map** in Appendix A.

Under the Public Land Survey System, the Project Site is said to be located in the following parts of Township 3 North; Range 8 East:

- South ½; Southwest ¼; Section 22
- North ½; Northwest ¼; Section 27

The coordinates of the approximate center of the Project Site are 42.640848, -83.498577.

Kem-Tec, Inc. (Client) hired nuInventa, LLC (nuI) to identify and delineate wetlands and other water resources that may exist with the limits of the Project Site. nuI's activities pertaining to this project focused on identifying potentially regulated wetlands, watercourses, and floodplains within the boundaries of the Project Site.

In general, wetlands in Michigan may fall under the jurisdiction of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) by Part 303, Wetlands Protection, of the *Natural Resources and Environmental Protection Act, 1994 PA 451* (NREPA), as amended, and/or the U.S. Army Corps of Engineers (USACE). USACE authority is often associated with the Great Lakes and their connecting waterways and is authorized by Section 404 of the *Federal Water Pollution Control Act of 1972 (Clean Water Act*). The federal definition of wetlands are *"…those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."*

Watercourses (e.g., streams, rivers, drains, ditches) that meet the requirements of Part 301, Inland Lakes and Streams, of the NREPA, and floodplains that meet the requirements of Part 31, Water Resources Protection, of the NREPA, fall under the jurisdiction of the EGLE.

Activities that may impact regulated or protected wetlands, watercourses, and floodplains must be permitted or cleared by authorizing agencies prior to project activities taking place. This report summarizes the natural features found on the Project Site and permits or clearances that may be required prior to the commencement of project activities.

2.0 SITE DESCRIPTION

The north and south boundaries of the Project Site are defined by Elizabeth Lake Road and Brendel Lake, respectively. As is evident in **Figure 2**, **Land Use and Land Cover Map** in Appendix A, a driveway extends from Elizabeth Lake Road, meanders southward through the Project Site, and terminates at the shoreline of Brendel Lake. Based on nuI's review of available information, the Project Site has been used as a campground for several decades; and, this land use is consistent with features that are evident on aerial imagery. Beyond area near the driveway that has been developed as a campground, land cover is a mix of old field and forest. Saturated and inundated ground is evident in significant parts of this undeveloped area, which indicates wetlands are likely present.

3.0 METHODOLOGY

The wetland determination and delineation involved a desktop review of publicly-available background information and data, which included U.S. Geological Survey (USGS) 7.5-Minute Topographic Quadrangle maps, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data, and Natural Resources Conservation Service (NRCS) soils data. Such information is routinely assessed to gain a perspective of where wetlands, streams, and other waters may be expected to occur on a site, which helps in planning fieldwork. A review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) was also conducted to determine the location of floodplains.

Following completion of the desktop review, nuI conducted fieldwork necessary to determine the presence and delineate the boundaries of wetlands on the Project Site using methodologies of the *Corps of Engineers Wetland Delineation Manual* (1987 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Midwest Region, Version 2.0*. For an area to support wetlands, three criteria must be present, which include a.) a dominance or prevalence of hydrophytic vegetation, b.) hydric soils, and c.) wetland hydrology. During the site visit, nuI also evaluated the Project Site for watercourses.

4.0 RESULTS

Below is a summary of findings with regard to the desktop review.

4.1 Desktop Review

4.1.1 USGS Topographic Quadrangle Map

USGS topographic maps with coverage for the Project Site were reviewed; see **Figure 3**, **USGS 7.5-Minute Topographic Maps, Highland (1968) and Clarkston (1968) Quadrangles** in Appendix A. An unimproved road is depicted and its location is generally

consistent with the location of the driveway that is evident on the aerial imagery. A majority of the Project Site is shown to be forested; and, symbology indicates that wetlands are present in large portions of the forested area. Brendel Lake is located in the southwest corner of the Project Site. The southeast end of the lake drains to the Huron River.

The elevation is highest at 970 feet along Elizabeth Lake Road and drops to 940 feet approximately 500 feet from the road – a slope of six percent. From this point, the ground is flat at 940 feet; and, this elevation is where wetlands are shown to occur.

4.1.2 USFWS NWI Data

With respect to site-specific wetland determinations, USFWS NWI data are useful primarily for project planning purposes. NWI maps were compiled more than two decades ago and are known to sometimes contain erroneous information. The data are useful, however, when combined with other secondary source information to gain an understanding of where wetlands are likely to occur, and provide insight as to where wetlands may have *historically* occurred. The USACE and the EGLE do not accept the use of NWI data as a substitute for an onsite wetland determination and delineation.

The NWI map indicates the presence of four wetland types occurring within the limits of the Project Site, which have the Cowardin classifications listed in Table 1, below; see **Figure 4**, **National Wetlands Inventory Map** in Appendix A.

Table 1. List of NWI Wetlands

Symbol	Cowardin Classification
L1UBH	Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded
PEM1C	Palustrine, Emergent, Persistent, Seasonally Flooded
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
PSS1C	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded

Nearly the entire Project Site is shown to be wetlands albeit for a small area along Elizabeth Lake Road, where the elevation is above 940 feet.

4.1.3 NRCS Soils Data

Hydric soils form under conditions of saturation, flooding, or ponding that occur long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. Presence of hydric soils is one of three criteria required for an area to be considered a wetland.

The Web Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service was accessed to determine what soil series for Oakland County, Michigan occur on the Project Site. Eight soil series are shown to occur on the Project Site; refer to **Figure 5**, **NRCS Soils Map** in Appendix A. The soil series are listed in Table 2, below.

Table 2. List of Mapped Soil Series

Map Unit Symbol	Map Unit Name	Status
11B	Capac sandy loam, 0 to 4 percent slopes	Non-Hydric*
12	Brookston and Colwood loams	Hydric*
17A	Wasepi sandy loam, 0 to 3 percent slopes	Non-Hydric*
18B	Fox sandy loam, till plain, 2 to 6 percent slopes	Non-Hydric*
27	Houghton and Adrian mucks	Hydric*
44B	Riddles sandy loam, 1 to 6 percent slopes	Non-Hydric*
44C	Riddles sandy loam, 6 to 12 percent slopes	Non-Hydric*
54A	Matherton sandy loam, 0 to 3 percent slopes	Non-Hydric*

* Soil unit includes one or more minor hydric soil components.

4.1.4 Floodplains

A review of FEMA FIRMs was conducted to determine the existence, location, and zone of floodplains on and within the vicinity of the Project Site. The FIRMs show floodplain areas along lakes, rivers, and tributaries. These maps record the following data: 100-year (1% chance of annual flooding) and 500-year (0.2% annual chance of flooding) floodplains, the height of the base flood elevation, and the risk of premium zones developed from topographical information across the floodplain. The FEMA Map Service Center was accessed; and, data coverage for the Project Site was accessed by address query. See **Figure 6**, **FEMA FIRM Map** in Appendix A. Brendel Lake is located in Zone AE, a "zone with a one percent chance of annual flooding".

4.2 Field Observations

Fieldwork required to complete the wetland delineation was conducted April 6 and 7, 2022. The temperature ranged between 40 and 50 degrees Fahrenheit; rain showers were intermittent.

Identified wetlands are depicted in **Figure 7**, **Delineated Wetlands and Water Resource Map** in Appendix A. Photographs of the general physical landscape and wetlands, and/or other relevant features are provided in the **Photographic Log** in Appendix B.

4.2.1 Wetlands

Data forms for data collected at points representing wetlands and non-wetlands (uplands) are provided in Appendix C. Summary data of wetlands identified and delineated are provided in Table 3, below

Table 3. Summary of Delineated Wetlands

Wetland ID	Type	Size (acres)	Wetland Data Points
Wetland A	Palustrine, forested	0.328	1
Wetland B	Palustrine, mixed	7.26	3, 6, 16
Wetland C	Palustrine, mixed	20.39	5, 8, 10
Wetland D	Palustrine, forested/scrub-shrub	4.44	12, 15

Wetland A

Data Point (DP) 1 is situated in the northwest corner of Wetland A, a forested wetland located near the northeast corner of the Project Site. Silver maple (*Acer saccharinum*, FACW) was observed throughout the tree, sapling/shrub, and herbaceous strata. Swamp white oak (*Quercus bicolor*, FACW) was identified as a dominant hydrophytic species in the tree and shrub/sapling shrub strata, as well.

The soils exhibited a depleted matrix (F3 hydric soil indicator) and depletion was observed below a dark surface (A11). These hydric soil characteristics are not consistent with the mapped soil unit, Wasepi sandy loam, a non-hydric soil, and appear to be more closely aligned with that of Houghton muck, which is shown to be the predominant soil unit occurring in other wetlands throughout the Project Site.

