City Hall: 218-692-2688
Planning & Zoning: 218-692-2689
Fax: 218-692-2687

13888 Daggett Bay Rd
Crosslake, Minnesota 56442
www.cityofcrosslake.org

CITY OF CROSSLAKE

PLANNING COMMISSION/BOARD OF ADJUSTMENT
January 28, 2022
9:00 A.M.

Crosslake City Hall
13888 Daggett Bay Rd, Crosslake MN 56442
(218) 692-2689

PUBLIC HEARING NOTICE

Applicant: Highway 103 Storage Association

Authorized Agent: Chris Suedbeck

Site Location: 13529 County Rd 103, Crosslake, MN 56442

Variance for:

- Increase of impervious to 57% where 50% is allowed
- Parcel size of 1,504 square feet where 20,000 square feet are required

To construct and allow:

- One 9,024 square foot storage building containing 6 individual units of 32'x47' which could be sold individually
- Decrease in required parcel size

Notification: Pursuant to Minnesota Statutes Chapter 462, and the City of Crosslake Zoning Ordinance, you are hereby notified of a public hearing before the City of Crosslake Planning Commission/Board of Adjustment. Property owners have been notified according to MN State Statute 462 & published in the local newspaper. Please share this notice with any of your neighbors who may not have been notified by mail.

Information: Copies of the application and all maps, diagrams or documents are available at Crosslake City Hall or by contacting the Crosslake Planning & Zoning staff at 218-692-2689. Please submit your comments in writing including your name and mailing address to Crosslake City Hall or (crosslakepz@crosslake.net).

STAFF REPORT

Property Owner/Applicant: Highway 103 Storage Association

Parcel Number(s): 14320509

Application Submitted: December 9, 2021

Action Deadline: February 6, 2022

City 60 Day Extension Letter sent / Deadline: N/A / N/A

Applicant Extension Received / Request: N/A / N/A

City Council Date: N/A

Authorized Agent: Chris Suedbeck

Variance for:

- Increase of impervious to 57% where 50% is allowed
- Parcel size of 1,504 square feet where 20,000 square feet are required

To construct and allow:

- One 9,024 square foot storage building containing 6 individual units of 32'x47' which could be sold individually
- Decrease in required parcel size

Current Zoning: Limited Commercial District

Existing Impervious Coverage:	**Proposed Impervious Coverage:**
49.9%	57.0%

- A stormwater management plan was submitted with the variance application
- No current septic system and no septic system proposed

Development Review Team Minutes held on 10-21-2021:

- Property at 13529 County Hwy 103
- The project proposal is for another storage building at 192'x47' with 6 units to be sold-CUP if rent
- Staff informed them that the variance procedure will need to be completed before proceeding with the preliminary and final plat public hearing requirements for a cleaner & possibly less expense process
- All setbacks shall be measured to the vertical side of the structure. No part of the structure, such as eaves, can overhang or reduce such setback by more than three feet (Sec. 26-303)
- If the eaves exceed 36" the setback and the impervious coverage shall be measured from the dripline
- Impervious maximum of 50%; structure lot line setbacks for residential is 20'; building height of 30' mid-peak

- The parcel is located within a plat and an organization that may have restrictions, you would need to verify those restrictions and clarify that your request is approved by that organization or allowed in the plat; an email was sent 10.13.2021 with the declaration and a note to look at page 12, 7.2 and amend any reference to the number of units from 57 to the proposed units if/when proceed
- Provide a document that all owners were notified and the details of that document
- Design and implement a stormwater management plan (gutters, berm & rain gardens) to update any existing plan per Article 7 & 8 and is not required to be on the survey
- No septic system on the parcel
- A Wetland Delineation is on file from Meister Environmental, LLC dated 7.15.2016
- A grade and elevation illustration along with the cut & fill calculations is required
- Discussion on application requirements, procedure, schedule, fee and the requirements/need for a complete application packet by 4:30 PM of the deadline date; 2 yr variance limit; notification methods
- A Land Use Permit will be required prior to construction

Property owner was informed that before they could be placed on a public hearing agenda the following information is required:

1. A certificate of survey meeting the requirements outlined in Article 8, Sec. 26-222 for the variance of the City Land Use Ordinance as well as the CUP (if rent), subdivision/plat amendment requirements
2. Grade illustration, Elevation illustration and Cut & Fill calculations
3. A complete Variance; CUP: Preliminary plat; final plat applications as needed and appropriate
4. The public hearing fees: Variance; CUP; Preliminary Plat; Final Plat and Park & Rec dedication fees

Parcel History:

- Highway 103 Storage plat established in 2012
- Highway 103 Storage First Addition plat amended in 2016
- April 2006 – Conditional Use to construct storage buildings/units
- April 2006 – Subdivision Metes & Bounds
- May 2006 – Zoning Map Amendment
- May 2006 – Address
- May 2006 – Sign
- May 2006 – 80’ x 180’ Commercial storage building
- July 2007 – 46’ x 160’ Commercial storage building
- December 2010 – Sign
- April 2012 – Preliminary & Final plat
- May 2012 – Commercial PUD – Conditional Use
- April 2013 – 80’ x 180’ Commercial storage building
- July 2014 – 80’ x 180’ Commercial storage building
- May 2015 – 110’ x 80’ Commercial storage building
- September 2016 – Preliminary & Final Plat of Highway 103 Storage First Addition
- September 2016 – 230’ x 48’ Commercial storage building
- No septic on the parcel

Agencies Notified and Responses Received:

County Highway Dept: No comments were received as of 1-14-2022
DNR: No comments were received as of 1-14-2022
City Engineer: 1-3-2022 comment received from Phil Martin
Lake Association: No comments were received as of 1-14-2022

Township: N/A
Crosslake Public Works: No comments were received as of 1-14-2022
Crosslake Park, Recreation & Library: No comments were received as of 1-14-2022
Concerned Parties: No comments were received as of 1-14-2022

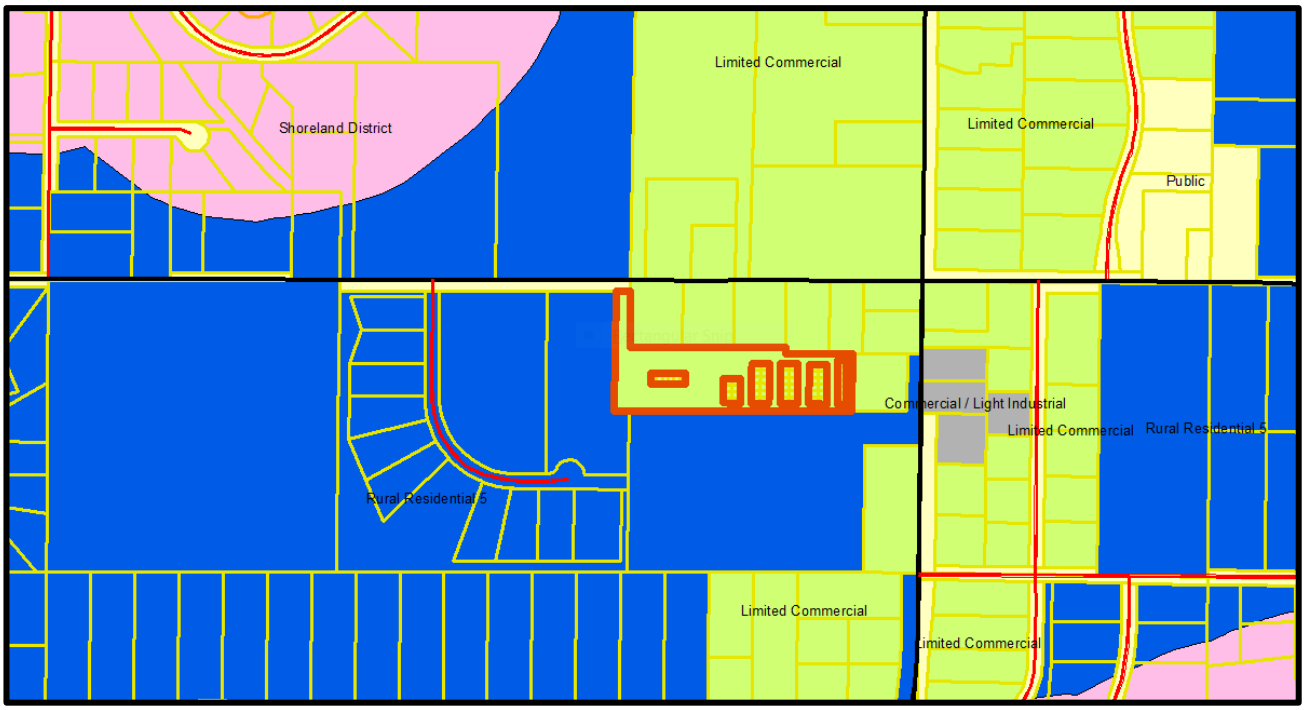
POSSIBLE MOTION:
To approve/table/deny the variance to allow:

- Increase of impervious to 57% where 50% is allowed
- Parcel size of 1,504 square feet where 20,000 square feet are required

To construct and allow:

