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Attachment 1

Saxon Schematic Design Report

SAXON HARBOR MARINA AND CAMPGROUND

SCHEMATIC DESIGN REPORT

JANUARY 2018

DRAFT

SMITHGROUP JJR Foth UPEA ENGINEERS & ARCHITECTS

Acknowledgements

This Schematic Design Report represents the efforts from many different entities, decision makers, designers, and stakeholders who generously invested time and effort toward reconstructing the Saxon Harbor Marina and Campground. A very special thank you is owed to the following individuals and agencies for their leadership and technical knowledge throughout the process.

Iron County Forestry and Parks
Iron County Land and Water Conservation Department
Federal Emergency Management Agency (FEMA)
Wisconsin Emergency Management (WEM)
Wisconsin Department of Natural Resources (WDNR)
Wisconsin Department of Transportation (WisDOT)
Ayres Associates (WisDOT consultant team lead)
U.S. Army Corps of Engineers (USACE)

Cover photography courtesy of DuWayne Kosma.

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Project Introduction

Background

During a severe storm event on July 11-12, 2016, nearly 10 inches of rain in a 12 hour time period caused catastrophic flooding of Oronto Creek, washing out County Trunk Highway A where it enters Saxon Harbor Park. The diverted water flowed through the Saxon Harbor Campground and Marina, severely damaging the recreational facilities. With funding assistance from the Federal Emergency Management Agency (FEMA) and Wisconsin Emergency Management (WEM), reconstruction of the roadway, harbor and campground requires complex coordination and permitting between several agencies and partners. This document presents the Schematic Design for the replacement marina and campground facilities, being led by Iron County Forestry. Other ongoing efforts include the reconstruction of CTH A by the Wisconsin Department of Transportation (WisDOT) and dredging of the federal navigational channel by the U.S. Army Corps of Engineers (USACE).

In April 2017, Iron County hired the team of Foth Infrastructure and Environment, SmithGroupJJR, and U.P. Engineers & Architects to facilitate the redesign process for Saxon Harbor Park. Based on a comprehensive site assessment, the team explored multiple concepts for the relocation of the campground facility, and replacement and renovation of the marina facilities. Meetings with project stakeholders and the public were held in May, October, and November 2017 to solicit feedback and gain consensus on the design. Regulatory agencies were also engaged in preliminary discussions to confirm the permitting process and help guide design decisions. The resulting Schematic Design includes:

- Replacement of the former campground in a new location south of Oronto Creek along CTH A.
- Rebuilding the marina in a similar configuration as preceded the storm event, with relocation of the northwest boat launch to a calmer wave environment.
- Restoring Oronto Creek to its former location, but also providing the low flow channel with an appropriate floodplain to reduce risks from future storm events.

Construction of the marina and campground facilities is being expedited to restore tourism dollars and stability to the local economy, as well as to aid safe navigation on Lake Superior. Initial cleanup of large debris was completed in fall 2016 by Forestry personnel, the National Guard, and Snow County Contracting. Dredging of the federal portions of the harbor by USACE began in fall 2017 and will be complete in early spring 2018. Realignment of CTH A and the replacement of the bridge over Oronto Creek by WisDOT is scheduled to be constructed from May to September 2018. Phase I of the park reconstruction includes debris removal from Oronto and Parker Creek downstream from the WisDOT project limits and restoration of the channel banks. This work is scheduled to be complete by June 29, 2018. The second phase of park restoration including the harbor and campground facilities is anticipated to run concurrently with the WisDOT project, with final construction of overlapping project areas to be completed immediately after CTH A is finished.

Although this report presents the final Schematic Design, it should be noted that the plan will continue to be refined throughout the design development and permitting phases in order to respond to regulatory input, budgetary considerations, new ideas and site discoveries. However, it is anticipated that the core program and design elements will remain similar as project details.

Post-flood aerial view of Saxon Harbor Park looking east.

Water breeched the stream banks and washed out CTH A at the bridge over Oronto Creek, as well as the campground and marina.

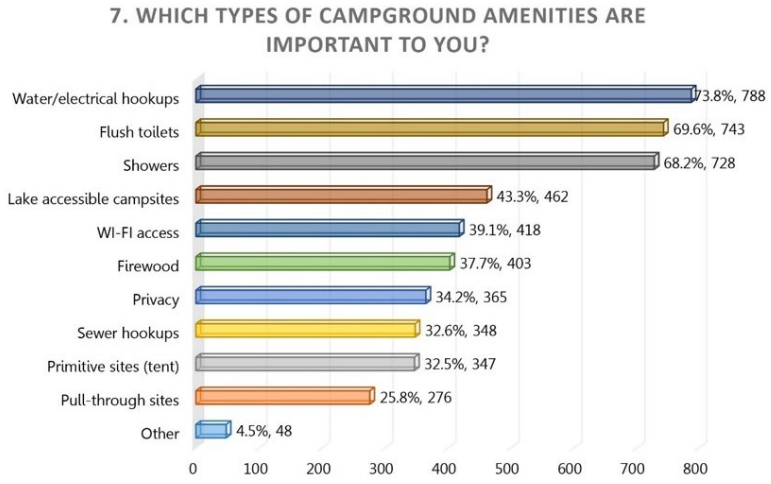
Initial Public Feedback and Guiding Principles