Surface water was observed at a depth of three inches at the data point. Primary indicators of wetland hydrology observed include surface water, a high water table and saturated soils within 12 inches of the surface, water marks on trees, and water-stained leaves. Inundation is visible on aerial imagery reviewed throughout most of the wetland area albeit not in the vicinity of the data point. The soil does appear saturated on aerial imagery in the vicinity of the data point, which is a secondary wetland hydrology indicator; other such indicators that are applicable for Wetland A include the geomorphic position of the wetland in a depression and the FAC-Neutral Test.

Wetland B

DPs 3, 6, and 16 are located near the northeast and south edges of Wetland B. The wetland extends offsite to the south and west; and, the size of the onsite portion is 7.26 acres. The wetland is separated from Wetland C by a man-made berm that appears to have been constructed to create a stable base on which to install the campground driveway through the Project Site prior to 1968. Prior to the time the berm was constructed, Wetlands B and C very likely were a single contiguous wetland.

Vegetation cover throughout the wetland consists of interspersed herbaceous, scrub-shrub, and forest communities. Typical hydrophytic species observed include eastern cottonwood (*Populus deltoides*, FAC); yellow birch (*Betula alleghaniensis*, FAC); American hornbeam (*Carpinus caroliniana*, FAC); swamp white oak; and, silver maple in the tree stratum. Red osier dogwood (*Cornus sericea*, FACW); common hackberry (*Celtis occidentalis*, FAC); *Carpinus caroliniana*, FAC; and, swamp white oak were dominant throughout the sapling/shrub stratum. In the herbaceous stratum, narrow-leaf cattail (*Typha angustifolia*, OBL); shoreline sedge (*Carex hyalinolepis*, OBL); and, skunk cabbage (*Symplocarpus foetidus*, OBL) were observed as dominant species.

One or more hydric soil criteria were observed at the data points, including a hydrogen sulfide odor (A4) at DPs 3 and 16 and sandy mucky mineral (S1) at DPs 3, 6, and 16. Soil characteristics observed at the data points are consistent with the mapped soil unit shown to be present at all data points, which is Houghton and Adrian mucks, a hydric soil.

The soil was saturated at the surface at DP 3 and surface water was observed at depths of one and three inches at DPs 6 and 16, respectively. Other primary wetland hydrology indicators observed at one or more of these data points include water marks on trees, inundation visible on aerial imagery, water-stained leaves, and a hydrogen sulfide odor. Secondary wetland hydrology indicators applicable for all data points include the geomorphic position of the wetland in a depression or swale and the FAC-Neutral Test.

Wetland C

DPs 5, 8, and 10 are located near the north and west edges of Wetland C. The wetland extends offsite to the east and south. The west edge of the wetland abuts the shoreline of Brendel Lake. The size of the onsite portion is 20.39 acres. The wetland is separated from Wetland D by a man-made berm that appears to have been constructed to create a stable base on which to install the campground driveway through the Project Site prior to 1968. Prior to the time the berm was constructed, Wetlands C and D very likely were a single contiguous wetland.

The north half of the wetland is predominantly interspersed herbaceous and scrub-shrub communities (see DPs 5 and 8) while a more significant forest community is present in the south half of the wetland (see DP 10). Typical hydrophytic species observed include peach-leaf willow (*Salix amygdaloides*, FACW); swamp white oak, yellow birch, and common hackberry in the tree stratum. Red osier dogwood, American hornbeam, swamp white oak, and common hackberry were present throughout the sapling/shrub stratum. In the herbaceous stratum, celery-leaved buttercup (*Ranunculus sceleratus*, OBL), shoreline sedge, skunk cabbage, and narrow-leaf cattail were dominant species observed.

Hydric soil criteria were met at all wetland data points; applicable hydric soil indicators include sandy mucky mineral (S1) and a hydrogen sulfide odor (A4). Soil characteristics observed at DPs 8 and 10 are consistent with the mapped soil unit, which is Houghton and Adrian mucks, a hydric soil. Regarding DP 5, these hydric soil characteristics are not consistent with the mapped soil unit, Wasepi sandy loam, a non-hydric soil.

Approximately one inch of surface water was present at all data points. Additional primary wetland hydrology indicators observed at one or more of these data points include water marks on trees, inundation visible on aerial imagery, water-stained leaves, and a hydrogen sulfide odor. Secondary wetland hydrology indicators applicable for all data points include the geomorphic position of the wetland in a depression or swale and the FAC-Neutral Test. As described in Section 4.2.2, intermittent Stream A flows into the northeast side of Wetland C. Surface water and groundwater is generally expected to flow south and southwest to Brendel Lake.

Wetland D

DPs 12 and 15 are located at the east and west ends of Wetland D, respectively. This wetland extends offsite to the west, is boarded at the south by Brendel Lake, and is separated from Wetland C by an elevated gravel driveway that was constructed atop a man-made berm. A small two-track path located approximately 150 feet west southwest of DP 6 separates the wetland from Wetland B.

The wetland is primarily forested with an appreciable scrub-shrub community. Typical hydrophytic species observed include swamp white oak, silver maple, and eastern cottonwood in the tree stratum. Red osier dogwood, American hornbeam, and swamp white oak were observed throughout the sapling/shrub stratum. In the herbaceous stratum, Indian hemp (*Apocynum cannabidum*, FAC), shoreline sedge, and skunk cabbage were dominant.

Hydric soil indicators observed include a hydrogen sulfide odor (A4) at DP 15 and a sandy mucky mineral (S1) soil at DPs 10 and 15. Soil characteristics observed at the data points are consistent with the mapped soil unit shown to be present at all data points, which is Houghton and Adrian mucks, a hydric soil.

Approximately one inch of surface water was present at all data points. Additional primary wetland hydrology indicators observed at one or more of these data points include water marks on trees, inundation visible on aerial imagery, water-stained leaves, and a hydrogen sulfide odor. Secondary wetland hydrology indicators applicable for all data points include the geomorphic position of the wetland in a depression or swale and the FAC-Neutral Test. Surface and groundwater is expected to flow south to Brendel Lake.

4.2.2 Watercourses

Intermittent Stream A flows onto the Project Site from the east; and, the approximate length of the onsite portion is 100 feet. The stream conveys surface water to the northeast edge of Wetland C.

4.2.3 Other Water Resource Features

Brendel Lake is located in the southwest corner of the Project Site. A majority of the lake shoreline is contiguous to Wetlands C and D albeit for developed campground area between the two wetlands. Here, the lake shoreline is abrupt and defined by beach and mowed turf grass.

4.2.4 Uplands

Data collected at DPs 2, 4, 7, 9, 11, 13, 14, and 17 represent upland areas surrounding the wetlands observed. Although hydric soils, hydrology indicators, and hydrophytic vegetation were observed at several upland data points, a combination of all three wetland criteria could not be established. These data points generally represent areas of the Project Site where the ground elevations are slightly higher than that around the wetlands. Typical upland plant species observed include shagbark hickory (*Carya ovata*, FACU); white oak (*Quercus alba*, FACU); northern red oak (*Quercus rubra*, FACU); American beech (*Fagus grandifolia*, FACU); black cherry (*Prunus serotina*, FACU); and, Canada goldenrod (*Solidago canadensis*, FACU).

5.0 CONCLUSIONS

Four wetlands and one intermittent stream were identified within the limits of the Project Site. The wetlands, which were all likely historically a single wetland prior to the time site was developed as a campground, extend offsite to the east, south, and west. The wetland complex is, for all practical purposes, connected to Brendel Lake, which is located in the southwest corner of the Project Site.

EGLE has the final authority on the extent, shape, size, location, and regulatory statuses of regulated wetlands, lakes, streams, and designated natural areas in the State of Michigan. A request may be submitted to EGLE to conduct a "Level 3 Review" of the findings presented in this report, which nuI can facilitate the review upon request.

Part 303, Wetlands Protection, of the NREPA, as amended, provides several criteria for a wetland to be considered regulated by the EGLE. Most commonly, a wetland is regulated by EGLE if it is five acres in size or larger, and/or if it is connected to or located within 500 feet of an inland lake, pond, river, or stream. It is nuI's opinion that all identified wetlands are regulated by EGLE because:

- The wetlands are connected to an inland lake, Brendel Lake; and,
- with and/or without offsite acreages considered, the individual sizes of Wetlands B, C, and D exceed five acres; and,
- Wetlands B, C, and D are located within 500 feet of an inland lake, Brendel Lake.

Watercourses (e.g., streams, rivers, drains, ditches) that meet the requirements of Part 301, Inland Lakes and Streams, of the NREPA fall under the jurisdiction of the EGLE. Intermittent Stream A flows onto the Project Site from the east and conveys surface water directly to the north edge of Wetland C. The length of Stream A within the limits of the Project Site is approximately 100 feet.