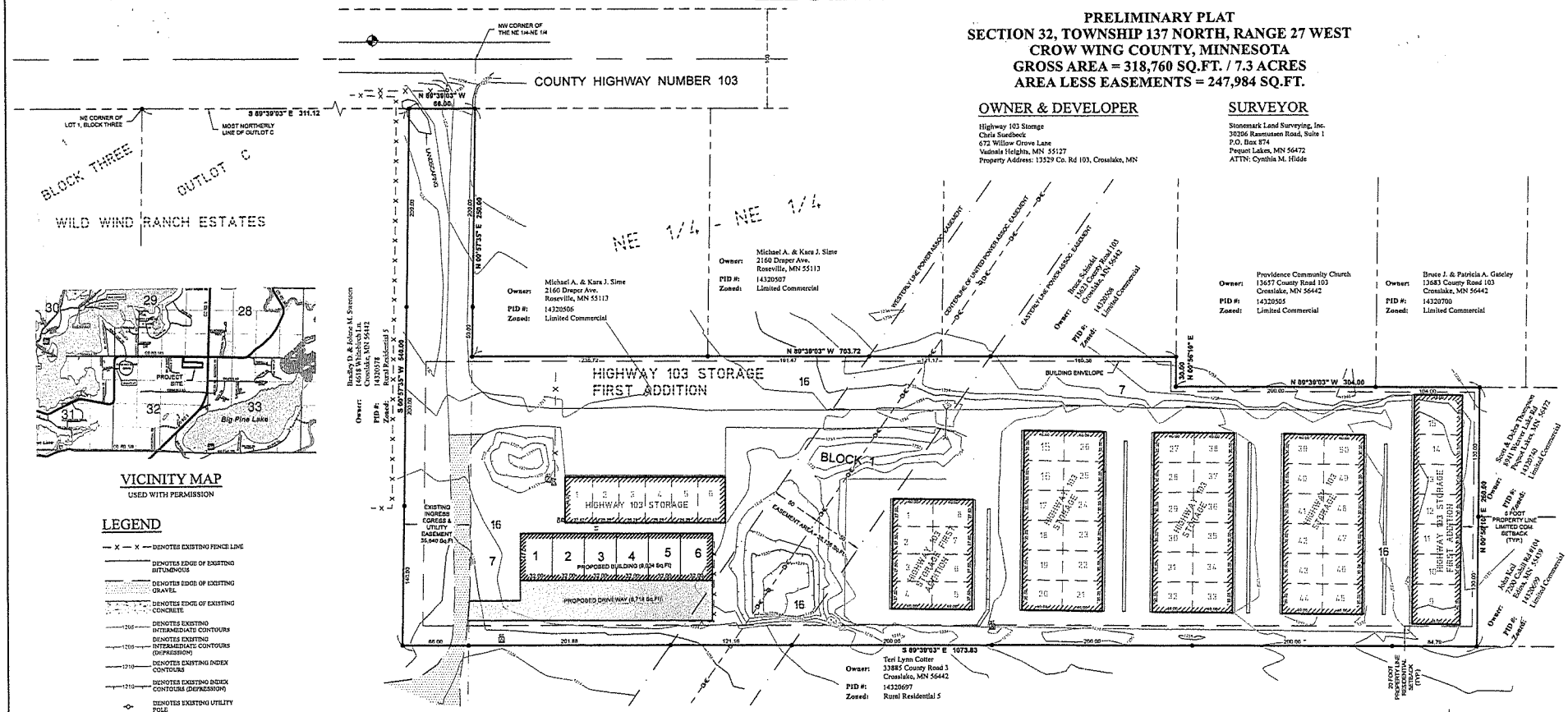
- One 9,024 square foot storage building containing 6 individual units of 32'x47' which could be sold individually
- Decrease in required parcel size

As shown on the certificate of survey dated 12-16-2021



HIGHWAY 103 STORAGE SECOND ADDITION

PRELIMINARY PLAT
SECTION 32, TOWNSHIP 137 NORTH, RANGE 27 WEST
CROW WING COUNTY, MINNESOTA
GROSS AREA = 318,760 SQ.FT. / 7.3 ACRES
AREA LESS EASEMENTS = 247,984 SQ.FT.



VICINITY MAP
USED WITH PERMISSION

LEGEND

- DENOTES EXISTING FENCE LINE
- DENOTES EDGE OF EXISTING BITUMINOUS
- DENOTES EDGE OF EXISTING GRAVEL
- DENOTES EDGE OF EXISTING CONCRETE
- DENOTES EXISTING INTERMEDIATE CONTOURS
- DENOTES EXISTING INTERMEDIATE CONTOURS (DEPRESSION)
- DENOTES EXISTING INDEX CONTOURS
- DENOTES EXISTING INDEX CONTOURS (DEPRESSION)
- DENOTES EXISTING UTILITY POLE
- DENOTES EXISTING OVERHEAD ELECTRIC CABLE
- DENOTES EXISTING ELECTRIC METER
- DENOTES EXISTING GROUND TRANSFORMER
- DENOTES EXISTING GAS VALVE
- DENOTES EXISTING PHONE PEDESTAL & PHONE BOX
- DENOTES EXISTING GAS METER
- DENOTES EXISTING CULVERT LOCATION
- DENOTES MONUMENT FOUND
- DENOTES SIGN MONUMENT SET MARKED BY LICENSE No. 44881

BENCHMARK:
FOUND ½" REBAR, FLUSH WITH GROUND
ELEV. = 1236.50

OWNER & DEVELOPER

Highway 103 Storage
Chris Sundbeck
672 Willow Grove Lane
Vadnais Heights, MN 55127
Property Address: 13529 Co. Rd 103, Crosslake, MN

SURVEYOR

Stonemark Land Surveying, Inc.
30206 Rasmusten Road, Suite 1
P.O. Box 874
Pequot Lakes, MN 56472
ATTN: Cynthia M. Hilde

CONTOUR INFORMATION

Contours shown have been obtained using standard survey topographic methodologies on July 6, 2016.
Contour interval is 1 foot as shown on this drawing.

SOIL DATUM

The Crow Wing County Soils Survey indicates soil in the proposed platted area to be classified as "Greycalm loamy sand (D49A) & Greycalm loamy sand (D49B)".

UTILITIES

This project will not require any water or sewer development.

ZONING

Current zoning is Limited Commercial = LC.

LEGAL DESCRIPTION

Lot 16, Block 1, HIGHWAY 103 STORAGE FIRST ADDITION, according to the recorded plat thereof, Crow Wing County, Minnesota.

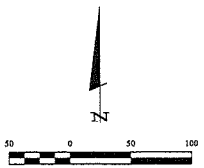
Subject to a power line easement in favor of United Power Association and subject to other easements, restrictions, and reservations of record.

Subject to access easement along westerly 66 feet of plat as depicted and also the utility easement also as depicted.

Also subject to mineral reservations of record, if any.

IMPERVIOUS CALCULATIONS

PROPOSED	IMPERVIOUS AREA (sq.ft.)	Net Area (sq.ft)	Percent Impervious (sq.ft)
Existing & Proposed Buildings	70,424	318,760	24.9%
Existing & Proposed Concrete	5,901	318,760	1.9%
Existing & Proposed Driveway	96,525	318,760	30.3%
Total	181,950	318,760	57.0%



Notes:
1. The tracts shown and described herein must be approved by the local zoning authority before title is transferred and/or building permits obtained.
2. Contact "GOPHER ONE-CALL" 1-800-252-1166 prior to construction.
3. The information contained herein is subject to change without notice, including, without limitation, configuration of lots, structures, roads, recreational areas, amenities, etc.

ORIENTATION OF THIS BEARING SYSTEM IS BASED ON THE RECORDED PLAT OF HIGHWAY 103 STORAGE

30206 Rasmusten Road
Suite 1
P.O. Box 874
Pequot Lakes, MN 56472
218-568-8490
www.stonemarklandsurveying.com

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA.
CYNTHIA M. HILDE PLS#44881
DATE 12/6/2021 LIC NO. 44881

REVISIONS		
DESCRIPTION	DATE	BY
PER CITY COMMENTS	12.6.21	CMH

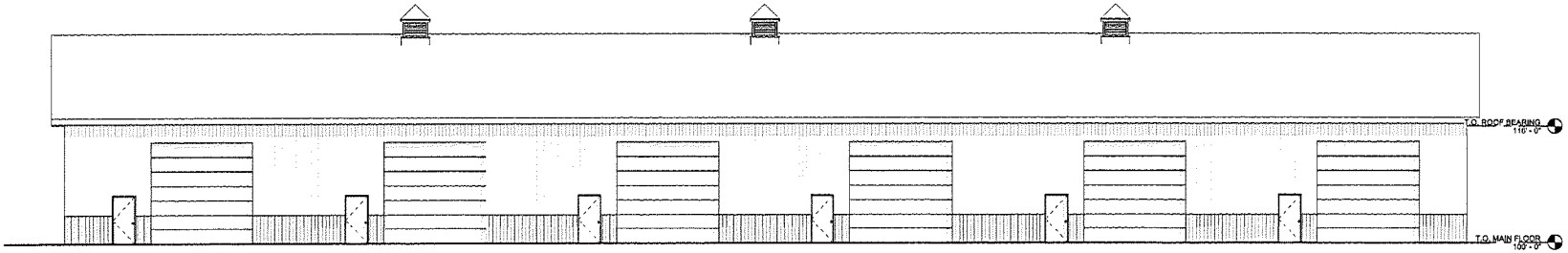
PROJECT NO.	DATE
21350	11-18-21
SCALE	
1"=60'	
VERT.	NONE

PROJECT MANAGER: CMH
CHECKED BY: PAT
FILE NAME: Pk21350.dwg
FIELD BOOK: DRAWING
BOOK no. ns pg
CMH

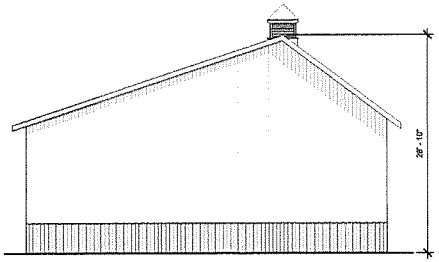
HIGHWAY 103 STORAGE SECOND ADDITION
PRELIMINARY PLAT
Highway 103 Storage
Chris Sundbeck
672 Willow Grove Lane
Vadnais Heights, MN 55127

SHEET 1 OF 1

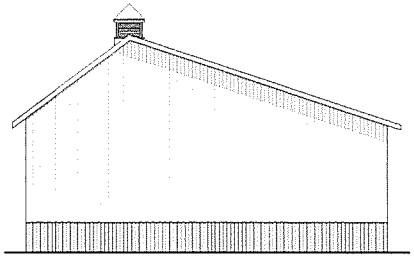
Cad: 12/6/2021 10:45:40 - F:\Drawings\2021\21350 Sundbeck - Hwy 103 Storage\Pk21350.dwg