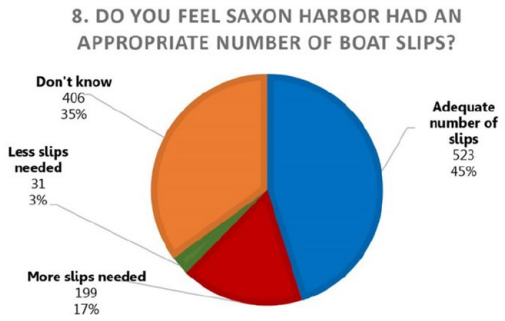
In September 2016, the Northwest Regional Planning Commission conducted an online survey to help inform the planning and redevelopment of Saxon Harbor Park. The survey collected 1,173 responses on question topics ranging from recreational activities to spending habits, and campground amenities to boat slips. Based on the survey results and answers to open-ended questions, respondents generally agreed on the following:

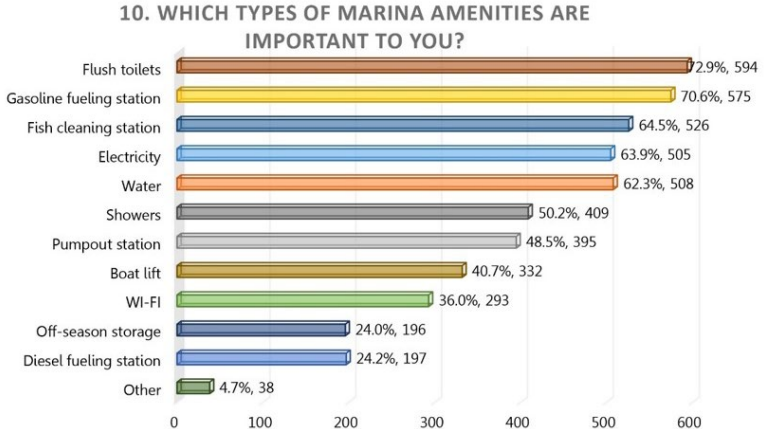
- There is a strong appreciation for Saxon Harbor and support for its reconstruction.
- Mixed views on adding commercial enterprises.
- Concern on the existing availability of wireless phone service.
- Desire for walk-in camping opportunities.
- For some, behavior issues created a negative perception of the former campground.
- Desire to improve campground privacy and the campground location.
- Need to improve beach access and paddle sports / small craft access.

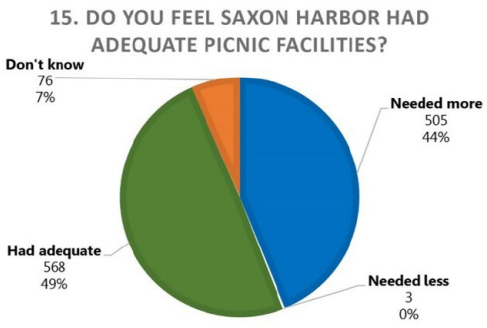
Early in the design process, SmithGroupJJR led a visioning session with project stakeholders to discuss specific needs and desires for the reconstructed facilities. Meetings were held on May 4, 2017, with five stakeholder groups including boaters, non-motorized craft users, business owners, camping enthusiasts, and Town of Saxon staff. General comments heard from attendees included:

- Locate the new campground facility as close to the marina as possible.
- Reconfigure the creek to reduce the likelihood of damage from future storm events.
- Provide better accommodations for paddle craft / kayaks, which limits conflict with motorized traffic.
- If necessary to increase slip sizes for larger boats, the total number of slips can be slightly reduced.
- Keep RV campsites together for security and staffing, rather than splitting between two smaller sites.
- Provide a playground at the campground. The lakefront / marina would also benefit from a separate play facility.
- Maintain a clear area for EMS helicopter landing.
- The majority of participants felt that tent camping on the north peninsula limited use of the lakefront area by the broader public.









Survey responses collected in September 2016 informed the planning process for park reconstruction.