Part 31, Water Resources Protection, of NREPA regulates activities within the 100-year floodplain and floodway of a river, stream, or drain, and within the floodplain of any watercourse with an upstream drainage area of two square miles or larger. Activities requiring a permit within regulated floodplains include the installation of permanent structures, permanent bridges, and/or culverts. Temporary crossings of regulated floodplains are generally exempt from permitting if the floodplain will be restored to existing elevations; however, temporary watercourse crossings would require a permit from the EGLE. FEMA data indicate that Brendel Lake is located in Zone AE, a "zone with a one percent chance of annual flooding".

Permits are required for any work (e.g., filling, dredging, construction, draining and/or other development) that is proposed to be conducted in water resources that are regulated under Part 303, Part 301, or Part 31, Water Resources Protection, of NREPA. Additionally, the White Lake Township and Oakland County should be contacted to determine if ordinances exist that affect activities conducted in wetlands and watercourses and their buffers.

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GLOSSARY OF TERMS AND DEFINITIONS

Atypical wetland: This term refers to areas in which one or more parameters (vegetation, soil and/or hydrology) have been sufficiently altered by human activities or natural events to preclude the presence of wetland indicators of the parameter.

Emergent Wetland: Vegetative classification of a wetland system based on the dominant vegetation consisting of rooted herbaceous plant species that have parts extending above a water surface.

100-year Flood: A flood with a magnitude that has a 1% chance of occurring or being exceeded in any given year.

Floodplain: The area of land adjoining a river or stream that will be inundated by a 100-year flood.

Floodway: The channel of a river or stream and the portions of the floodplain adjoining the channel, which are reasonably required to carry and discharge a 100-year flood.

Hydric Soil: Soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (1991 National Technical Committee on Hydric Soils definition).

Hydrophytic Vegetation: Plant species that grow in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats.

Ordinary High Water Mark: *The point on a stream bank to which the presence and action of surface water is so continuous as to leave a district marked by erosion; destruction or prevention of woody terrestrial vegetation; predominance of aquatic vegetation; or other easily recognized characteristic.*

Scrub-Shrub Wetland: Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants less than three inches in diameter but greater than three feet in height.

Typical Situation: That, which normally, usually, or commonly occurs.

Wooded (Forested) Wetland: Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants three inches in diameter or greater regardless of height.

Wetland: "…land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support, wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh…"

Wetland Hydrology: Hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season.

Wetland Indicator Status:

OBL: Obligate wetland plant that occurs almost always, 99% of the time, in wetlands under natural conditions, but which rarely occur in non-wetlands.

FACW: Facultative wetland plant that occurs usually, 67% to 99% of the time, in wetlands, but also occurs 1% to 33% of the time in non-wetlands.

FAC: Facultative plant that occurs in both wetlands and non-wetlands 33% to 67% of the time.

FACU: Plant that occurs sometimes, 1% to 33% of the time, in wetlands but occurs more often, 67% to 99% of the time, in non-wetlands.