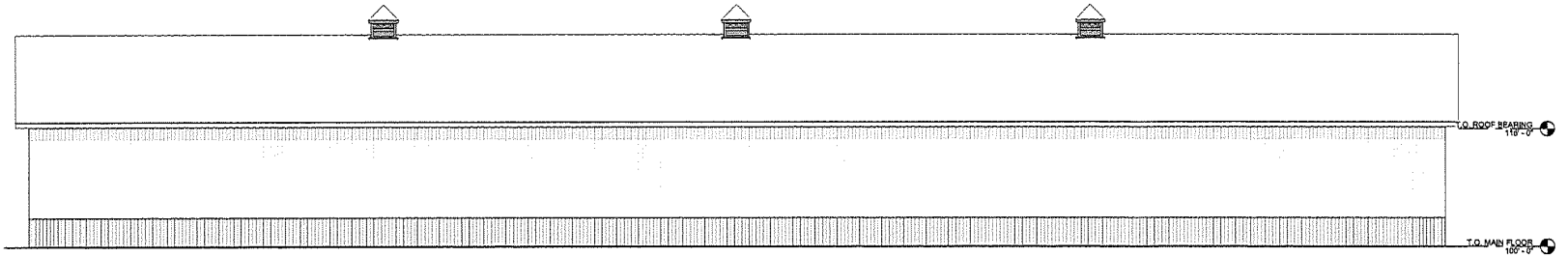
1 A2.1 **SOUTH ELEVATION**
1/8" = 1'-0"



2 A2.1 **WEST ELEVATION**
1/8" = 1'-0"



3 A2.1 **EAST ELEVATION**
1/8" = 1'-0"



4 A2.1 **NORTH ELEVATION**
1/8" = 1'-0"

 PRINTED: 12/2/2021 2:43:03 PM

REVISIONS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a Duly Licensed Architect under the laws of the State of Minnesota

11360 BUSINESS 371
BRAINERD, MN 56401
PHONE 218829-5383
FAX 218829-5383
www.hytecconst.com
lic #BC-20050648

HYTEC CONSTRUCTION
ARCHITECTURAL DIVISION

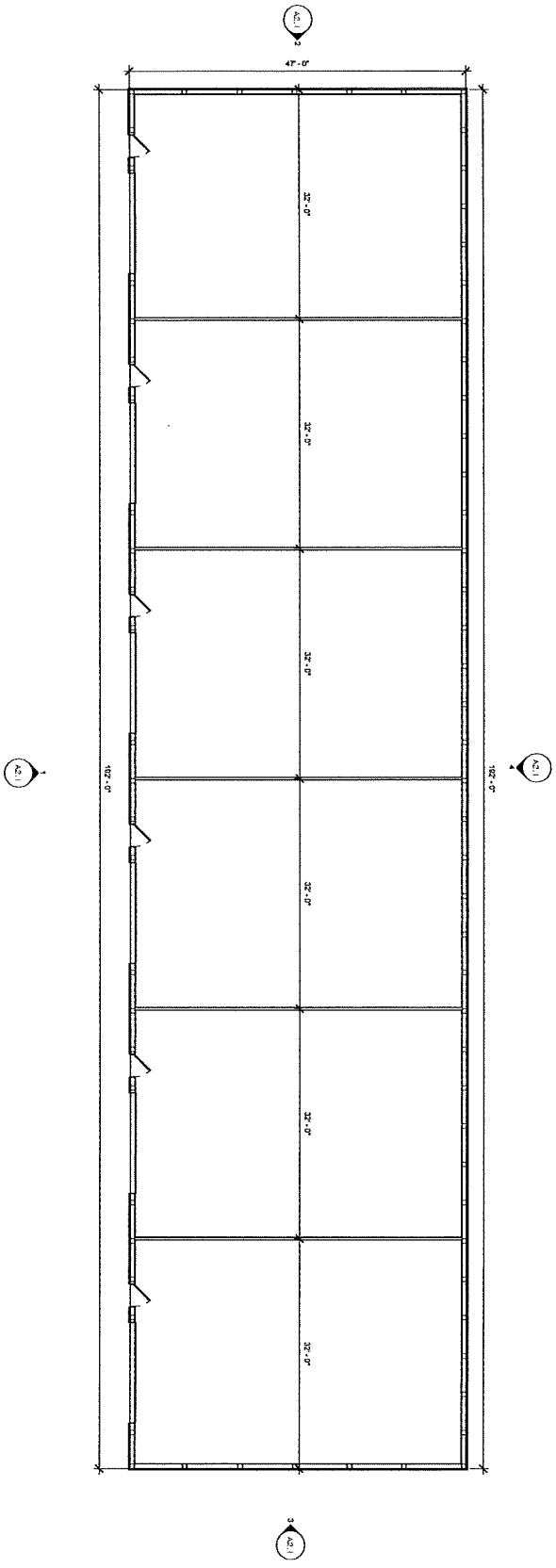
HIGHWAY 103 STORAGE

EXTERIOR ELEVATIONS

PROJECT #

DATE: 12.2.21

SHEET: A2.1



1 A1.1 MAIN LEVEL FLOOR PLAN
1/8" = 1'-0"

PRINTED: 12/2/2021 2:40:30 PM

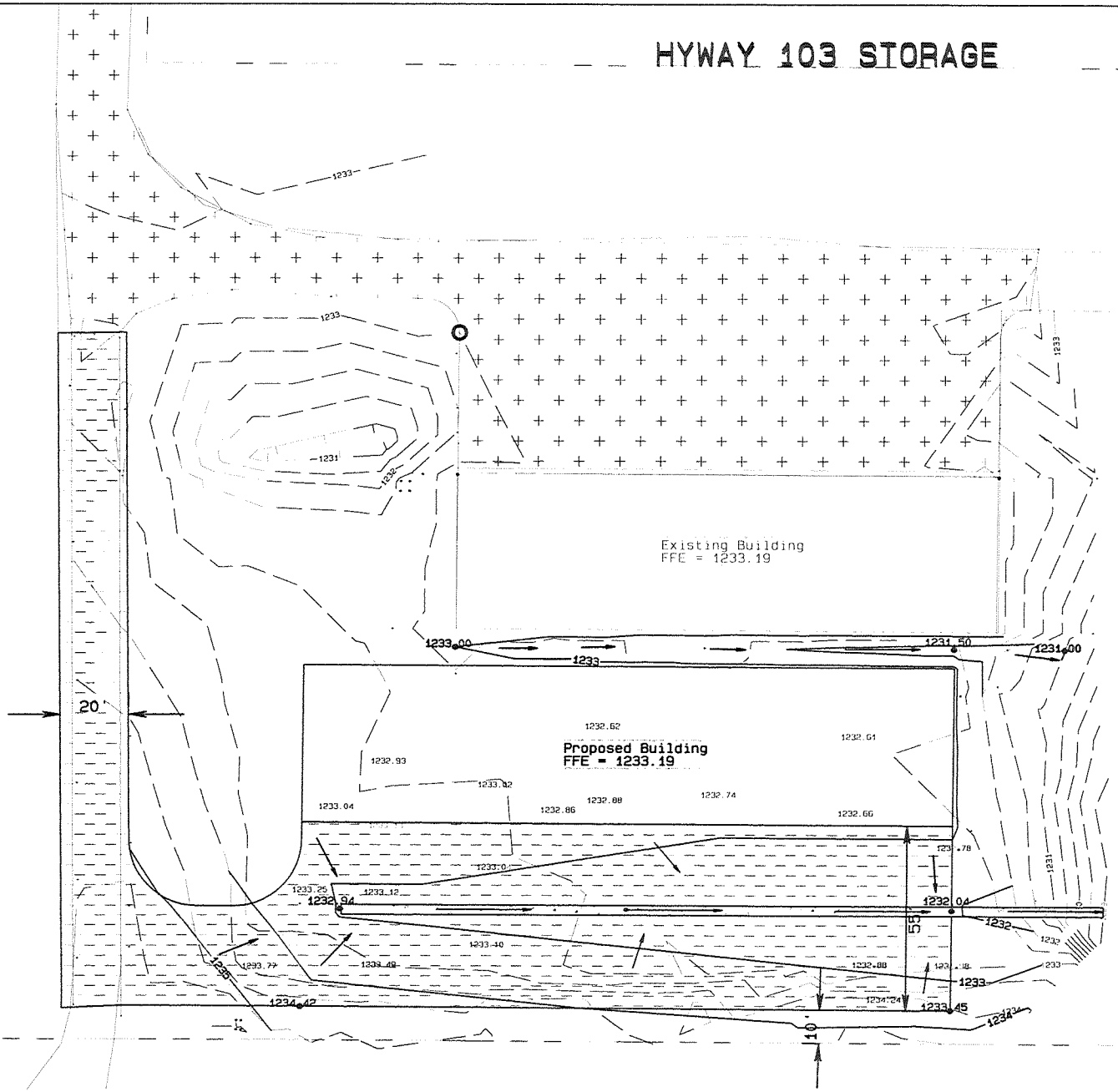
A1.1	SHEET:	DATE: 12.2.21		PROJECT #	HIGHWAY 103 STORAGE MAIN FLOOR PLAN	

HYTEC CONSTRUCTION
ARCHITECTURAL DIVISION
11360 BUSINESS 371
BRAINERD, MN 56401
PHONE 218/829-8529
FAX 218/829-5383
www.hytecconst.com
lic #BC-20050648

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a Duly Licensed Architect under the laws of the State of Minnesota