Based on the public comments and discussion, guiding principles were established to shape the vision for reconstruction and inform the decision making process through the life of the project. The principles were organized according to the four core facets of sustainability, in the areas of Ecology, Economics, Society and Human Spirit:

Ecology: *Sustaining the ability of the landscape to perform ecological functions such as building soil, recharging and cleaning water, cycling nutrients, and enabling biological systems to remain diverse and productive.*

- Restore Oronto Creek to its former location, reconnecting the low flow channel with an appropriate floodplain.
- Enhance habitat within the stream channel and other areas as possible, specifically including native species to benefit pollinators.
- Avoid wetland impacts to the extent practicable while maintaining close proximity of the recreational facilities to each other, minimizing disturbance area of the development footprint.

Economics: *Encouraging reinvestment in the community and providing cost effective solutions that preserve or wisely use scarce resources.*

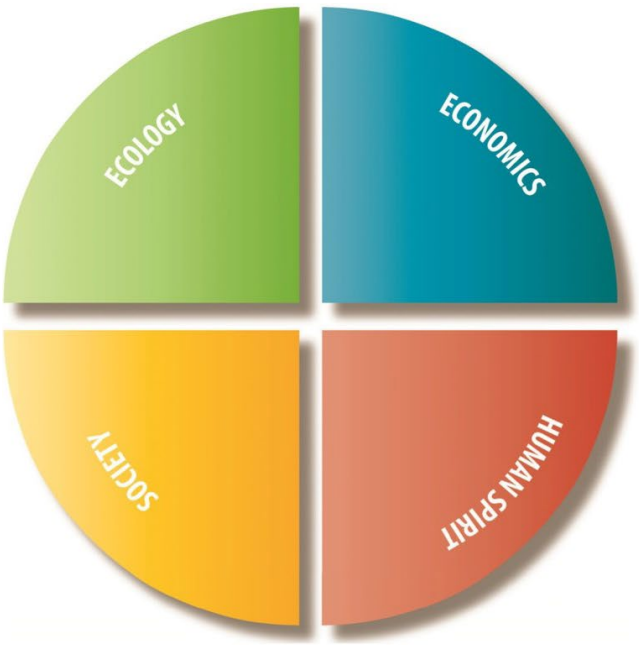
- Expedite reconstruction to restore tourism dollars and economic stability to the local area.
- Minimize maintenance for infrastructure and other improvements.
- Design to minimize the impact of future flood events.
- Identify additional funding opportunities that can help offset County contributions and allow for future enhancement.

Society: *Providing equitable access to natural resources for the benefit of all community residents and preserving cultural connections between people and place.*

- Provide equitable access for all recreational users to the lakefront (i.e. re-purpose the north peninsula as community space).
- Maximize universally accessible connections between the parking, marina, campground, beach and boat launches.
- Provide an accessible kayak launch, separated from boat traffic.

Human Spirit: *Inspiring a deeper, spiritual connection with nature and place.*

- Support safe, enjoyable water-based recreation on Lake Superior.
- Identify, enhance and protect viewsheds.
- Integrate educational opportunities that share information on ecology and history of the harbor.
- Commemorate the flood event and create a memorial to the life of Assistant Fire Chief Mitch Koski.



ECOLOGY
Sustaining the ability of the landscape to perform ecological functions such as building soil, recharging and cleaning water, cycling nutrients, and enabling biological systems to remain diverse and productive.

ECONOMICS
Encouraging reinvestment in the community and providing cost effective solutions that preserve or wisely use scarce resources.

SOCIETY
Providing equitable access to natural resources for the benefit of all community residents and preserving cultural connections between people and place.

HUMAN SPIRIT
Inspiring a deeper, spiritual connection with nature and place.

The four pillars for sustainable development.

Concurrent Projects

Several agencies are involved in the rebuild of Saxon Harbor. Given the overlapping project limits, it is anticipated that multiple contractors will be working on site simultaneously. Coordination with the following projects is required to ensure critical design and construction milestones are completed as scheduled.