APPENDIX A

Maps

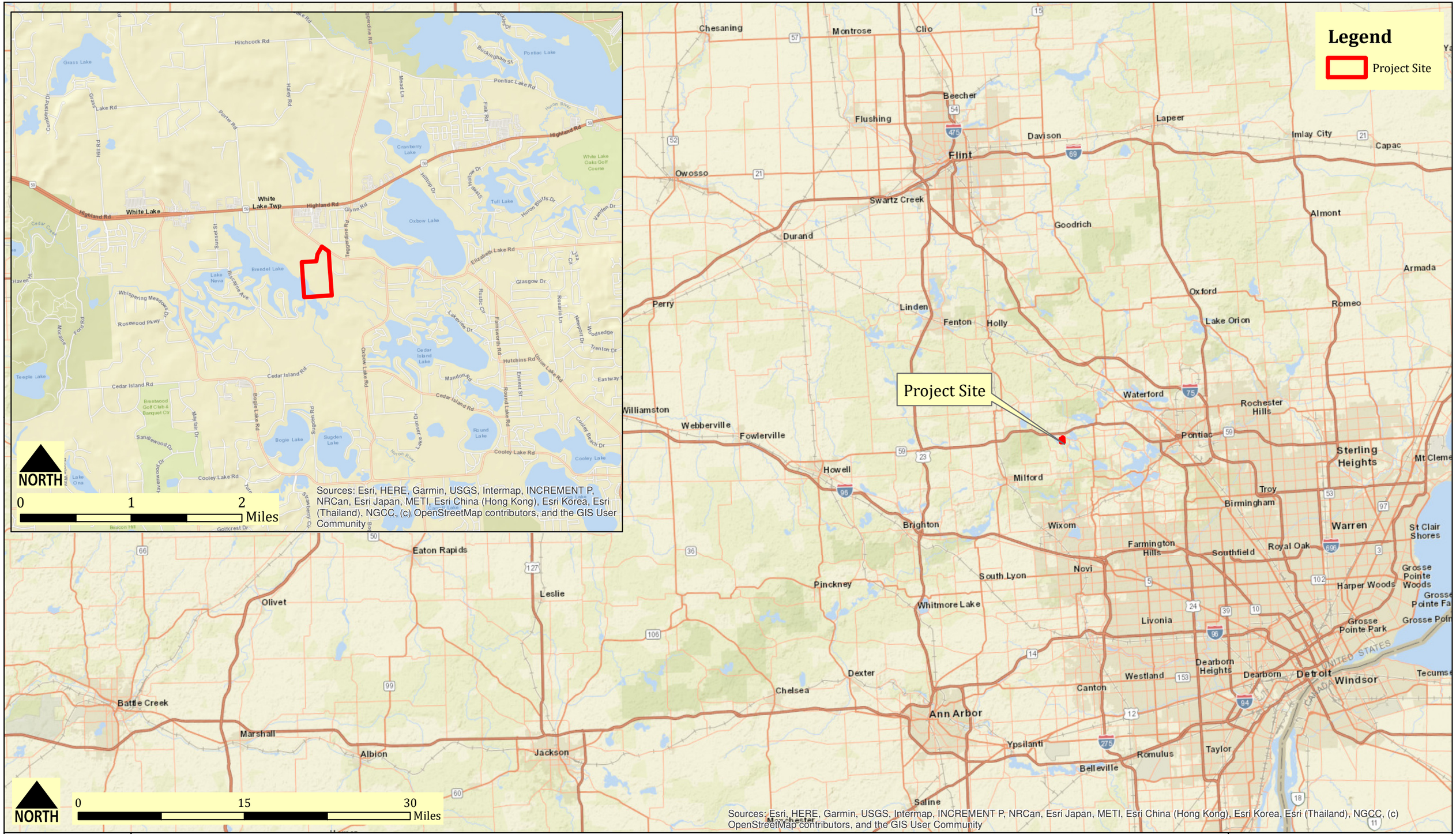

Figure 1

Project No. 221016

Project Site Location Map

Brendel Lake Campground

10785 Elizabeth Lake Road, White Lake Township, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

Figure 2

Project No. 221016

Land Use and Land Cover Map

Brendel Lake Campground

10785 Elizabeth Lake Road, White Lake, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

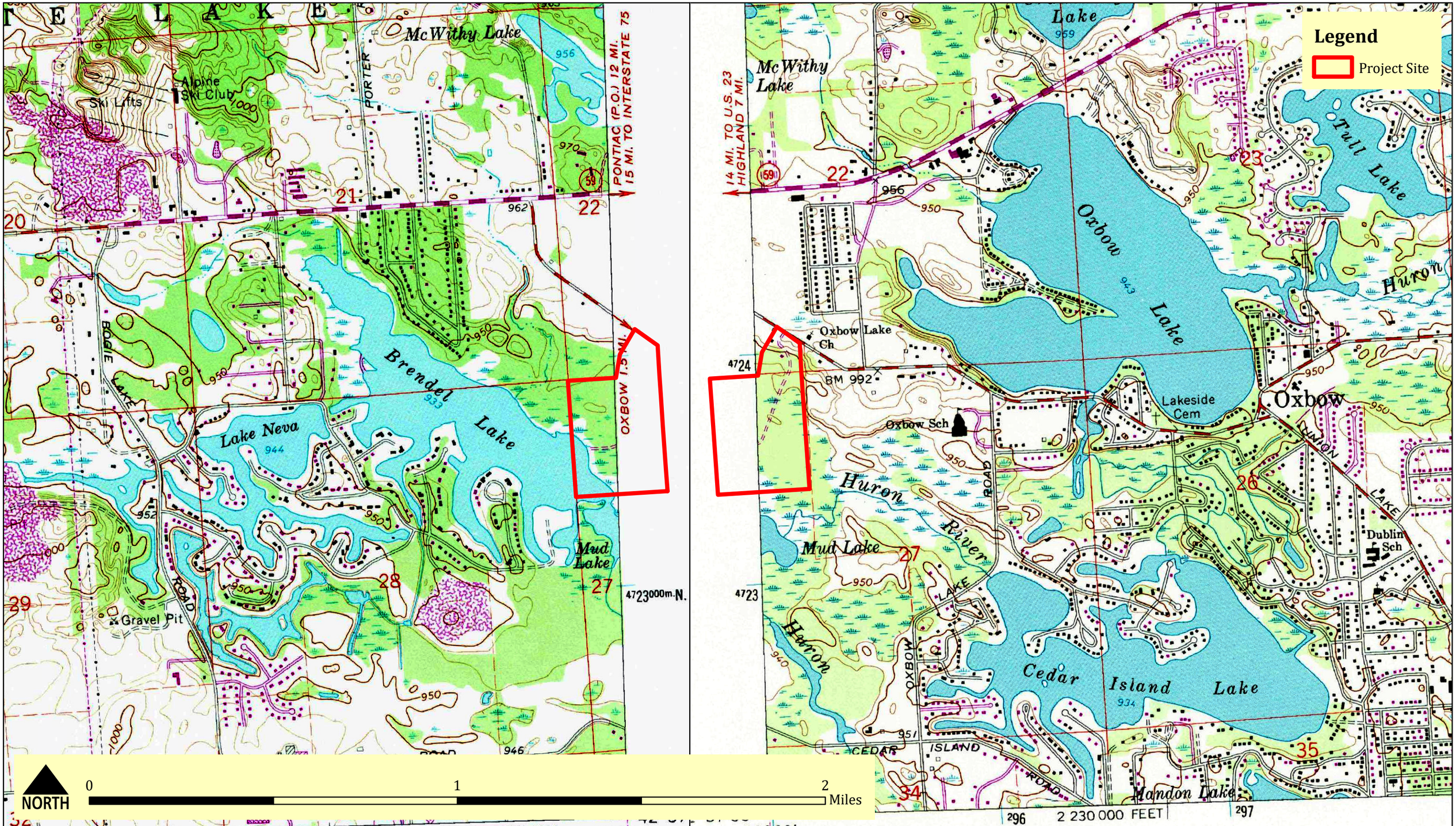

Figure 3

Project No. 221016

USGS 7.5-Minute Topographic Maps, Highland (1968) and Clarkston (1968) Quadrangles

Brendel Lake Campground

10785 Elizabeth Lake Road, White Lake Township, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

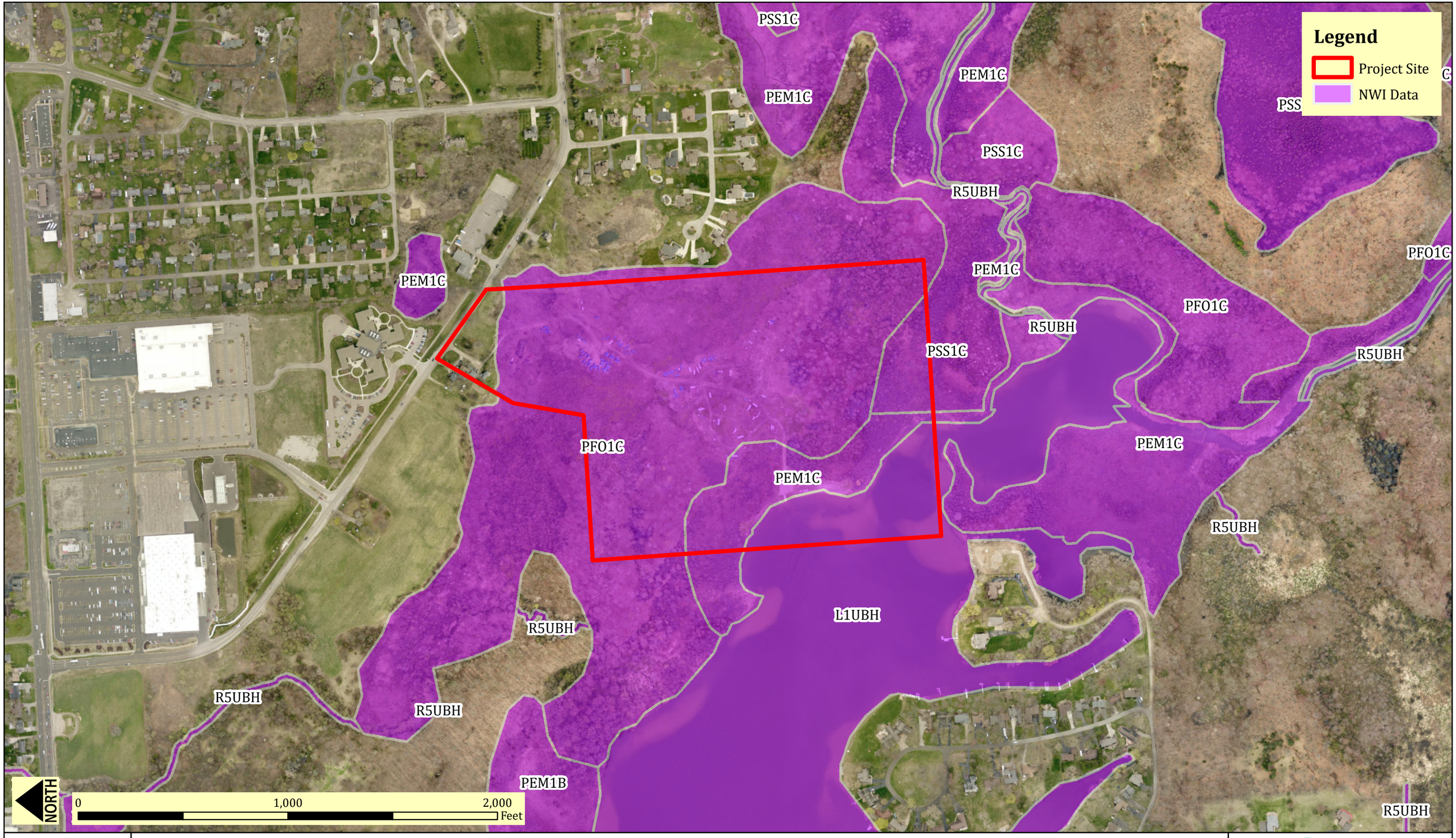

Figure 4

Project No. 221016

National Wetlands Inventory Map

Brendel Lake Campground
10785 Elizabeth Lake Road, White Lake, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