REVISIONS

HYWAY 103 STORAGE

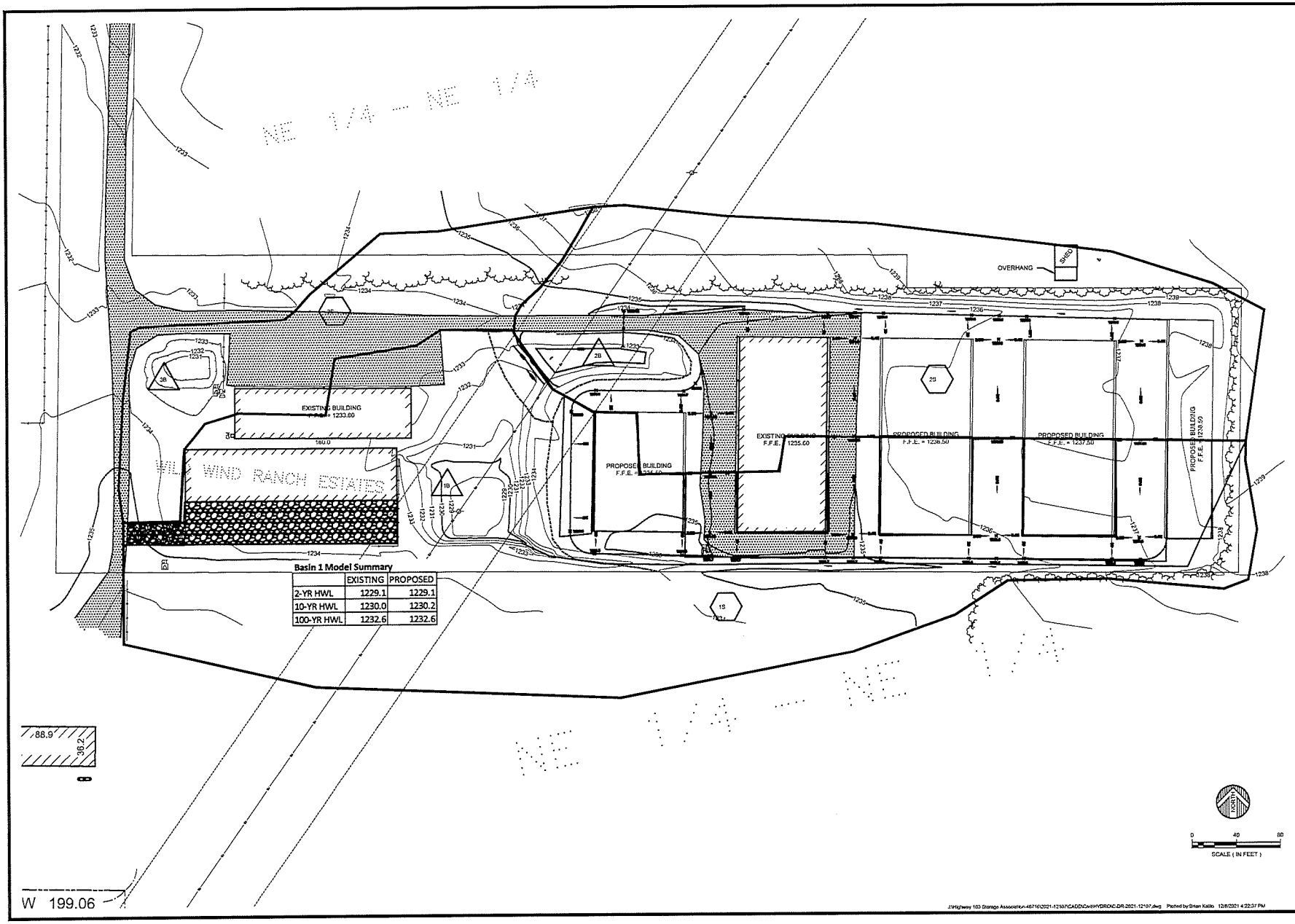


GRADING QUANTITIES	
Common excavation cut & fill	75 cubic yards
Common excavation cut & remove off site	237 cubic yards
Strip & respread topsoil	66 cubic yards

LEGEND	
Water flow direction	
Existing spot elevation	1232.62
Proposed spot elevation	1234.42
Existing contours	1231
proposed contours	1233
Existing bituminous surface	
Proposed bituminous surface	
Proposed conc valley gutter	

0 15 30 60

30 Scale



WIDSETH
ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINN

DATE: #### LIC. NO. ####

NO.	DATE	REVISION DESCRIPTION	BY

DATE: ####
SCALE: ####
DRAWN BY: ####
CHECKED BY: ####
CONTRACT: ####

HIGHWAY 103 STORAGE
HIGHWAY 103 STORAGE ASSOCIATION
CROSS LAKE, MN
####

SHEET NO.
####

J:\Highway 103 Storage Association\h-467160\2021-1210\CADD\Civil\HYDRO\C-DR-2021-12107.dwg Plotted by:Brian Kallio 12/8/2021 4:22:37 PM

January 5, 2022

WiDSETH
ARCHITECTS ▪ ENGINEERS
SCIENTISTS ▪ SURVEYORS

Highway 103 Storage Assn
Attention: Chris Suedbeck
672 Willow Grove Lane
Vadnais Heights, Mn 55127

RE: Highway 103 Storage Stormwater Report, Cross Lake, MN

Dear Mr.Suedbeck:

Widseth has reviewed the site and prepared this summary of stormwater calculations completed for the Highway 103 Storage facility located in Crosslake, Minnesota. Highway 103 Storage Association plans to construct a 9,000 square foot storage building and associated driveway at their existing storage facility. The project site is located on a gravel road south of Highway 103 and west of Highway 3 in Crosslake. The site location is shown in Figure 1.

Existing Conditions

There are currently six storage buildings on the property with paved driveway access and 3 basins that collect surface runoff. The site is sloped to the basins in the central area of the site and one near the entrance on the west. The elevations on the property range from about 1239 in the east, to about 1234 in the center and east. The basin bottom elevations range from about 1229 to 1231.

According to the Natural Resource Conservation Service (NRCS) soils report, the soils at the site are Graycalm loamy sand and classified as Hydrologic Soil Group A with high hydraulic conductivity. Historically, runoff to the basins has rapidly infiltrated and not discharged from the site. The NRCS soil report for the site is provided in Attachment 1.

Proposed Conditions

Highway 103 Storage Association will construct a new 9,000 square foot storage building and paved driveway access from the gravel road. The site of the new building and parking surface will be graded to drain to the largest basin, on the south side near the middle of the site. The improvements will include a total increase in impervious surface of about 18,000 square feet.

Summary

The drainage areas are shown in the maps in Figure 2. Impervious areas were measured using the site survey and aerial imagery for the site. The only change between existing and proposed conditions is the addition of impervious surfaces to reflect the new building and pavement. Both existing and proposed conditions have been modeled using HydroCAD to calculate the existing and proposed discharge rates for 2-, 10-, and 100-year rainfall events.

Impervious Area Calculations

The total site impervious areas were measured to complete the form *Lot Impervious Coverage and Landscaping for Stormwater Worksheet.* The measured existing impervious area is 147,497 square feet and measured proposed new impervious area is 17,878 square feet, for a

total of 165,375 after construction is completed. The total lot area is 248,161 square feet. This calculates a total of 59.4% and 66.6% existing and proposed impervious surfaces. The impervious coverage worksheet is provided in Attachment 2.

The impervious coverage worksheet calculates the equivalent of 1 inch of runoff from the site impervious surfaces to determine the required stormwater infiltration capacity for the site. The calculated runoff is 13,872 cubic feet.

The three basins at the property do not have an outlet, other than infiltration or overflows during an extreme rainfall. The basins provide a total of about 41,643 cubic feet of stormwater detention to exceed the required capacity.

Runoff Rate Calculations

The modeled peak runoff rate leaving the site is zero for all rainfall events for both existing and proposed conditions, indicating that the entire rainfall is captured, contained, and infiltrated in the existing basins and there is no increase in site runoff. The HydroCAD output is provided in Attachment 3.

High Water Level Evaluation

We evaluated the modeled high water level to determine the appropriate elevation for the storage building. The Existing and proposed high water levels for the three basins are:

- Basin 1: Existing = 1233.0, Proposed = 1233.2
- Basin 2 = Existing = 1234.2, Proposed = 1234.2
- Basin 3 = Existing = 1233.0, Proposed = 1233.0

The high water level increases by 0.2 feet for Basin 1 and is unchanged for Basin 2 and 3. The proposed new building is adjacent to Basin 1, so the floor for the proposed building needs to be constructed at 1235.2 or higher to provide 2 feet of freeboard in relation to the modeled water levels.

Conclusion

The added impervious surface on the site does not increase runoff from the site. The existing basins completely contain the runoff from all rainfall events up to and including a 100-year rainfall event. Based on the high water level evaluation, the floor for the new building needs to be set at 1235.2 or higher to maintain 2 feet of separation from the adjacent high water levels.

Please contact me at (651) 358-2355 if you have any questions.