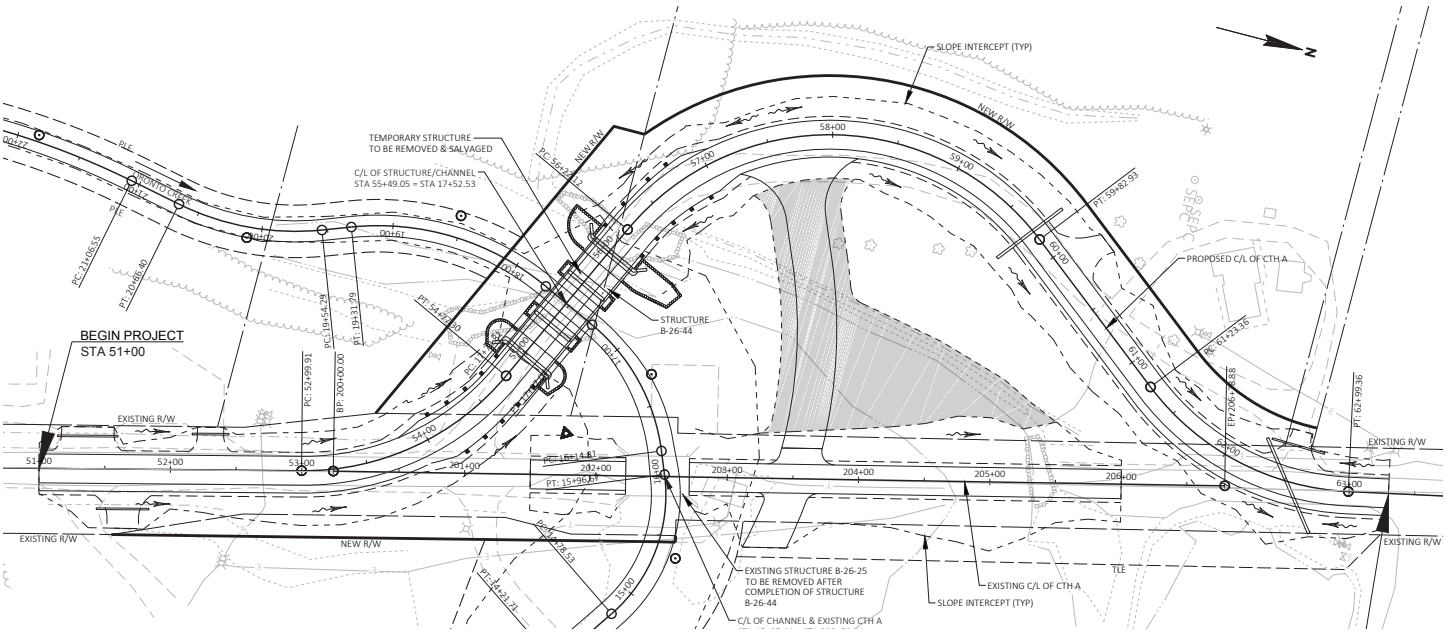
CTH A Road and Bridge Replacement Project

WisDOT is responsible for the reconstruction of CTH A including the bridge over Oronto Creek. Plans have been prepared by a consultant team led by Ayres Associates, and will be a locally let project bidding in March 2018. In an effort to improve safety and flood resiliency, CTH A has been realigned in a sweeping curve to the west of its pre-flood location. Configured for a posted speed of 25 mph, the typical road section includes two 11-foot travel lanes, a 6-foot integral pedestrian lane on the east side, and 3-foot wide gravel shoulders. By curving the road, the bridge is relocated 200 feet upstream from the pre-flood location and features a three-span design perpendicular to the channel to bypass by high stream flows and be less susceptible to blockage.

As SmithGroupJJR prepared hydraulic models for Oronto and Parker Creek to inform the reconstruction of the marina and campground, they assisted the Ayres team with the assessment of the stream channel and the replacement bridge structure. Although Oronto Creek was returned to its former location, the channel design was modified to include a connected floodplain from approximately 300 feet upstream to 900 feet downstream of the new bridge. This stream configuration is intended to convey additional storm flow through the bridge to the controlled spillway overflow into the marina basin. WisDOT will be reconstructing Oronto Creek from the upstream project limit to the spillway location, while the remainder of Oronto and Parker Creek downstream to the confluence with Lake Superior will be bid in Phase I of the harbor project.

WisDOT will also be leading the submittal of a Conditional Letter of Map Revision (CLOMR) for placement of fill above the former floodplain elevation. The CLOMR is necessary to correct the existing definition of the approximate floodplain area and document that project-related impacts fall within acceptable FEMA and WDNR tolerances. Within six months following completion of construction, a Letter of Map Revision (LOMR) will be submitted to FEMA to formally document the changes.