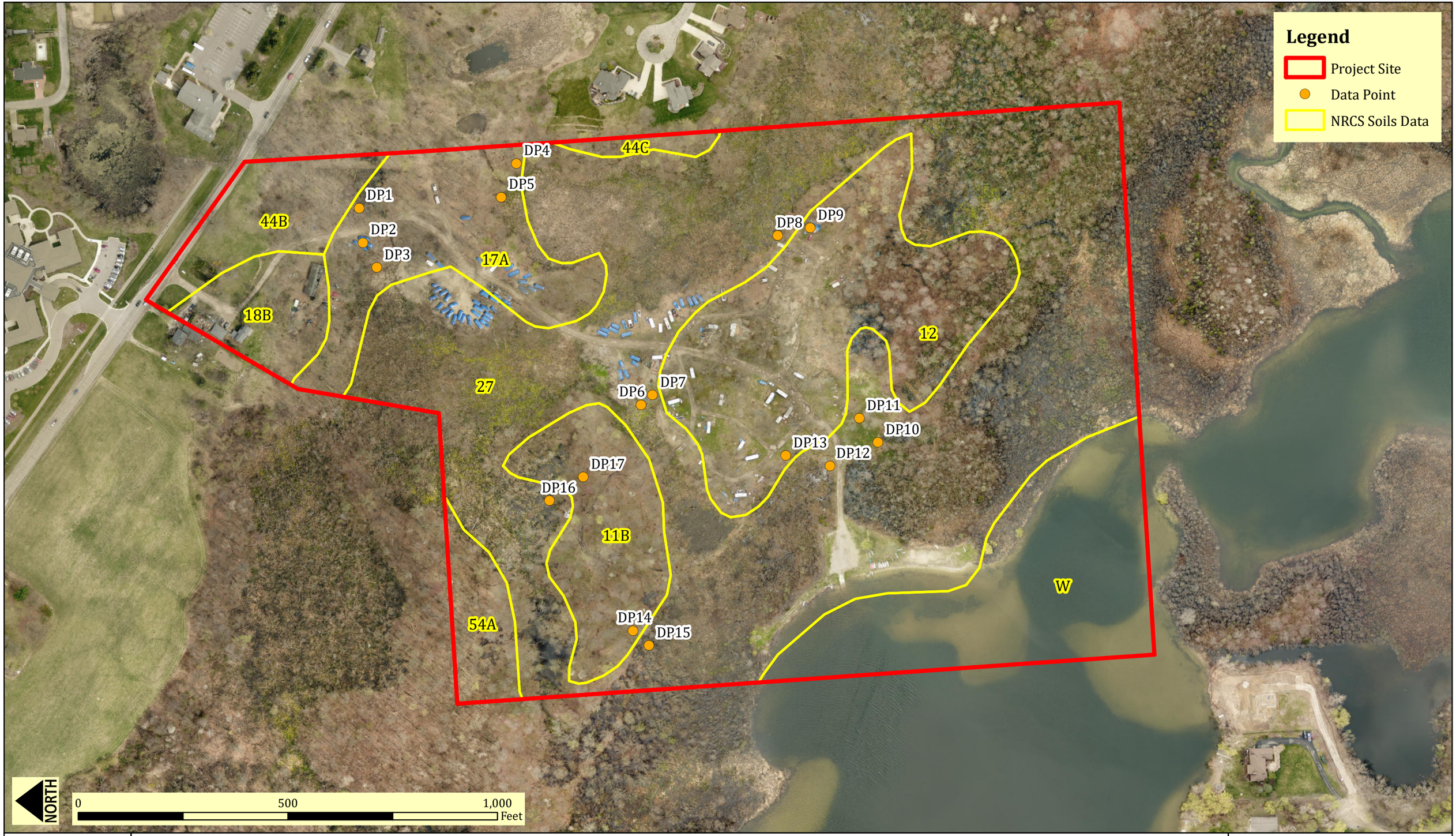

Figure 5

Project No. 221016

NRCS Soils Map

Brendel Lake Campground
10785 Elizabeth Lake Road, White Lake, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

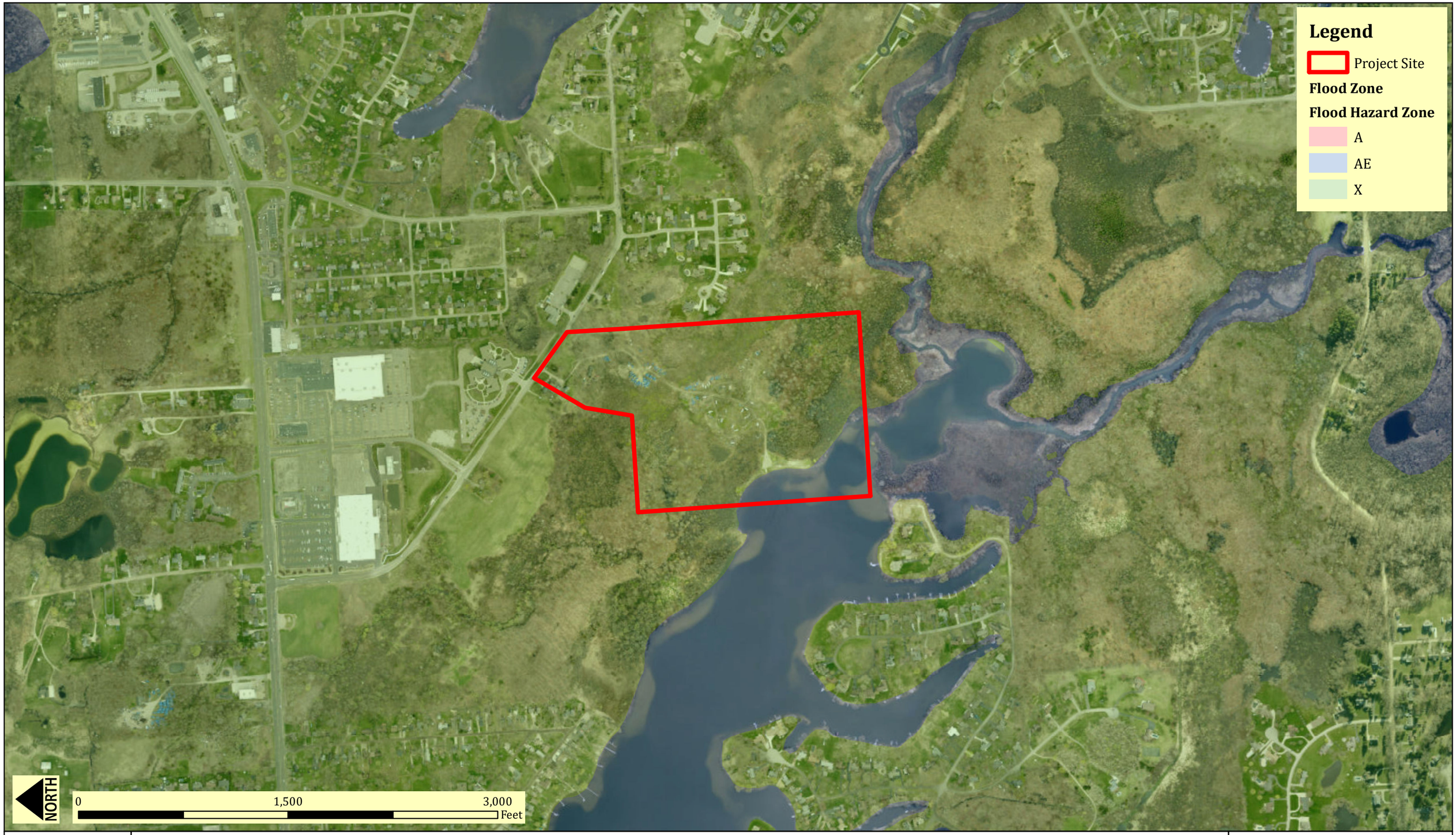

Figure 6

Project No. 221016

FEMA FIRM Map

Brendel Lake Campground
10785 Elizabeth Lake Road, White Lake, Oakland County, Michigan

nu Inventa

Drawn By: R. Newkirk	Date: 4-1-2022
Reviewed By: C. Appleman	Rev: 0

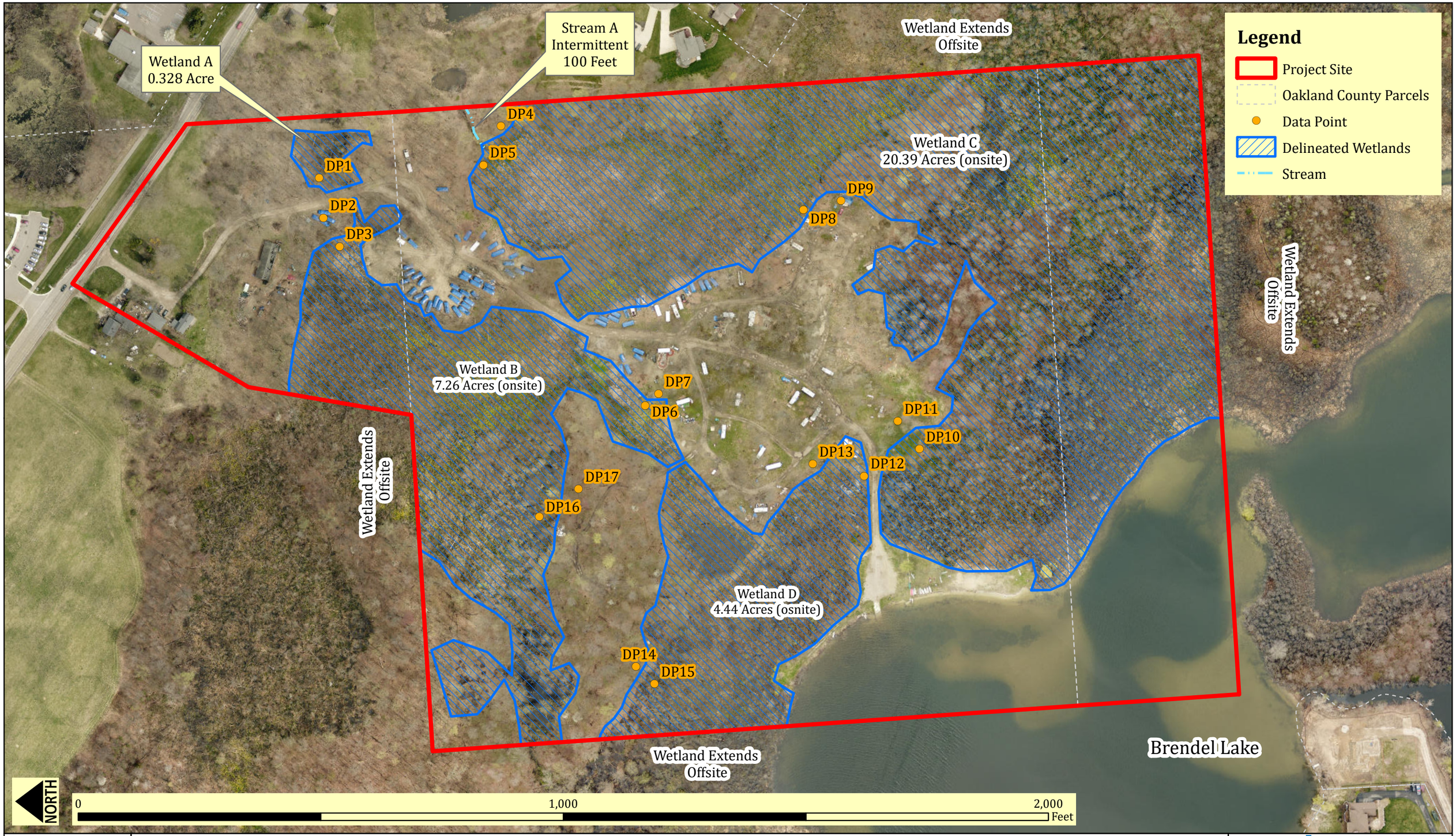

Figure 7	**Wetland Delineation and Water Resource Map** Brendel Lake Campground 10785 Elizabeth Lake Road, White Lake Township, Oakland County, Michigan	nu Inventa
Project No. 221016		Drawn By: R. Newkirk · Date: 4-21-2022 Reviewed By: C. Appleman · Rev: 0