Sincerely,

Widseth, Smith, Nolting and Associates

Brian Kallio, PE
Civil/Water Resources Engineer

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

Brian F. Kallio, PE
Lic. No. 25817

1/5/2022
Date

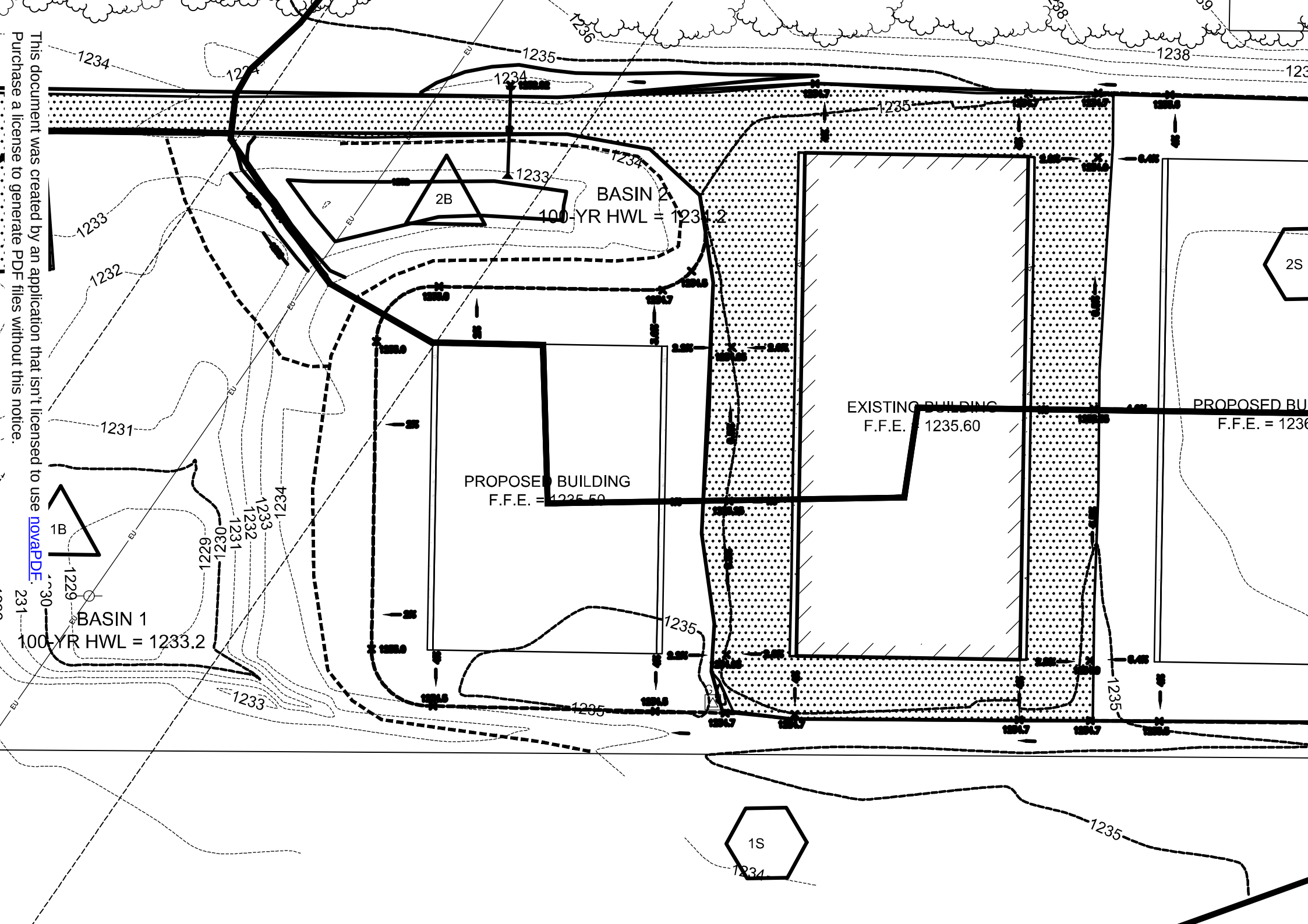
FIGURE 1

Site Location Map

FIGURE 1	SITE LOCATION HIGHWAY 103 STORAGE	WiDSETH ARCHITECTS ▪ ENGINEERS ▪ SCIENTISTS ▪ SURVEYORS

FIGURE 2

Drainage Area Map



ATTACHMENT 1

Soil Survey Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Crow Wing County, Minnesota

Highway 103 Storage

December 9, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,660 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Crow Wing County, Minnesota
Survey Area Data: Version 17, Sep 10, 2021

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

Date(s) aerial images were photographed: Jun 12, 2014—Aug 23, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
D49A	Graycalm loamy sand, 0 to 2 percent slopes	31.2	59.9%
D49B	Graycalm loamy sand, 2 to 8 percent slopes	20.6	39.5%
D79C	Graycalm-Rifle complex, 0 to 10 percent slopes	0.3	0.6%
Totals for Area of Interest		**52.1**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Crow Wing County, Minnesota

D49A—Graycalm loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2dflg
Elevation: 660 to 1,710 feet
Mean annual precipitation: 25 to 33 inches
Mean annual air temperature: 37 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Graycalm

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Outwash

Typical profile

A - 0 to 4 inches: loamy sand
Bw1 - 4 to 20 inches: loamy sand
Bw2 - 20 to 31 inches: sand
E and Bt - 31 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sloping Upland, Low AWC, Acid (G091AN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

Minor Components

Graycalm, moderately sloping

Percent of map unit: 10 percent
Landform: Flats
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

D49B—Graycalm loamy sand, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dflh
Elevation: 660 to 1,710 feet
Mean annual precipitation: 25 to 33 inches
Mean annual air temperature: 37 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Graycalm

Setting

Landform: Rises
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Outwash

Typical profile

A - 0 to 4 inches: loamy sand
Bw1 - 4 to 20 inches: loamy sand
Bw2 - 20 to 31 inches: sand
E and Bt - 31 to 79 inches: sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sloping Upland, Low AWC, Acid (G091AN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

Minor Components

Graycalm, nearly level

Percent of map unit: 10 percent
Landform: Rises
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

D79C—Graycalm-Rifle complex, 0 to 10 percent slopes

Map Unit Setting

National map unit symbol: 2ndr4
Elevation: 660 to 1,710 feet
Mean annual precipitation: 25 to 33 inches
Mean annual air temperature: 37 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Graycalm and similar soils: 55 percent
Rifle, ponded, and similar soils: 15 percent
Graycalm, nearly level, and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Graycalm

Setting

Landform: Rises
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear

Parent material: Outwash

Typical profile

A - 0 to 4 inches: loamy sand
Bw1 - 4 to 20 inches: loamy sand
Bw2 - 20 to 31 inches: sand
E and Bt - 31 to 79 inches: sand

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sloping Upland, Low AWC, Acid (G091AN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

Description of Rifle, Ponded

Setting

Landform: Rises
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oi - 0 to 12 inches: peat
Oe - 12 to 43 inches: mucky peat
Oa1 - 43 to 59 inches: muck
Oa2 - 59 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 29.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Forage suitability group: Not Suited (G091AN024MN)
Other vegetative classification: Not Suited (G091AN024MN)
Hydric soil rating: Yes

Description of Graycalm, Nearly Level

Setting

Landform: Rises
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Outwash

Typical profile

A - 0 to 4 inches: loamy sand
Bw1 - 4 to 20 inches: loamy sand
Bw2 - 20 to 31 inches: sand
E and Bt - 31 to 79 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sloping Upland, Low AWC, Acid (G091AN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

Minor Components

Wurtsmith

Percent of map unit: 10 percent
Landform: Rises
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: Sloping Upland, Low AWC, Acid (G091AN008MN)
Hydric soil rating: No

Lougee

Percent of map unit: 5 percent
Landform: Rises

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic (G091AN014MN)
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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

ATTACHMENT 2

Impervious Area Worksheet

Landowner / Parcel #: Highway 103 Storage Association Date: 12/9/21

Lot Impervious Surface Coverage & Landscaping for Stormwater Worksheet

Please use the table below to calculate your impervious surface coverage. Impervious coverage is limited to 25% of the total lot area. Calculate out all that apply to your situation. If a structure has odd dimensions or if using to size stormwater basins, multiple rows / sheets may be needed. If total imp. of irregular structure or driveway is known, just multiply by 1.

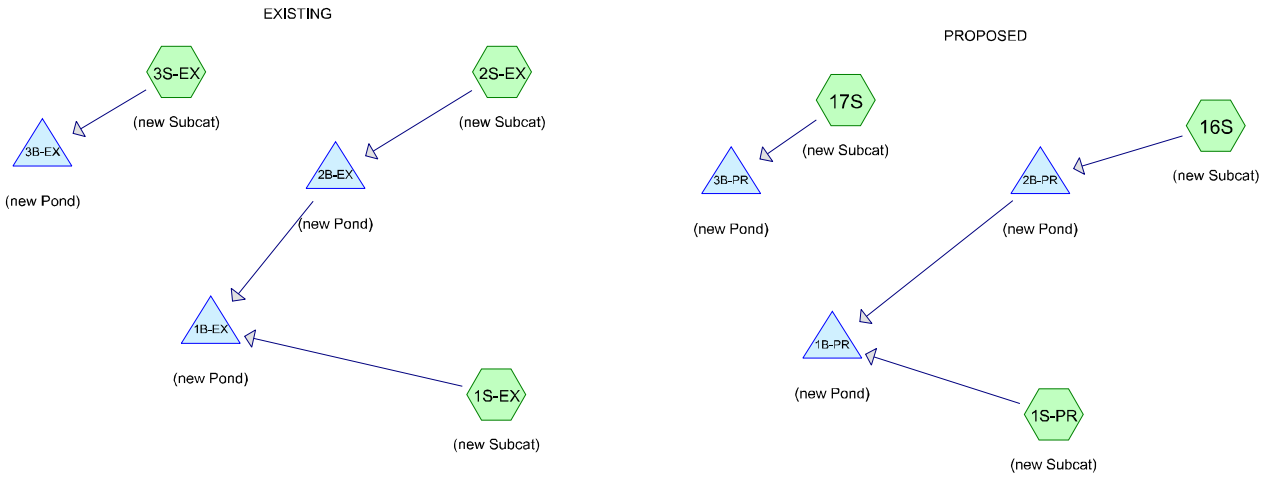
Existing Structures	Length (ft)		Width (ft)		Total (in sq. feet)
House, garage, shed Boathouse Greenhouse Other (Dog Kennel, etc.)	673 (ft)	X	100 (ft)	=	67,346 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
Driveways* & Landscaping:					
Driveway*, Parking Area, Apron, Boat Ramp, Sidewalk, Patio, Paving Stones, Landscaping (incl. plastic), Other	704 (ft)	X	100 (ft)	=	70,376 (sq ft)
	391 (ft)	X	25 (ft)	=	9,775 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
			Total Existing Impervious		147,497 **(sq ft)**
Proposed Structures					
House, garage, shed Boathouse Greenhouse Other (Dog Kennel, etc.)	48 (ft)	X	192 (ft)	=	9,216 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
Driveways* & Landscaping:	**Assumes a 12' wide driveway unless evidence to the contrary*				
Driveway*, Parking Area, Apron, Boat Ramp, Sidewalk, Patio, Paving Stones Landscaping (incl. plastic), Other	87 (ft)	X	100 (ft)	=	8,662 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
	(ft)	X	(ft)	=	0 (sq ft)
			Total Proposed Impervious		17,878 **(sq ft)**
Total Lot Area (sq. ft.) = 248,161			**Total existing Impervious**	=	147,497 **(sq ft)**
			Total w/new Impervious	=	165,375 **(sq ft)**
			% existing impervious	=	59.4 %
			% w/new impervious	=	66.6 %