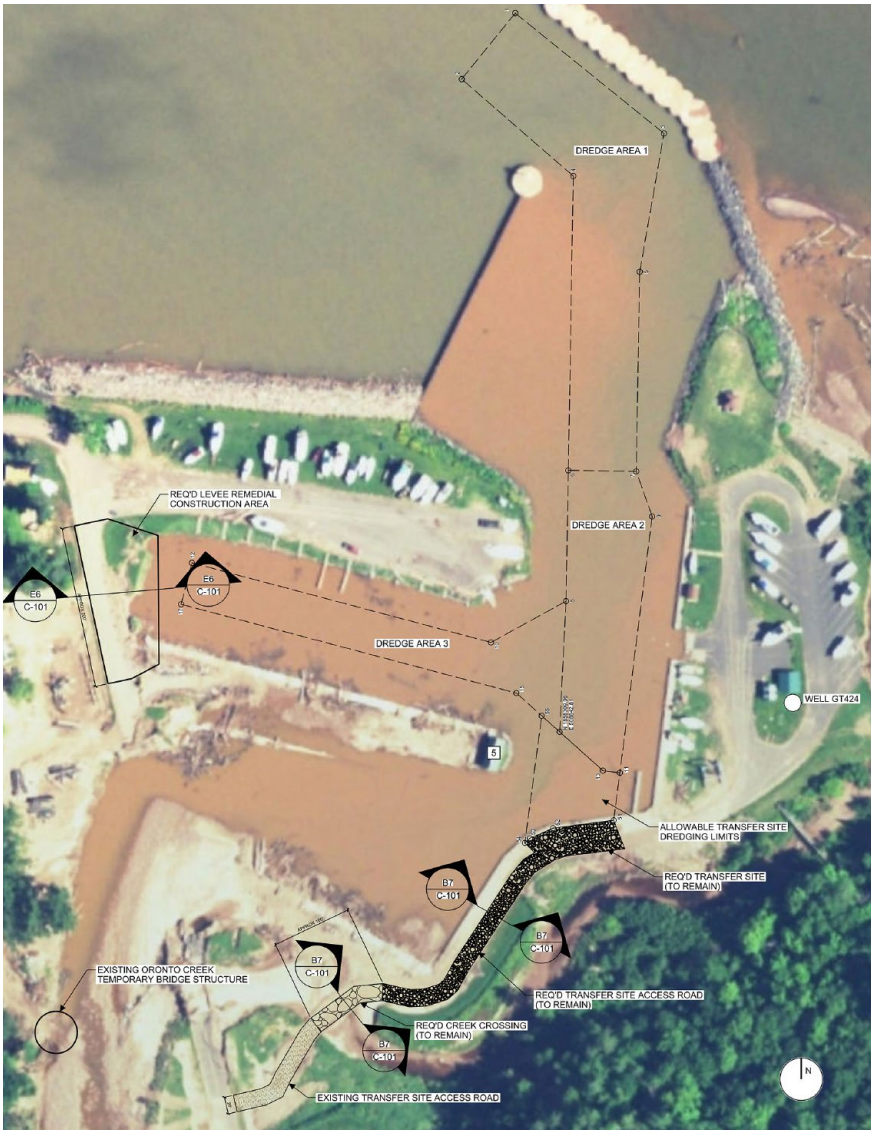
During construction of the new bridge, the original alignment of CTH A will be temporarily rebuilt and the old bridge put back into service to be used for construction access and hauling of materials for both the roadway and harbor reconstruction projects. The old bridge will be removed by the WisDOT contractor at the completion of this phase of construction.



The reconstruction of CTH A shifts the road realignment west of the current bridge structure.

USACE Dredging

The designated federal navigational channel is maintained by USACE, and includes a 50-foot wide strip in the center of the North Basin as well as an approximately 80-foot wide channel from the harbor entrance to the travel lift well. USACE awarded a contract for dredging deposited sediment and debris from the navigational channel and restoring the levee on the west side of the North Basin, with work to begin in November 2017 and be complete by August 15, 2018. Coordination is required for the additional harbor dredging outside the navigation channel and within the South Basin, which will be bid in Phase I of the harbor project.



USACE dredge plan for the federal navigational channel.

Site Investigation and Analysis

Saxon Harbor Park prior to July 2016 flood.

The main campground area featured 27 campsites.

The smaller campground overlooked the harbor from across Oronto Creek.

Several site investigations were completed to assess the current physical characteristics of Saxon Harbor Park, which identified opportunities and limitations for reconstruction of the marina and campground facilities, as well as other potential future uses and improvements.

Existing Features, Topography and Vegetation

Information on post-flood site features including topography was collected in April 2017 via aerial survey by Continental Mapping Consultants, Inc. Ground verification of site utilities and detailed conditions was performed by U.P. Engineers and Architects in December 2017. USACE acquired bathymetric data for the harbor in July 2016. These surveys were combined and then compared to the 2005 Harbor Expansion Project record documents prepared by SEH and pre-flood aerial photography to assess post-flood damage.

Saxon Harbor is designated as a federal “harbor of refuge” on Lake Superior, as it provides transient slips for boats in distress or emergency situations such as inclement weather. Prior to the flood, the marina provided 91 seasonally leased boat slips, along with 12 transient slips and 2 boat launches. The slips were arranged in two basins, with side ties along the east side of the harbor with a travel lift well. Parking and a restroom facility were located on a central peninsula between the basins, with additional parking both south and north of the harbor.