APPENDIX B

Photographic Log

PHOTOGRAPHIC LOG

Photo: 1 **Date:** 4-7-2022 **Direction:** East **Description:** Data Point (DP) 1 is situated in the northwest corner of Wetland A, a palustrine, forested wetland located in the northeast corner of the Project Site.	

Photo: 2 **Date:** 4-7-2022 **Direction:** South **Description:** View of upland DP 2, which is located beside a gravel campground drive that separates Wetlands A and B.	

PHOTOGRAPHIC LOG

Photo: 3 **Date:** 4-7-2022 **Direction:** South **Description:** DP 3 is located in the northeastern most extent of Wetland B. The vegetation community around the data point is primarily herbaceous, which transitions to a forested community in the background.	

Photo: 4 **Date:** 4-7-2022 **Direction:** South **Description:** DP 4 is located on a hillside, in an upland forest near the northeast edge of Wetland C and along the east boundary of the Project Site.	

PHOTOGRAPHIC LOG

Photo: 5 **Date:** 4-7-2022 **Direction:** South **Description:** Wetland DP 5 is located near the north edge of Wetland C.	

Photo: 6 **Date:** 4-7-2022 **Direction:** West **Description:** DP 6 is situated in the southern extent of Wetland B where the vegetation consists of a nearly monotypic stand of narrowleaf cattail (*Typha angustifolia*, OBL). A contiguous forested wetland community is evident in the background.	

PHOTOGRAPHIC LOG

Photo: 7
Date: 4-7-2022
Direction: East
Description: DP 7 is located near and south of Wetland B in an upland forested area with mowed turf grass.

Photo: 8
Date: 4-7-2022
Direction: East
Description: View of wetland DP 8, which is located along the west boundary of Wetland C.

PHOTOGRAPHIC LOG

Photo: 9
Date: 4-7-2022
Direction: North
Description: DP 9 is located in upland, south of DP 8 and west of Wetland C, which is evident in the background.

Photo: 10
Date: 4-7-2022
Direction: West
Description: DP 10 is located in the far west side of Wetland C.

PHOTOGRAPHIC LOG

Photo: 11 **Date:** 4-7-2022 **Direction:** West **Description:** View of Wetland C (scrub-shrub, forested area in the background) from upland DP 11.	

Photo: 12 **Date:** 4-7-2022 **Direction:** West **Description:** Wetland DP 12 is located in the southeast corner of Wetland D. Here, the vegetation community is predominantly forested. A driveway that separates the wetland from Wetland C is evident to the left in the photograph.	

PHOTOGRAPHIC LOG

Photo: 13
Date: 4-7-2022
Direction: South
Description: DP 13 is located in upland approximately 25 feet north of Wetland D.

Photo: 14
Date: 4-7-2022
Direction: South
Description: DP 14 is located in upland on the north side of Wetland D, which is evident in the background where standing water is present.

PHOTOGRAPHIC LOG

Photo: 15 **Date:** 4-7-2022 **Direction:** East **Description:** View of Wetland D at DP 15, which is located near the west edge of the Project Site. Wetland D extends offsite further off in the background.	

Photo: 16 **Date:** 4-7-2022 **Direction:** North **Description:** DP 16 is located in a forested portion of Wetland B.	

PHOTOGRAPHIC LOG

Photo: 17 **Date:** 4-7-2022 **Direction:** North **Description:** DP 17 is located in forested upland approximately 75 feet south of Wetland B.	

Photo: 18 **Date:** 4-7-2022 **Direction:** Northeast **Description:** Upstream view of intermittent Stream A. The stream flows onto the Project Site from land to the east.	

PHOTOGRAPHIC LOG

Photo: 19 **Date:** 4-7-2022 **Direction:** Southwest **Description:** Downstream view of intermittent Stream A. The stream flows to the northeast edge of Wetland C.	

Photo: 20 **Date:** 4-7-2022 **Direction:** Ground View **Description:** View of the bottom of intermittent Stream A.	

PHOTOGRAPHIC LOG

Photo: 21 **Date:** 4-7-2022 **Direction:** North **Description:** View of a sand beach at the shoreline of Brendel Lake.	

Photo: 22 **Date:** 4-7-2022 **Direction:** South **Description:** View of lake edge along Brendel Lake. The scrubby area in the background and beyond the beach is Wetland C.	

APPENDIX C

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP1

Investigator(s): R. Newkirk Section, Township, Range: SW 1/4; SW 1/4; Section 22; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 0 Lat: 42.642731 Long: -83.498049 Datum: WGS84

Soil Map Unit Name: 17A - Wasepi sandy loam, 0 to 3 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in the northwest corner of Wetland A, a forested wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	35	Yes	FACW
2. *Quercus bicolor*	30	Yes	FACW
3.			
4.			
5.			
	65	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer saccharinum*	18	Yes	FACW
2. *Quercus bicolor*	10	Yes	FACW
3.			
4.			
5.			
	28	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Acer saccharinum*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	98	x 2 =	196
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	98 (A)		196 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

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

SOIL

Sampling Point: DP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	100					Loamy/Clayey	
9-17	10YR 5/2	85	10YR 5/4	15	C	M	Loamy/Clayey	Distinct redox concentrations

[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)
- X 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)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

Soil characterisitcs are more consistent with that of the Houghton series.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence 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)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches): 3
Water Table Present?	Yes	X	No	___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 0

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP2

Investigator(s): R. Newkirk Section, Township, Range: SW 1/4; SW 1/4; Section 22; T3N; R8E

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 7 Lat: 42.642713 Long: -83.498356 Datum: WGS84

Soil Map Unit Name: 17A - Wasepi sandy loam, 0 to 3 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located beside a gravel campground road that separates Wetlands A and B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	25	Yes	FACW
2. *Carya ovata*	20	Yes	FACU
3. *Acer saccharinum*	15	Yes	FACW
4. *Populus deltoides*	5	No	FAC
5.			
	65	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus deltoides*	8	Yes	FAC
2. *Quercus bicolor*	5	Yes	FACW
3.			
4.			
5.			
	13	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	10	Yes	FACU
2. *Taraxacum officinale*	4	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	14	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *Vitis riparia*	7	Yes	FACW
2.			
	7	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	52	x 2 =	104
FAC species	13	x 3 =	39
FACU species	34	x 4 =	136
UPL species	0	x 5 =	0
Column Totals:	99 (A)		279 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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 X No ____

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

SOIL

Sampling Point: DP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	100					Loamy/Clayey	Gravelly mix
10-16	10YR 5/3	95	10YR 5/4	5	C	M	Loamy/Clayey	Faint redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP3

Investigator(s): R. Newkirk Section, Township, Range: SW 1/4; SW 1/4; Section 22; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 0 Lat: 42.642627 Long: -83.498579 Datum: WGS84

Soil Map Unit Name: 17A - Wasepi sandy loam, 0 to 3 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in the northeastern most extent of Wetland B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	25	Yes	FACW
2. *Populus deltoides*	15	Yes	FAC
3. *Acer saccharinum*	10	No	FACW
4. *Prunus serotina*	7	No	FACU
5.			
	57	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus sericea*	8	Yes	FACW
2. *Quercus bicolor*	5	Yes	FACW
3.			
4.			
5.			
	13	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	25	Yes	OBL
2. *Carex hyalinolepis*	15	Yes	OBL
3. *Onoclea sensibilis*	5	No	FACW
4. *Symplocarpus foetidus*	4	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	49	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *Vitis riparia*	5	Yes	FACW
2.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	44	x 1 =	44
FACW species	58	x 2 =	116
FAC species	15	x 3 =	45
FACU species	7	x 4 =	28
UPL species	0	x 5 =	0
Column Totals:	124 (A)		233 (B)
Prevalence Index = B/A =			1.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