Simple Calculator for Approximating Size of Stormwater Practice & Amount of Phosphorus Reduction:

Total w/ new impervious:				**Storage volume: Gal / Cu ft (= gal / 7.48)**		**Bottom size (sq ft) of infiltration area by depth** 3"	6"	9"	12"	15"	18"
165,375	x	0.623 / 0.083 Gal / Cu ft	=	103,0[illegible]Gal	13,7[illegible]Cu ft	54,905 cu ft x 4	27,452 cu ft x 2	18,256 cu ft x 1.33	13,726 cu ft x 1	10,981 cu ft x 0.8	9,197 cu ft x 0.67
Total exst imp	=	147,497	x	0.0000366	=	5.40	**Existing phosphorous loading (lbs/yr)**				
Tot w/new imp	=	165,375	x	0.0000366	=	6.05	**Phosphorous reduction w/ stormwater mgmt**				
For rain barrels, use this formula to determine size/amount needed:		Roof area (sq ft)		x	0.5625	=	0	**Gallons generated from a 1" rain event**			

ATTACHMENT 3

HydroCAD Model Output



Subcat Reach Pond Link

Routing Diagram for 2021-12107-HCAD
Prepared by Widseth Smith Nolting, Printed 12/15/2021
HydroCAD® 10.10-7a s/n 06224 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
10.489	39	>75% Grass cover, Good, HSG A (1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S)
3.457	98	Unconnected pavement, HSG A (1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S)
3.326	98	Unconnected roofs, HSG A (1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S)
17.272	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
17.272	HSG A	1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
17.272		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
10.489	0.000	0.000	0.000	0.000	10.489	>75% Grass cover, Good	1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S
3.457	0.000	0.000	0.000	0.000	3.457	Unconnected pavement	1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S
3.326	0.000	0.000	0.000	0.000	3.326	Unconnected roofs	1S-EX, 1S-PR, 2S-EX, 3S-EX, 16S, 17S
17.272	**0.000**	**0.000**	**0.000**	**0.000**	**17.272**	**TOTAL AREA**	

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S-EX: (new Subcat) Runoff Area=4.877 ac 32.36% Impervious Runoff Depth=1.88"
Flow Length=700' Slope=0.0130 '/' Tc=18.2 min CN=58 Runoff=10.13 cfs 0.765 af

Subcatchment1S-PR: (new Subcat) Runoff Area=4.877 ac 40.78% Impervious Runoff Depth=2.32"
Flow Length=700' Slope=0.0130 '/' Tc=18.2 min CN=63 Runoff=12.89 cfs 0.942 af

Subcatchment2S-EX: (new Subcat) Runoff Area=2.794 ac 45.24% Impervious Runoff Depth=2.59"
Flow Length=600' Slope=0.0100 '/' Tc=19.4 min CN=66 Runoff=8.10 cfs 0.603 af

Subcatchment3S-EX: (new Subcat) Runoff Area=0.965 ac 35.65% Impervious Runoff Depth=2.05"
Tc=0.0 min CN=60 Runoff=4.12 cfs 0.165 af

Subcatchment16S: (new Subcat) Runoff Area=2.794 ac 45.24% Impervious Runoff Depth=2.59"
Flow Length=600' Slope=0.0100 '/' Tc=19.4 min CN=66 Runoff=8.10 cfs 0.603 af

Subcatchment17S: (new Subcat) Runoff Area=0.965 ac 35.65% Impervious Runoff Depth=2.05"
Tc=0.0 min CN=60 Runoff=4.12 cfs 0.165 af

Pond 1B-EX: (new Pond) Peak Elev=1,232.93' Storage=0.660 af Inflow=12.79 cfs 1.021 af
Outflow=0.86 cfs 1.021 af

Pond 1B-PR: (new Pond) Peak Elev=1,233.18' Storage=0.778 af Inflow=14.68 cfs 1.198 af
Outflow=1.05 cfs 1.198 af

Pond 2B-EX: (new Pond) Peak Elev=1,234.22' Storage=0.198 af Inflow=8.10 cfs 0.603 af
Discarded=0.29 cfs 0.347 af Primary=5.58 cfs 0.256 af Outflow=5.87 cfs 0.603 af

Pond 2B-PR: (new Pond) Peak Elev=1,234.22' Storage=0.198 af Inflow=8.10 cfs 0.603 af
Discarded=0.29 cfs 0.347 af Primary=5.58 cfs 0.256 af Outflow=5.87 cfs 0.603 af

Pond 3B-EX: (new Pond) Peak Elev=1,232.95' Storage=0.098 af Inflow=4.12 cfs 0.165 af
Outflow=0.15 cfs 0.165 af

Pond 3B-PR: (new Pond) Peak Elev=1,232.95' Storage=0.098 af Inflow=4.12 cfs 0.165 af
Outflow=0.15 cfs 0.165 af

Total Runoff Area = 17.272 ac Runoff Volume = 3.243 af Average Runoff Depth = 2.25"
60.73% Pervious = 10.489 ac 39.27% Impervious = 6.783 ac

Summary for Subcatchment 1S-EX: (new Subcat)

Runoff = 10.13 cfs @ 12.30 hrs, Volume= 0.765 af, Depth= 1.88"
Routed to Pond 1B-EX : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
3.299	39	>75% Grass cover, Good, HSG A
0.830	98	Unconnected roofs, HSG A
0.748	98	Unconnected pavement, HSG A
4.877	58	Weighted Average
3.299		67.64% Pervious Area
1.578		32.36% Impervious Area
1.578		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
5.8	600	0.0130	1.71		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.2	700	Total			

Summary for Subcatchment 1S-PR: (new Subcat)

Runoff = 12.89 cfs @ 12.29 hrs, Volume= 0.942 af, Depth= 2.32"
Routed to Pond 1B-PR : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
2.888	39	>75% Grass cover, Good, HSG A
1.042	98	Unconnected roofs, HSG A
0.947	98	Unconnected pavement, HSG A
4.877	63	Weighted Average
2.888		59.22% Pervious Area
1.989		40.78% Impervious Area
1.989		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
5.8	600	0.0130	1.71		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.2	700	Total			

Summary for Subcatchment 2S-EX: (new Subcat)

Runoff = 8.10 cfs @ 12.30 hrs, Volume= 0.603 af, Depth= 2.59"
Routed to Pond 2B-EX : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
0.612	98	Unconnected roofs, HSG A
0.652	98	Unconnected pavement, HSG A
1.530	39	>75% Grass cover, Good, HSG A
2.794	66	Weighted Average
1.530		54.76% Pervious Area
1.264		45.24% Impervious Area
1.264		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
5.6	500	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
19.4	600	Total			

Summary for Subcatchment 3S-EX: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.12 cfs @ 12.05 hrs, Volume= 0.165 af, Depth= 2.05"
Routed to Pond 3B-EX : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
0.229	98	Unconnected pavement, HSG A
0.115	98	Unconnected roofs, HSG A
0.621	39	>75% Grass cover, Good, HSG A
0.965	60	Weighted Average
0.621		64.35% Pervious Area
0.344		35.65% Impervious Area
0.344		100.00% Unconnected

Summary for Subcatchment 16S: (new Subcat)

Runoff = 8.10 cfs @ 12.30 hrs, Volume= 0.603 af, Depth= 2.59"
Routed to Pond 2B-PR : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
0.612	98	Unconnected roofs, HSG A
0.652	98	Unconnected pavement, HSG A
1.530	39	>75% Grass cover, Good, HSG A
2.794	66	Weighted Average
1.530		54.76% Pervious Area
1.264		45.24% Impervious Area
1.264		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
5.6	500	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
19.4	600	Total			

Summary for Subcatchment 17S: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.12 cfs @ 12.05 hrs, Volume= 0.165 af, Depth= 2.05"
Routed to Pond 3B-PR : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.20"

Area (ac)	CN	Description
0.229	98	Unconnected pavement, HSG A
0.115	98	Unconnected roofs, HSG A
0.621	39	>75% Grass cover, Good, HSG A
0.965	60	Weighted Average
0.621		64.35% Pervious Area
0.344		35.65% Impervious Area
0.344		100.00% Unconnected

Summary for Pond 1B-EX: (new Pond)

Inflow Area = 7.671 ac, 37.05% Impervious, Inflow Depth = 1.60" for 100-yr event
Inflow = 12.79 cfs @ 12.43 hrs, Volume= 1.021 af
Outflow = 0.86 cfs @ 14.28 hrs, Volume= 1.021 af, Atten= 93%, Lag= 111.2 min
Discarded = 0.86 cfs @ 14.28 hrs, Volume= 1.021 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,232.93' @ 14.28 hrs Surf.Area= 0.448 ac Storage= 0.660 af

Plug-Flow detention time= 442.8 min calculated for 1.020 af (100% of inflow)
Center-of-Mass det. time= 443.2 min (1,269.8 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,229.00'	0.943 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,229.00	0.053	0.000	0.000
1,230.00	0.099	0.076	0.076
1,231.00	0.030	0.064	0.140
1,232.00	0.306	0.168	0.308
1,233.00	0.458	0.382	0.690
1,233.50	0.551	0.252	0.943

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,229.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,190.00' Phase-In= 0.01'

Discarded OutFlow Max=0.86 cfs @ 14.28 hrs HW=1,232.93' (Free Discharge)
↑**1=Exfiltration** (Controls 0.86 cfs)

Summary for Pond 1B-PR: (new Pond)

Inflow Area = 7.671 ac, 42.41% Impervious, Inflow Depth = 1.87" for 100-yr event
Inflow = 14.68 cfs @ 12.42 hrs, Volume= 1.198 af
Outflow = 1.05 cfs @ 14.07 hrs, Volume= 1.198 af, Atten= 93%, Lag= 98.8 min
Discarded = 1.05 cfs @ 14.07 hrs, Volume= 1.198 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,233.18' @ 14.07 hrs Surf.Area= 0.492 ac Storage= 0.778 af