Slips in the South Basin and along the south side of the North Basin were floating docks accessed off a perimeter sidewalk set at a field verified elevation of 605.25 (NAVD88). These docks were destroyed by the 2016 flood, along with the central restroom building. Slips along the north side of the North Basin were not damaged, and consist of older fixed, pile supported docks individually accessed by steeply sloping wooden ramps and staircases over a stone revetment edge.

The campground previously featured 33 total campsites, located on both sides of Oronto Creek. The main campground area included 27 sites of various sizes, of which 26 were severely damaged by the flood. The adjacent playground was also destroyed, and the park pavilion including restrooms required cleaning and restoration. Southeast of the CTH A bridge over Oronto Creek, a smaller campground included six sites and a restroom building in a dead-end road configuration. This area was not damaged by the flood. Five tent campsites were also located on the peninsula between the North Basin and the Lake Superior shoreline, and an additional five rustic walk-in sites were located at the confluence of Oronto and Parker Creek as accessed by a pedestrian footbridge from the east boat launch area or a trail from the smaller RV campground.

The topography of the site features a relatively flat area above the revetted edge of the harbor, nestled between steep bluffs along the Lake Superior shoreline. Across Oronto Creek from the South Basin, an eroding bluff face requires stabilization to prevent future blockage of the stream channel from a major slide. A beach area across from the North Basin was formerly sand, but erosion by high water and wave action over the 2015-16 winter season left large rocks and rugged conditions. Site vegetation is characterized by mown turf in the campground and marina facilities, with few trees. Stream banks and channel areas are naturalized. The forest areas surrounding the site are dominated by Sugar Maple, Red Maple, Balsam Fir, White Birch, and Aspen.

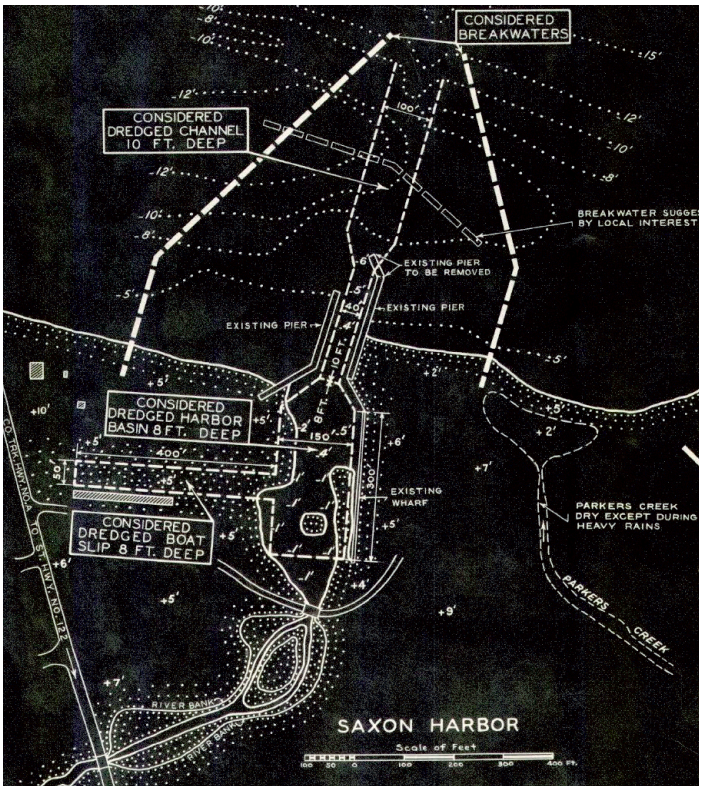
Saxon Harbor Park is a key economic driver to the local community. Busy summer weekends see upwards of 2,000 visitors, and the average daily spending in Iron County by this user group is around $83. Annual revenues to Iron County Forestry from camping and boating activities averages around $124,000. These revenues account for approximately 50% of the total county parks yearly budget, and are used to offset operational expenses for other County facilities.

Streams and Waterways

Historically, Oronto and Parker Creeks were two separate waterways each flowing into Lake Superior. Preliminary drawings by USACE from 1947 show the harbor located in the Oronto Creek estuary, with Parker Creek described as “dry except during heavy rains.” Existing public piers and a wharf where the creek met Lake Superior supported local navigation. Project plans from 1965 for the excavation of the navigational channel and the construction of the breakwaters also rerouted the Oronto Creek to flow east into Parker Creek through a straightened, relatively flat channel.