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

SOIL

Sampling Point: DP3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					Mucky Sand	
6-11	10YR 3/2	100					Sandy	
11-17	10YR 5/3	90	10YR 6/4	10	C	M	Loamy/Clayey	Faint redox concentrations

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP4

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 8 Lat: 42.641693 Long: -83.497696 Datum: WGS84

Soil Map Unit Name: 17A - Wasepi sandy loam, 0 to 3 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located on a hillside, in an upland forest near the north edge of Wetland C and along the east boundary of the Project Site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	50	Yes	FACU
2. *Quercus rubra*	20	Yes	FACU
3. *Carya ovata*	5	No	FACU
4.			
5.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Quercus alba*	20	Yes	FACU
2. *Fagus grandifolia*	15	Yes	FACU
3. *Quercus bicolor*	15	Yes	FACW
4.			
5.			
	50	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex sp.*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=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: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	125 (A)		470 (B)

Prevalence Index = B/A = 3.76

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** X

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

SOIL

Sampling Point: DP4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	100					Loamy/Clayey	
11-17	10YR 5/3	95	10YR 5/4	5	C	M	Loamy/Clayey	Faint redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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 X Depth (inches): ___

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

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

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP5

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 42.641799 Long: -83.49799 Datum: WGS84

Soil Map Unit Name: 17A - Wasepi sandy loam, 0 to 3 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in Wetland C near its north edge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	35	Yes	FACW
2. *Betula lenta*	20	Yes	FACU
3. *Populus deltoides*	10	No	FAC
4. *Celtis occidentalis*	10	No	FAC
5.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Quercus bicolor*	20	Yes	FACW
2. *Celtis occidentalis*	15	Yes	FAC
3. *Populus deltoides*	8	No	FAC
4.			
5.			
	43	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex hyalinolepis*	20	Yes	OBL
2. *Symplocarpus foetidus*	5	No	OBL
3. *Cornus sericea*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	28	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	58	x 2 =	116
FAC species	43	x 3 =	129
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	146 (A)		350 (B)
Prevalence Index = B/A =			2.40

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 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** X **No** ____

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

SOIL

Sampling Point: DP5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	100					Mucky Sand	
7-16	10YR 5/3	90	10YR 5/1	10	D	M	Sandy	

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP6

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 2 Lat: 42.640925 Long: -83.499864 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is situated in the southern extent of Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	20	Yes	FACW
2. *Quercus rubra*	15	Yes	FACU
3.			
4.			
5.			
	35	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Quercus bicolor*	8	Yes	FACW
2. *Cornus sericea*	5	Yes	FACW
3.			
4.			
5.			
	13	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	25	Yes	OBL
2. *Symplocarpus foetidus*	5	No	OBL
3. *Cornus sericea*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	33	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	36	x 2 =	72
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	81 (A)		162 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation consists of a nearly monotypic stand of narrowleaf cattail (Typha angustifolia, OBL).

SOIL

Sampling Point: DP6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 2/1	100					Mucky Sand	

[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)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence 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)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP7

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none

Slope (%): 0 Lat: 42.640848 Long: -83.499779 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located near and south of Wetland B in an upland forested area with mowed turf grass.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	35	Yes	FACU
2. *Populus deltoides*	15	Yes	FAC
3.			
4.			
5.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus sericea*	5	Yes	FACW
2. *Quercus bicoor*	5	Yes	
3.			
4.			
5.			
	10	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	8	Yes	FACU
2. *Carex sp.*			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	8	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	43	x 4 =	172
UPL species	0	x 5 =	0
Column Totals:	63 (A)		227 (B)
Prevalence Index = B/A =			3.60

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** X

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

SOIL

Sampling Point: DP7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					Sandy	
10-17	10YR 4/2	100					Sandy	

[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)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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 X Depth (inches): ___

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

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

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP8

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 42.639996 Long: -83.498403 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located within and along the west boundary of Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix amygdaloides*	30	Yes	FACW
2. *Betula lenta*	15	Yes	FACU
3. *Quercus bicolor*	10	No	FACW
4.			
5.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	20	Yes	FAC
2. *Quercus bicolor*	10	Yes	FACW
3.			
4.			
5.			
	30	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	18	Yes	OBL
2. *Symplocarpus foetidus*	6	Yes	OBL
3. *Onoclea sensibilis*	4	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	28	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	24	x 1 =	24
FACW species	54	x 2 =	108
FAC species	20	x 3 =	60
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	113 (A)		252 (B)
Prevalence Index = B/A =			2.23

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 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** X **No** ____

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

SOIL

Sampling Point: DP8

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 2/1	100					Mucky Sand	

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP9

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none

Slope (%): 0 Lat: 42.639783 Long: -83.498345 Datum: WGS84

Soil Map Unit Name: 12 - Brookston and Colwood loams NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in upland, south of DP 8 and west of Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	25	Yes	FACU
2. *Quercus bicolor*	20	Yes	FACW
3. *Populus deltoides*	10	No	FAC
4.			
5.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Quercus rubra*	12	Yes	FACU
2. *Carpinus caroliniana*	10	Yes	FAC
3. *Fagus grandifolia*	5	No	FACU
4.			
5.			
	27	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	10	Yes	FACU
2. *Carex sp.*	4	Yes	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	14	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	52	x 4 =	208
UPL species	0	x 5 =	0
Column Totals:	92 (A)		308 (B)

Prevalence Index = B/A = 3.35

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 X

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

SOIL

Sampling Point: DP9

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/1	100					Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ 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 X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 9
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 5

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP10

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 42.639381 Long: -83.500259 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in a forested portion of Wetland C, near its northwest edge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula alleghaniensis*	30	Yes	FAC
2. *Quercus bicolor*	20	Yes	FACW
3. *Celtis occidentalis*	15	Yes	FAC
4. *Quercus rubra*	5	No	FACU
5.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus sericea*	20	Yes	FACW
2. *Carpinus caroliniana*	12	Yes	FAC
3. *Quercus bicolor*	7	No	FACW
4. *Celtis occidentalis*	5	No	FAC
5.			
	44	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Ranunculus sceleratus*	7	Yes	OBL
2. *Carex hyalinolepis*	5	Yes	OBL
3. *Symplocarpus foetidus*	4	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	16	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *Vitis riparia*	7	Yes	FACW
2.			
	7	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	16	x 1 =	16
FACW species	54	x 2 =	108
FAC species	62	x 3 =	186
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	137 (A)		330 (B)
Prevalence Index = B/A =			2.41

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

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

SOIL

Sampling Point: DP10

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 2/1	100					Mucky Sand	

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP11

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none

Slope (%): 0 Lat: 42.639499 Long: -83.500041 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located in upland approximately 50 feet north of Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	35	Yes	FACU
2. *Quercus rubra*	20	Yes	FACU
3.			
4.			
5.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *None*			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex sp.*	15	Yes	
2. *Symphyotrichum lanceolatum*	8	Yes	FAC
3. *Solidago canadensis*	5	No	FACU
4. *Daucus carota*	5	No	UPL
5. *Glechoma hederacea*	3	No	FACU
6.			
7.			
8.			
9.			
10.			
	36	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	8	x 3 =	24
FACU species	63	x 4 =	252
UPL species	5	x 5 =	25
Column Totals:	76 (A)		301 (B)
Prevalence Index = B/A =			3.96

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** X

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

SOIL

Sampling Point: DP11

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Sandy	
8-17	10YR 4/2	95	10YR 5/4	5	C	M	Sandy	Distinct redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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 X Depth (inches): ___

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

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

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP12

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 2 Lat: 42.6397 Long: -83.500453 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PEM1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in the southeast corner of Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	35	Yes	FACW
2. *Acer saccharinum*	15	Yes	FACW
3. *Quercus rubra*	10	No	FACU
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	20	Yes	FAC
2. *Quercus bicolor*	7	Yes	FACW
3.			
4.			
5.			
	27	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex hyalinolepis*	12	Yes	OBL
2. *Apocynum cannabinum*	5	Yes	FAC
3. *Symplocarpus foetidus*	4	No	OBL
4. *Onoclea sensibilis*	4	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	25	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	16	x 1 =	16
FACW species	61	x 2 =	122
FAC species	25	x 3 =	75
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	112 (A)		253 (B)
Prevalence Index = B/A =			2.26

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

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

SOIL

Sampling Point: DP12

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100					Mucky Sand	

[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)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP13