Plug-Flow detention time= 429.5 min calculated for 1.197 af (100% of inflow)
Center-of-Mass det. time= 429.9 min (1,251.4 - 821.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,229.00'	0.943 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,229.00	0.053	0.000	0.000
1,230.00	0.099	0.076	0.076
1,231.00	0.030	0.064	0.140
1,232.00	0.306	0.168	0.308
1,233.00	0.458	0.382	0.690
1,233.50	0.551	0.252	0.943

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,229.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,220.00' Phase-In= 0.01'

Discarded OutFlow Max=1.05 cfs @ 14.07 hrs HW=1,233.18' (Free Discharge)
↑**1=Exfiltration** (Controls 1.05 cfs)

Summary for Pond 2B-EX: (new Pond)

Inflow Area = 2.794 ac, 45.24% Impervious, Inflow Depth = 2.59" for 100-yr event
Inflow = 8.10 cfs @ 12.30 hrs, Volume= 0.603 af
Outflow = 5.87 cfs @ 12.47 hrs, Volume= 0.603 af, Atten= 28%, Lag= 10.0 min
Discarded = 0.29 cfs @ 12.47 hrs, Volume= 0.347 af
Primary = 5.58 cfs @ 12.47 hrs, Volume= 0.256 af
Routed to Pond 1B-EX : (new Pond)

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,234.22' @ 12.47 hrs Surf.Area= 0.162 ac Storage= 0.198 af

Plug-Flow detention time= 236.7 min calculated for 0.603 af (100% of inflow)
Center-of-Mass det. time= 236.6 min (1,065.6 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,231.00'	0.246 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,231.00	0.001	0.000	0.000
1,232.00	0.031	0.016	0.016
1,233.00	0.058	0.044	0.061
1,234.00	0.150	0.104	0.164
1,234.50	0.177	0.082	0.246

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,231.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,220.00' Phase-In= 0.01'
#2	Primary	1,234.00'	**20.0' long + 20.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.29 cfs @ 12.47 hrs HW=1,234.21' (Free Discharge)
1=Exfiltration (Controls 0.29 cfs)

Primary OutFlow Max=5.38 cfs @ 12.47 hrs HW=1,234.21' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 5.38 cfs @ 1.05 fps)

Summary for Pond 2B-PR: (new Pond)

Inflow Area = 2.794 ac, 45.24% Impervious, Inflow Depth = 2.59" for 100-yr event
Inflow = 8.10 cfs @ 12.30 hrs, Volume= 0.603 af
Outflow = 5.87 cfs @ 12.47 hrs, Volume= 0.603 af, Atten= 28%, Lag= 10.0 min
Discarded = 0.29 cfs @ 12.47 hrs, Volume= 0.347 af
Primary = 5.58 cfs @ 12.47 hrs, Volume= 0.256 af
Routed to Pond 1B-PR : (new Pond)

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,234.22' @ 12.47 hrs Surf.Area= 0.162 ac Storage= 0.198 af

Plug-Flow detention time= 236.7 min calculated for 0.603 af (100% of inflow)
Center-of-Mass det. time= 236.6 min (1,065.6 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,231.00'	0.246 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,231.00	0.001	0.000	0.000
1,232.00	0.031	0.016	0.016
1,233.00	0.058	0.044	0.061
1,234.00	0.150	0.104	0.164
1,234.50	0.177	0.082	0.246

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,231.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,220.00' Phase-In= 0.01'
#2	Primary	1,234.00'	**20.0' long + 20.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.29 cfs @ 12.47 hrs HW=1,234.21' (Free Discharge)
1=Exfiltration (Controls 0.29 cfs)

Primary OutFlow Max=5.38 cfs @ 12.47 hrs HW=1,234.21' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 5.38 cfs @ 1.05 fps)

Summary for Pond 3B-EX: (new Pond)

Inflow Area = 0.965 ac, 35.65% Impervious, Inflow Depth = 2.05" for 100-yr event
Inflow = 4.12 cfs @ 12.05 hrs, Volume= 0.165 af
Outflow = 0.15 cfs @ 13.55 hrs, Volume= 0.165 af, Atten= 96%, Lag= 89.6 min
Discarded = 0.15 cfs @ 13.55 hrs, Volume= 0.165 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,232.95' @ 13.55 hrs Surf.Area= 0.085 ac Storage= 0.098 af

Plug-Flow detention time= 399.4 min calculated for 0.165 af (100% of inflow)
Center-of-Mass det. time= 399.8 min (1,221.6 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,230.00'	0.152 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,230.00	0.001	0.000	0.000
1,231.00	0.018	0.010	0.010
1,232.00	0.040	0.029	0.038
1,233.00	0.087	0.063	0.102
1,233.50	0.112	0.050	0.152

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,230.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,220.00' Phase-In= 0.01'

Discarded OutFlow Max=0.15 cfs @ 13.55 hrs HW=1,232.95' (Free Discharge)
↑**1=Exfiltration** (Controls 0.15 cfs)

Summary for Pond 3B-PR: (new Pond)

Inflow Area = 0.965 ac, 35.65% Impervious, Inflow Depth = 2.05" for 100-yr event
Inflow = 4.12 cfs @ 12.05 hrs, Volume= 0.165 af
Outflow = 0.15 cfs @ 13.55 hrs, Volume= 0.165 af, Atten= 96%, Lag= 89.6 min
Discarded = 0.15 cfs @ 13.55 hrs, Volume= 0.165 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,232.95' @ 13.55 hrs Surf.Area= 0.085 ac Storage= 0.098 af

Plug-Flow detention time= 399.4 min calculated for 0.165 af (100% of inflow)
Center-of-Mass det. time= 399.8 min (1,221.6 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,230.00'	0.152 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,230.00	0.001	0.000	0.000
1,231.00	0.018	0.010	0.010
1,232.00	0.040	0.029	0.038
1,233.00	0.087	0.063	0.102
1,233.50	0.112	0.050	0.152

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,230.00'	**1.600 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1,220.00' Phase-In= 0.01'

Discarded OutFlow Max=0.15 cfs @ 13.55 hrs HW=1,232.95' (Free Discharge)
↑**1=Exfiltration** (Controls 0.15 cfs)

Hwy. 103 Storage Association – Legal Declaration Changes

December 3, 2021

Crosslake City Council:

This letter is to confirm that on November 17, 2021, The Highway 103 Storage Association owners held a vote on adding six units to the association and increasing the number of units from 57 to 63. Owners were informed that this would require a change to the number of units identified in the association declaration documents.

This vote was via email in order to reach all 57 existing unit owners and consistent with past practices. Voting concluded on December 3rd, 2021. The vote passed with 87.7% in favor of changing the declaration to reflect 63 units and moving forward with the addition of the new building and units.

Best Regards,

Highway 103 Storage Association Board

Signed by:

12/9/21

Dennis West
Board President

12/9/21

Chris Suedbeck
Board Secretary

Cheryl

From: BDSkipper <bdskipper@gmail.com>
Sent: Friday, October 8, 2021 3:31 PM
To: Cheryl
Cc: Jon Kolstad
Subject: Re: Hwy. 103 DRT Form
Attachments: New Building & Apron Maintenance Voting Results. - carguybd@gmail.com - Gmail.pdf

Hi Cheryl,

I was able to talk with Chris Suedbeck (Treasurer) who is leading the administrative/communications effort with the board, and he was in-transit somewhere so he asked that I assist you in the interest of a timely response. We did not have a meeting per se, however we conducted a virtual vote so as to hear each association member's voice. Typically we get about 15% participation in the meetings thus virtual is the only viable option to survey our owners. Plus, several people have departed for the season and/or are snowbirds already gone, etc. Attached here is a copy of the notice that went out a few weeks ago. Again, this is to be considered preliminary anyway; we were just surveying the members to determine whether to move forward to subsequent steps. I am now working on getting the appraisal done, etc., and I have confidence that once we share specifics of the financials, ownership will buy-in to a larger degree than is reflected in these vote totals. People evidently completely overlooked that the measure entails buying the land, not just adding a structure without compensation to the Association. As is however, the measure passed anyway.

In terms of Association Board Members, they are:

Dennis West, President
Brian Determan, Vice-President
Chris Suedbeck, Treasurer

Hopefully this answers your questions but if not, please advise, thanks.

Brian Determan

On Sun, Oct 3, 2021 at 9:11 AM BDSkipper <bdskipper@gmail.com> wrote:

> Good Morning Cheryl and Jon,
>
> I was informed this morning that our vote on building the new structure did in fact narrowly pass, and I was instructed to move forward with the variance discussion. I pulled this from consideration because I didn't want you spending undue time on an issue that wasn't moving forward. Is there any way we can get this on the October 12th docket still or are we looking at November?
>
> Please advise, thanks.
>
> Brian Determan
>
> PS my cell number has changed since I submitted the form. It's now- 218-838-3586

On Wed, Sep 22, 2021 at 8:04 AM Cheryl <crosslakepz@crosslake.net> wrote:

Thank you for the update. I will make it as withdrawn. Let us know if anything changes in the future.

Respectfully,

Cheryl Stuckmayer
Planner – Zoning Coordinator
Crosslake Planning and Zoning Department
13888 Daggett Bay Rd
Crosslake, MN 56442

Office: (218) 692-2689
Fax: (218) 692-2687
Email: crosslakepz@crosslake.net
Website: www.cityofcrosslake.org

Excellent customer service is our top priority. Please let me know if I was helpful!

-----Original Message-----
From: Brian Scott <bdskipper@gmail.com>
Sent: Tuesday, September 21, 2021 5:03 PM
To: Cheryl <crosslakepz@crosslake.net>
Subject: Hwy. 103 DRT Form Withdrawal

Hello Cheryl and Jon,

Please withdraw our DRT form from consideration. Upon advice of an attorney, an expansion of our property is subject to an in-person association vote that needs to be nearly unanimous. Given that our typical meetings have 10 (of 57) attendees, we envision that it is a virtual impossibility that we can summon sufficient in-person votes to move forward with our planned project. I apologize for the undue effort that we subjected you to; we had several elements under review simultaneously and the legal element appears to have derailed our plan early in the process.