Today, Oronto Creek upstream of the former CTH A bridge is characterized as an Exceptional Resource Water (ERW) and a Class I Trout Stream, and Parker Creek is a Class III Trout Stream. Oronto Creek is considered an important resource for fish spawning and nursery grounds, including species of minnows, rainbow and brook trout, and coho salmon. Fisheries surveys prior to the catastrophic flood event recorded a channel width of 16 feet near the existing CTH A bridge, which WDNR requests be maintained in the restored channel design. Based on concerns for wildlife, any erosion mat used along the stream banks must be biodegradable and non-netted, such as Class I Type B Urban or, if necessary for sheer stress, Class II Type C. In-stream work within the channel is also restricted from September 15 to May 15 to avoid impacts to fish spawning and aquatic organisms.

In August 2017, WDNR conducted a navigability determination for two small unnamed tributaries of Oronto Creek that flow through the proposed campground relocation site west of CTH A. Both streams are less than three feet wide and are typically less than 6” high at top of bank. Therefore, the streams were determined to be non-navigable.



USACE 1947 plan for Saxon Harbor


Non-navigable unnamed tributary to Oronto Creek (Photo courtesy WDNR)

Floodplain and Coastal Analysis

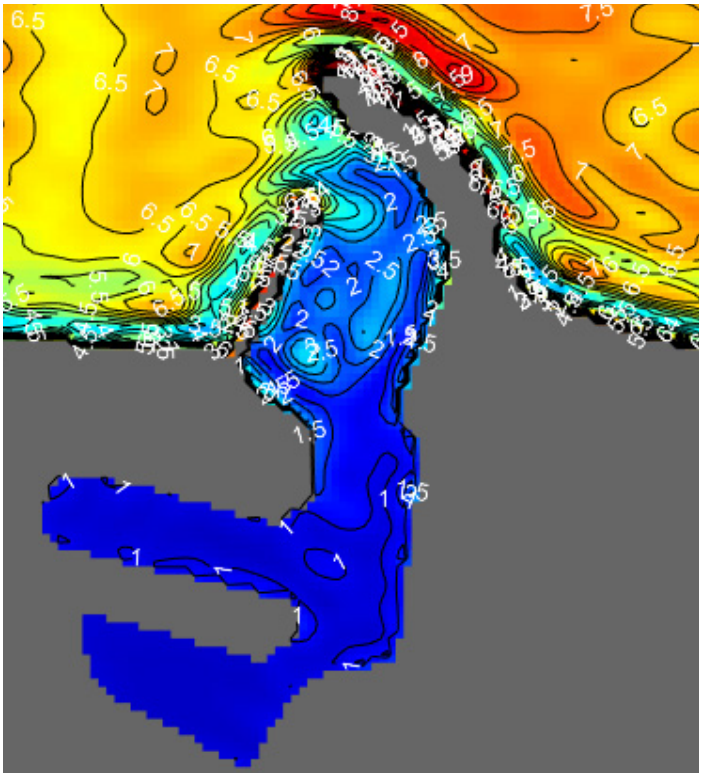
The existing flood hazard boundary map for Iron County (last updated April 1988) was not developed at a resolution sufficient enough to evaluate marina and campground configuration alternatives, as the Zone A hazard area overlaid both bluffs and low-lying areas around the harbor irrespective of topography. Therefore, several analyses were completed and combined to understand the local flood potential, including an evaluation of the wave climate and run-up from Lake Superior, and a hydraulic analysis of Oronto and Parker Creeks. The studies and final plans for the stream and harbor reconstruction will be submitted to FEMA to request a map revision through the CLOMR / LOMR process led by WisDOT.

SmithGroupJJR completed a coastal analysis to assess the Lake Superior wave climate and associated wave run-up elevation. During high wind events coupled with high water levels, waves impact the shoreline and enter the marina and stream channel, having the potential for negative impacts. Numerical modeling combined local bathymetry, wave and wind data with extrapolated seiche information from gauges in Duluth, MN and Marquette, MI, to predict wave heights and run-up elevations for Harbor Park. The run-up elevations were calculated assuming a combination of the 100-year water-surface elevation (WSE), 100-year storm surge height and 100-year wave conditions occurring simultaneously. The resulting base flood elevation (BFE) is the wave run-up elevation that 2% of the waves will reach or exceed, which for Harbor Park occurs at approximately elevation 609 feet (IGLD85).