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none

Slope (%): 1 Lat: 42.639987 Long: -83.50035 Datum: WGS84

Soil Map Unit Name: 12 - Brookston and Colwood loams NWI classification: PEM1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in upland approximately 25 feet north of Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	30	Yes	FACU
2. *Betula alleghaniensis*	15	Yes	FAC
3. *Ulmus americana*	10	No	FACW
4.			
5.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	10	Yes	FAC
2.			
3.			
4.			
5.			
	10	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex sp.*	5	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	65 (A)		215 (B)

Prevalence Index = B/A = 3.31

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 X

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

SOIL

Sampling Point: DP13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	100					Loamy/Clayey	
10-17	10YR 6/2	95	10YR 5/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ 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 X Depth (inches): ___

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

Saturation Present? Yes X No ___ Depth (inches): 10

(includes capillary fringe)

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP14

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 5 Lat: 42.641022 Long: -83.501859 Datum: WGS84

Soil Map Unit Name: 11B - Capac sandy loam, 0 to 4 percent slopes NWI classification: PEM1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located in upland approximatley 25 feet north of Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	50	Yes	FACU
2. *Quercus bicolor*	25	Yes	FACW
3. *Carya ovata*	10	No	FACU
4. *Carpinus caroliniana*	5	No	FAC
5.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	10	Yes	FAC
2. *Fraxinus pennsylvanica*	5	Yes	FACW
3.			
4.			
5.			
	15	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex sp.*	5	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=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: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	105 (A)		345 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ____

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

SOIL

Sampling Point: DP14

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	100					Sandy	
9-16	10YR 5/2	95	10YR 5/4	5	C	M	Sandy	Distinct redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP15

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 0 Lat: 42.64092 Long: -83.501994 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian Mucks NWI classification: PEM1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in the western most extend of Wetland D, near the west boundary of the Project Site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	30	Yes	FAC
2. *Quercus bicolor*	20	Yes	FACW
3. *Salix amygdaloides*	15	No	FACW
4. *Acer saccharinum*	10	No	FACW
5. *Quercus rubra*	10	No	FACU
	85	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus sericea*	15	Yes	FACW
2. *Quercus bicolor*	8	Yes	FACW
3. *Carpinus caroliniana*	5	No	FAC
4.			
5.			
	28	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex hyalinolepis*	7	Yes	OBL
2. *Symplocarpus foetidus*	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	12	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	12	x 1 =	12
FACW species	68	x 2 =	136
FAC species	35	x 3 =	105
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	125 (A)		293 (B)
Prevalence Index = B/A =			2.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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** X **No** ____

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

SOIL

Sampling Point: DP15

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

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

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP16

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 0 Lat: 42.641543 Long: -83.500687 Datum: WGS84

Soil Map Unit Name: 27 - Houghton and Adrian mucks NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data point is located in a forested portion of Wetland B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula alleghaniensis*	25	Yes	FAC
2. *Quercus bicolor*	15	Yes	FACW
3. *Carpinus caroliniana*	10	Yes	FAC
4.			
5.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	20	Yes	FAC
2. *Celtis occidentalis*	8	Yes	FAC
3. *Quercus bicolor*	5	No	FACW
4.			
5.			
	33	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex sp.*	5	Yes	
2. *Symplocarpus foetidus*	3	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	8	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	20	x 2 =	40
FAC species	63	x 3 =	189
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	86 (A)		232 (B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 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** X **No** ____

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

SOIL

Sampling Point: DP16

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100					Mucky Sand	

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 3		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Brendel Lake Campground / Elizabeth Lake Road (221016) City/County: White Lake Twp/Oakland Sampling Date: 4-6-2022

Applicant/Owner: Kem-Tec, Inc. (client) State: MI Sampling Point: DP17

Investigator(s): R. Newkirk Section, Township, Range: NW 1/4; NW 1/4; Section 27; T3N; R8E

Landform (hillside, terrace, etc.): upland Local relief (concave, convex, none): none

Slope (%): 0 Lat: 42.641543 Long: -83.500486 Datum: WGS84

Soil Map Unit Name: 11B - Capac sandy loam, 0 to 4 percent slopes NWI classification: PFO1C

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

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

Are Vegetation No , Soil No , or Hydrology No 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 X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Data point is located in upland approximately 75 feet south of Wetland B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	40	Yes	FACU
2. *Prunus serotina*	20	Yes	FACU
3. *Carpinus caroliniana*	15	Yes	FAC
4.			
5.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	20	Yes	FAC
2. *Quercus rubra*	10	Yes	FACU
3.			
4.			
5.			
	30	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *None*			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	105 (A)		385 (B)

Prevalence Index = B/A = 3.67

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** X

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

SOIL

Sampling Point: DP17

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Loamy/Clayey	
10-17	10YR 4/4	70	10YR 5/8	30	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).

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 X Depth (inches): ___

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

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

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

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

Remarks:

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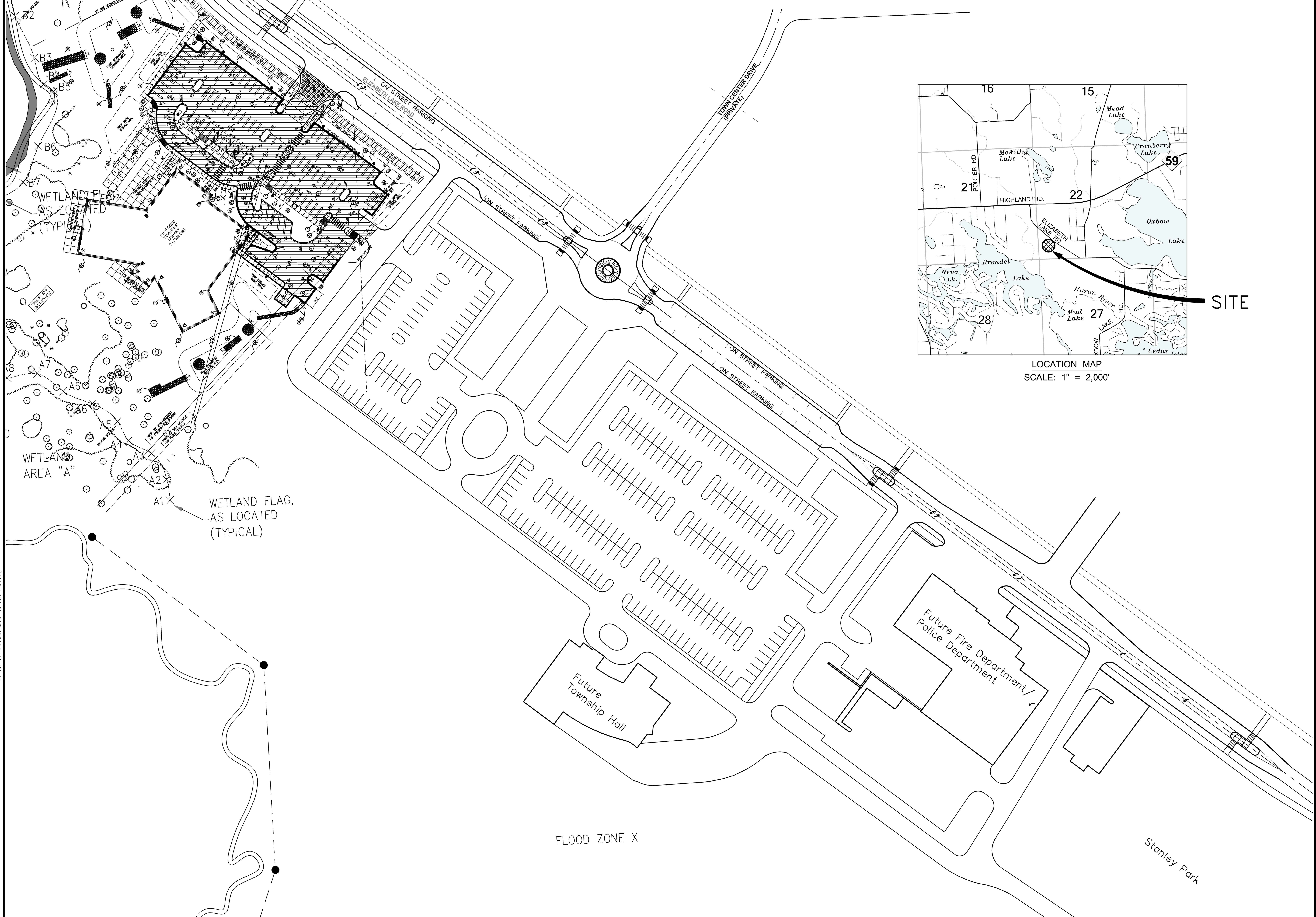
Elizabeth Lake Road Proposed Civic Center



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White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

Civic Center Campus Concept

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DRAWN BY: J&A
DESIGN BY: -
CHECKED BY: -

J&A JOB NUMBER: 18579

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C-101