Regards,

Brian Determan
Vice President
Hwy. 103 Association

Gmail Search mail

New Building & Apron Maintenance Voting Results.

Inbox ×

chris.suedbeck@yahoo.com
to 987snow, Brian, me, Brooke, bwscm, Chad, Craig, cwoodson1956, David, David, David, dean.haskamp, De

Good Morning Owners,

The voting on these two items concluded Thursday. The summary is below:

Apron Maintenance:
For 47
Against 10
Total 57

The maintenance will move forward and be scheduled for mid to late October.

New Building Construction:
For 29
Against 28
Total 57

B

This project will move forward with the approval of the owners and Board. We will keep you in the loo financial estimate prior to moving forward. Thank you all for your feedback and input on this topic.

Attached is a copy of the official voting results. In past votes the Board has received negative comme close, the board decided to err on the side of transparency. I would ask that all owners be respectful

No re
cha
Start
or

Thank you.

chris.suedbeck@yahoo.com

From: MacMillan, Michelle GRE-MG <mmacmillan@GREnergy.com>
Sent: Thursday, December 2, 2021 8:47 AM
To: chris.suedbeck@yahoo.com
Subject: Crosslake Easement

Chris,

Thank you for reaching out to Great River Energy regarding the property located at 13529 County Rd. 103, Crosslake, MN. Great River Energy is the surviving entity of Mergers with United Power Association and now owns and operates the transmission line that crosses this property. Great River Energy does not have any required setbacks outside of the easement that covers the transmission line.

Please let me know if you have any additional questions.

Michelle MacMillan
Land Rights Representative
Great River Energy
12300 Elm Creek Boulevard
Maple Grove, MN 55369-4718

Direct: 763-445-5984
Main: 763-445-5000
Fax: 763-445-6784
Cell: 612-845-1204
mmacmillan@GREnergy.com

GREAT RIVER ENERGY.

Please consider the environment before you print this e-mail.

From: Phil Martin
To: Cheryl; Ted Strand
Subject: RE: PC/BOA 1-28-2022
Date: Monday, January 3, 2022 11:30:18 AM

Hi Cheryl

My comments:

Brewster – The stormwater plan needs more grading and computation detail to show the plan is feasible. I'd request stormwater area grading/contour detail that shows adequate stormwater volume will be provided.

Note that the normal reservoir pool elevation is 1229.57. That means no stormwater area can have a bottom elevation lower than 1232.57 to provide 3' separation to assumed groundwater elevation for storage/infiltration area. If applicant has soil boring that shows groundwater elevation is lower than normal pool, we would consider that for setting storage area bottom limits.

Based on contour information provided, Stormwater areas 1, 2, and 3 locations seem to be unacceptable to provide 3' separation required for an infiltration area.

Stormwater areas 5 and 6 are adjacent to proposed pressure bed. Pressure bed system designer notes direct that roof water and driveway water should be diverted away from the pressure bed. We recommend they remove those areas and divert water away to stormwater storage area 4 and the north side of driveway.

The new pressure bed will occupy the only drainfield space and no secondary site has been identified according to the designer's notes.

Hwy 103 – Stormwater computations appear to have been prepared by Widseth. We'd recommend a signed certification page be provided by the Widseth staff person doing the work for confirmation of their involvement.

Thanks

Phil Martin
218-821-7265

From: Cheryl <cstuckmayer@crosslake.net>
Sent: Wednesday, December 29, 2021 11:54 AM
To: Dani McNeil <danielle.mcneil@state.mn.us>; Ted Strand <publicwk@crosslake.net>; Mark Melby <mark.melby@crowwing.us>; Phil Martin <Phillip.Martin@bolton-menk.com>; Brad Person <brad@breenandperson.com>
Subject: PC/BOA 1-28-2022

Variance Application
Planning and Zoning Department
13888 Daggett Bay Road, Crosslake, MN 56442
218.692.2689 (Phone) 218.692.2687 (Fax) www.cityofcrosslake.org

Jan 28th 2022 meeting

Receipt Number: 969812 Permit Number: 210280V

Property Owner(s): HIGHWAY 103 STORAGE ASSN
Mailing Address: 672 WILLOW GROVE LN VADNAIS HTS, MN 55127
Site Address: 13529 CO RD 103 CROSSLAKE MN 56442
Phone Number: 651-208-1222
E-Mail Address: CHRIS.SUMBECK@YAHOO.COM
Parcel Number(s): ~~[illegible]~~ 14320509
Legal Description: Lot 16, Blk 1, Hwy 103 Storage 1st Addn
Sec 32 Twp 137 Rge 26 ☐ 27 ☑ 28 ☐
Lake/River Name: N/A
Do you own land adjacent to this parcel(s)? ■ Yes X No
If yes list Parcel Number(s)
Authorized Agent: CHRIS SUMBECK BRIAN DETERMAN
Agent Address: 672 WILLOW GROVE LN VADNAIS HTS, MN 55127
Agent Phone Number: 651-208-1222

Variances
(Check applicable requests)

- ☐ Lake/River Setback
- ☐ Road Right-of-Way Setback
- ☐ Bluff Setback
- ☐ Side Yard Setback
- ☐ Wetland Setback
- ☐ Septic Tank Setback
- ☐ Septic Drainfield Setback
- ☑ Impervious Coverage
- ☐ Accessory Structure
- ☐ Building Height
- ☐ Patio Size
- ☑ Lot size
- ☐ _____

Signature of Property Owner(s) _____ Date 12/9/21
Signature of Authorized Agent(s) _____ Date 12/9/21

- All applications must be accompanied by a signed Certificate of Survey
- Fee $500 for Residential and Commercial Payable to "City of Crosslake" (Copies) $500 + $6.00 + $7.50 = $513.50
- No decisions were made on an applicant's request at the DRT meeting. Submittal of an application after DRT does not constitute approval. Approval or denial of applications is determined by the Planning Commission/Board of Adjustment at a public meeting as per Minnesota Statute 462 and the City of Crosslake Land Use Ordinance.

For Office Use:
Application accepted by CS Date 12-9-2021 Land Use District LC
Lake Class N/A Septic: Compliance N/A SSTS Design N/A Installation N/A

AUTHORIZED AGENT FORM

CHRIS SUESBECK

I hereby authorize (print) BRIAN DETTLMAN (FOX PATH VENTURES) to act as my authorized agent in dealing with Crosslake to obtain the following:

_____ Land Use Permit _____ Shoreland Alteration Permit

_____ Septic Permit X Subdivision Approval

_____ Public Hearing X Other IMPERVIOUS COVERAGE VARIANCE

For the following property:

Site Address 13529 CO. RD. 103
CROSSLAKE, MN 55127

Section # 32 Township #137 Range # [X] 27 [ ] 28

Parcel Number(s) 14320509

Recorded Document Number –Contract for Deed (If applicable) N/A

[signature] / DENNIS WEST / _____
Property Owner Signature / Printed Name ASSOCIATION PRESIDENT Date

612-501-5652
Property Owner Phone Number

651-208-1222
Authorized Agent Phone Number

672 WILLOW GROVE LN
VADNAIS HTS, MN 55127
Authorized Agent's Mailing Address

Practical Difficulty Statement

Pursuant to City of Crosslake Ordinance Article 8 – Variances may be granted when it is found that strict enforcement of the Land Use Ordinance will result in a "practical difficulty".

Please answer the following questions regarding the "practical difficulty" for your variance request.

1. Is the Variance request in harmony with the purposed and intent of the Ordinance?
   Yes ☐ No ☐
   Why:
   Defer to the Planning Commission/Board of Adjustment

2. Is the Variance consistent with the Comprehensive Plan?
   Yes ☐ No ☐
   Why:
   Defer to the Planning Commission/Board of Adjustment

3. Is the property owner proposing to use the property in a reasonable manner not permitted by the Land Use Ordinance?
   Yes ☒ No ☐
   Why: THE OWNERS WISH TO DEVELOP A VACANT LOT TO MEET THE GROWING NEEDS OF EXISTING OWNERS FOR ADDITIONAL STORAGE A VARIANCE WILL BE NEEDED FOR IMPERVIOUS COVERAGE TO COMPLETE THIS PROJECT

4. Will the issuance of a Variance maintain the essential character of the locality?
   Yes ☒ No ☐
   Why: NEW BUILDING WILL BE SAME MATERIALS AND APPEARANCE AS EXISTING STRUCTURES

5. Is the need for a Variance due to circumstances unique to the property and not created by the property owner?
   Yes ☒ No ☐
   Why: WHILE THE PROPERTY HAS EXTENSIVE DRAINAGE PONDS THE LARGE AREA NEEDED FOR TRAILER MANEUVERING WOULD INCREASE THE IMPERVIOUS TOTAL ABOVE CURRENT ORDINANCE

6. Does the need for a Variance involve more than economic considerations?
   Yes ☒ No ☐
   Why: CURRENT OWNERS HAVE EXPRESSED A NEED FOR ADDITIONAL UNITS AND HEATED UNIT WHICH THIS PROJECT WOULD ADDRESS.

City of Crosslake Planning Commission/Board of Adjustment

FINDINGS OF FACT

SUPPORTING / DENYING A VARIANCE REQUEST

A Variance may be granted by the Planning Commission/Board of Adjustment when it is found that strict enforcement of the Land Use Ordinance will result in a "practical difficulty" according to Minnesota Statute Chapter 462. The Planning Commission/Board of Adjustment should weigh each of the following questions to determine if the applicant has established that there are "practical difficulties" in complying with regulations and standards set forth in the Land Use Ordinance.

1. Is the Variance request in harmony with the purposes and intent of the Ordinance?
   Yes No
   Why:

2. Is the Variance consistent with the Comprehensive Plan?
   Yes No
   Why:

3. Is the property owner proposing to use the property in a reasonable manner not permitted by the Land Use Ordinance?
   Yes No
   Why:

4. Will the issuance of a Variance maintain the essential character of the locality?
Yes No
Why:

5. Is the need for a Variance due to circumstances unique to the property and not created by the property owner?
Yes No
Why?

6. Does the need for a Variance involve more than economic considerations?
Yes No
Why: