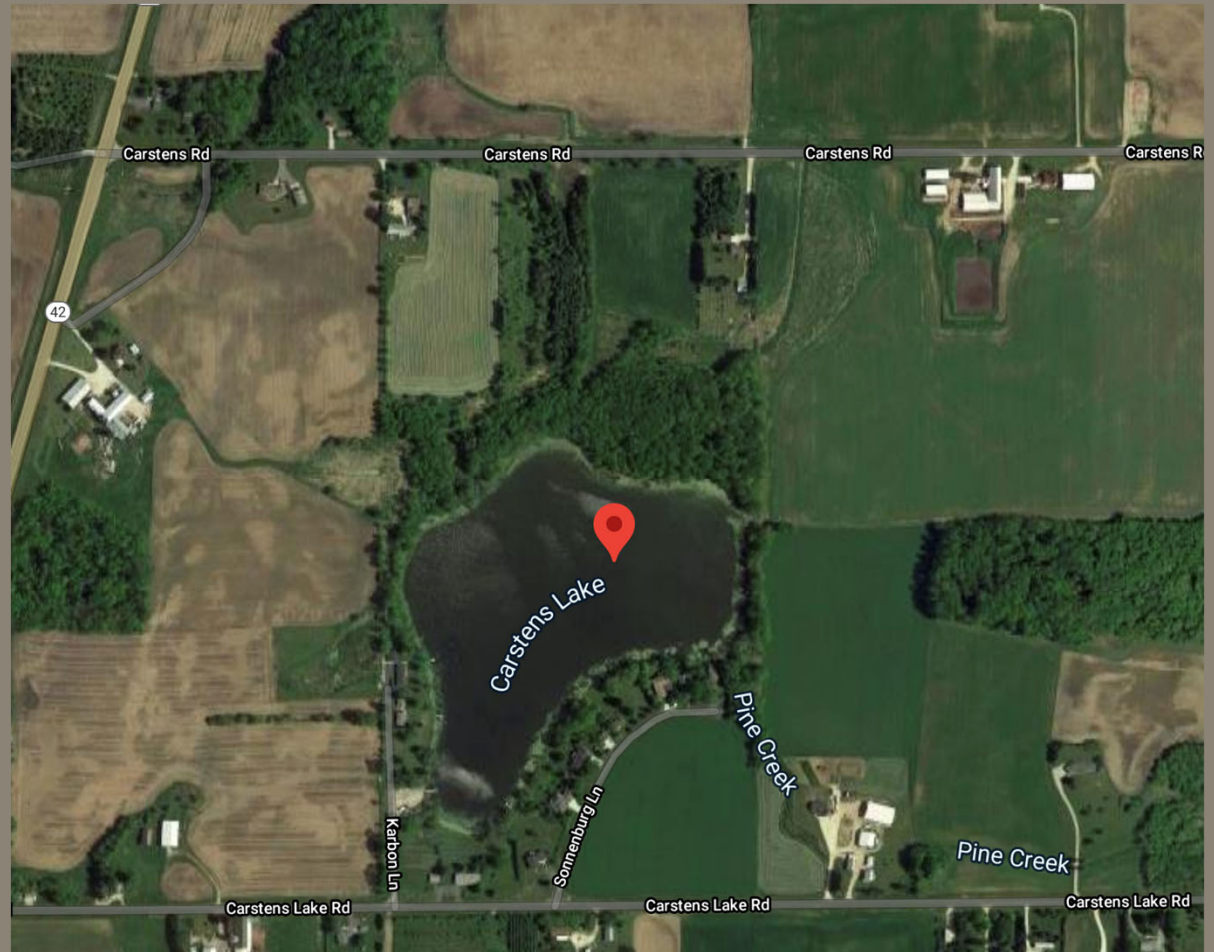


Manitowoc County Lakes Association Meeting

February 27,
2025



Carstens Lake Project Updates

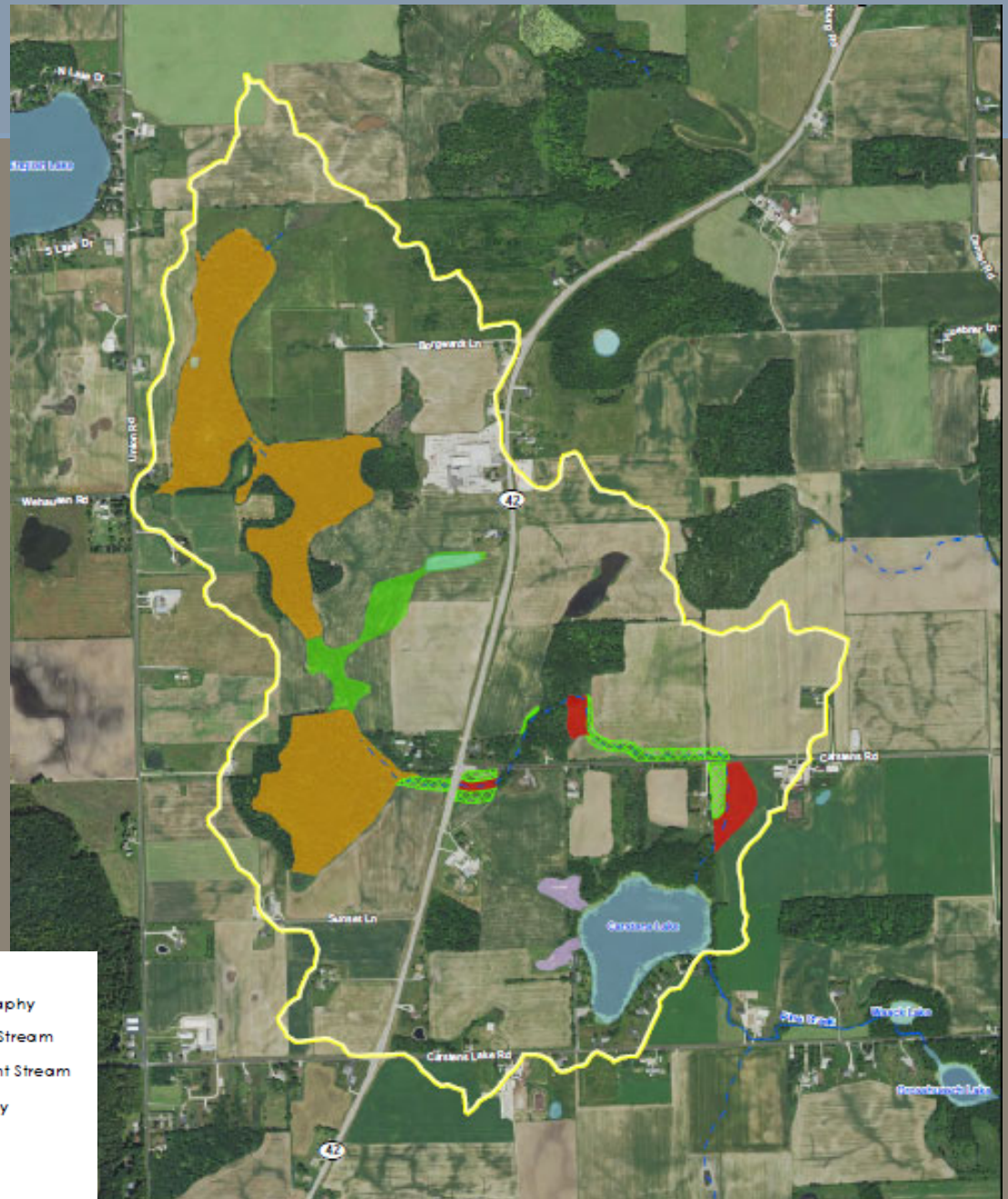
Amy Lentz, LNRP
Sarah Majerus, Stantec

Background

- Carstens Lake
 - 21-acre seepage lake
 - 767-acre watershed
- MCLA approached LNRP with project idea
- LNRP applies for DNR Lake Management Planning Grant in 2016
- 2017 Lake Management Plan recommends off-line water quality treatment
- LNRP applies for DNR Lake Management Implementation Grant in 2018

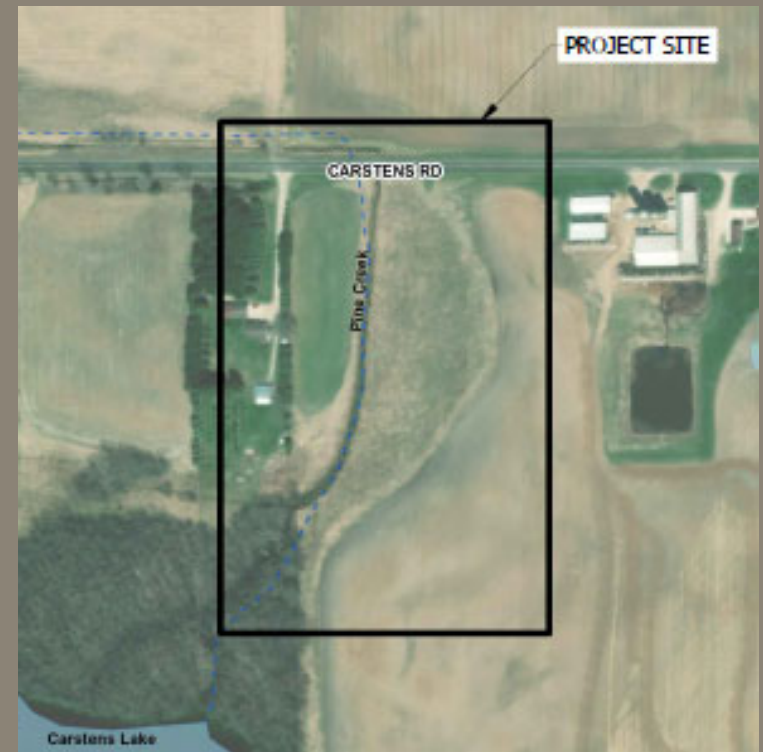
Legend

- | | |
|--|---|
|  Carstens Lake Watershed (767.04 acres) |  DNR 24k Hydrography |
|  100ft Riparian Buffer |  Perennial Stream |
|  Off-line Sedimentation Basin |  Intermittent Stream |
|  Spawning Enhancement |  Waterbody |
|  Wetland Preservation Measures | |
|  Wetland Restoration Measures | |



Project Goals

- TSS and Phosphorus Removal
- Diversion vs. Harvesting
- UWSP Sorption Technology
- Wetland Habitat Restoration
- Partnerships
 - Hill Line Dairy
 - Professor Kyle Herrman, UWSP
 - Lakeshore Natural Resource Partnership
 - WDNR
 - Fund for Lake Michigan
 - Manitowoc County
 - MCLA
 - Carstens Lake Association
 - Stantec



Wetland Scrape Design

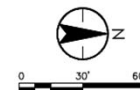


LEGEND	
+	BENCHMARK
⚡	UTILITY POLE
⌵	GUY WIRE
⌚	TELEPHONE PEDESTAL
---	SECTION LINE
- - - -	RIGHT-OF-WAY
---	ROAD CENTERLINE
---	EXISTING MAJOR CONTOUR
---	EXISTING MINOR CONTOUR
--- (O) ---	OVERHEAD WIRES
---	MARKED TELEPHONE
---	CREEK CENTERLINE
---	DELINEATED CREEK
---	DELINEATED WETLAND
→	EXISTING FLOW ARROW
---	PROPOSED MAJOR CONTOUR
---	PROPOSED MINOR CONTOUR
---	WETLAND SCRAPES

EMERGENT ZONE PLANTINGS

WET MEADOW SEED MIX

NOTE:
1. ALL SEEDING AND VEGETATION RESTORATION TO BE PERFORMED BY OWNER. THIS SHEET PROVIDED FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO RESPREAD TOPSOIL, AND OWNER WILL EXECUTE ALL TEMPORARY AND PERMANENT SEEDING AND PLANTING



Wetland Scrapes 2024



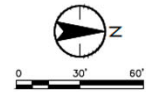
Sedimentation Basin Design

THE CONSULTANT SHALL VERIFY THAT ALL DESIGN INFORMATION IS ACCURATE AND THAT ALL INFORMATION IS BASED ON THE DATA PROVIDED. THE CONSULTANT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. THE CONSULTANT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT.

Plot Date: 04/18/2024 - 4:00pm
Drawing Name: 19370101.DWG
Drawing Path: C:\Users\jdoyle\OneDrive\Documents\19370101.DWG
Drawing Scale: 1"=30'



LEGEND	
+	BENCHMARK
UT	UTILITY POLE
GW	GUY WIRE
TP	TELEPHONE PEDESTAL
---	SECTION LINE
---	RIGHT-OF-WAY
---	ROAD CENTERLINE
---	EXISTING MAJOR CONTOUR
---	EXISTING MINOR CONTOUR
---	OVERHEAD WIRES
---	MARKED TELEPHONE
---	CREEK CENTERLINE
---	DELINEATED CREEK
---	DELINEATED WETLAND
---	EXISTING FLOW ARROW
---	PROPOSED MAJOR CONTOUR
---	PROPOSED MINOR CONTOUR
---	STOCKPILE
---	LIMITS OF GRADING
---	STORMWATER PIPE
---	STORMWATER FLARED END SECTION
---	EMERGENT ZONE PLANTINGS
---	WET MEADOW SEED MIX
---	NO-MOW FESCUE
---	UPLAND PRAIRIE MIX
---	ACCESS DRIVE



PERMIT SET - NOT FOR CONSTRUCTION

RESTORATION PLAN
CARSTENS ROAD WATER QUALITY MANAGEMENT AREA
LAKESHORE NATURAL RESOURCE PARTNERSHIP
MANITOWOC COUNTY, WISCONSIN

DATE OF ISSUANCE	April 18, 2024
NO. REVISION	DATE
SURVEY	CHART
DRAWN	JMD
DESIGNED	JMD
CHECKED	AV
APPROVED	AV
PROJ. NO.	19370101
SHEET NUMBER	L1.00

Sedimentation Basin Construction



Sedimentation Basin Construction



Sedimentation Basin



Project Schedule

- 2022-2025 Mesocosm (Lab) Experiments, UWSP
- 2023-2024 Wetland Scrape Construction, Revegetation/Restoration
- 2024 Sedimentation Basin Construction
- 2025 Revegetation/Restoration, UWSP Field Monitoring & Pilot Study Begins
- 2026 UWSP Pilot Study Year 2
- 2026 - ? Operations and Maintenance
 - ☐ Media replacement
 - ☐ Invasive species control
 - ☐ Years 3+ monitoring



We are optimistic that using Posidon Pellets will be a low-cost tool that will provide additional phosphorus removal for Carstens Lake and has the potential to help other lakes in Manitowoc County.

Partners



Hill Line Dairy

Manitowoc County Soil and Water

Carstens Lake Association



NRCS



University of Wisconsin
Stevens Point



Questions?

Amy Lentz, Director of Projects, LNRP

amy@lnrp.org

630-335-5545

Sarah Majerus, Stantec

sarah.majerus@stantec.com

920-627-3183