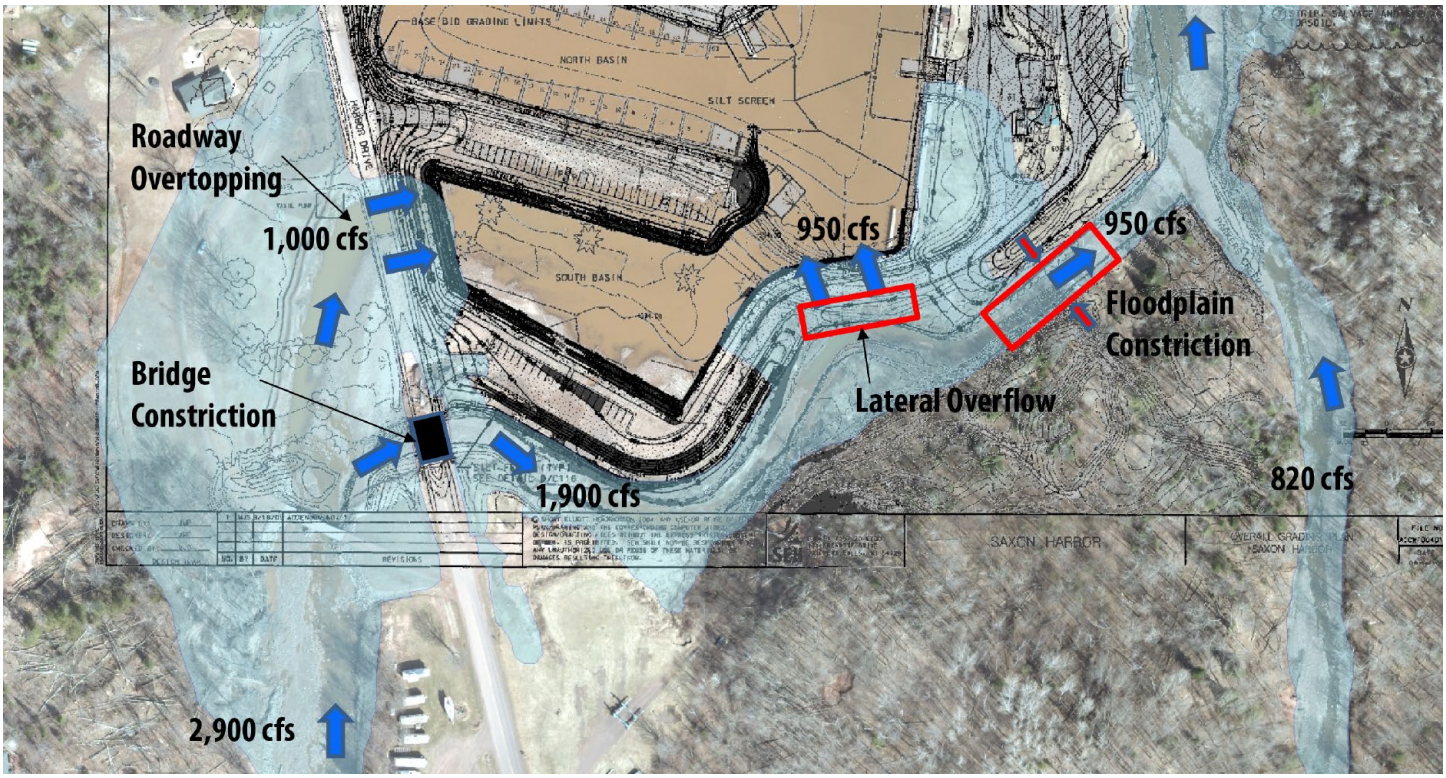
Further analysis of the wave climate within the harbor was completed to evaluate the dock design and other replacement facilities. This study showed that the wave climate within the marina can be significant, particularly for offshore events from the Northeast and North-Northeast directions. For these events, waves enter the mouth of the harbor and travel down the federal navigation channel. Given the proximity of the east and west launches, both experience relatively the same wave climate during these events, seeing a 1.5-foot wave in a 10-year storm event from the NNE. This exceeds levels comfortable for retrieval during a routine event where smaller, trailerable boats may need to get off the lake quickly. Although there are no standards for agitation at boat launches (the risk of use is generally left to the discretion of the boater), safety for smaller boats typically targets a maximum wave height of 6 inches. Therefore, this analysis recommended moving the west launch to a more tranquil location to improve launch conditions during events.

SmithGroupJJR performed a hydraulic analysis of Oronto and Parker Creeks using HEC-RAS software to evaluate conditions prior to the July 2016 flood and proposed changes to the stream floodplain and bridge configuration. The Lake Superior BFE (considered static water level plus run-up) was used as the tailwater condition for the Oronto/ Parker Creek hydraulic analysis. Stream and floodplain geometry for areas significantly impacted by the storm were assessed based on 1994 geometric data from the existing CTH A bridge by Ayres Associates and the 2005 Harbor Expansion project plans by SEH. Prior to the flood, the bridge at CTH A restricted flow within Oronto Creek, resulting in roadway overtopping and flooding of the former campground site west of the marina basin. Floodwaters followed this path during the July 2016 storm event into the South Basin causing extensive erosion. The proposed CTH A bridge and west roadway embankment grade is designed to pass the entire 100-year design storm event to the east rather than overflowing the roadway as occurred in 2016. The reconfigured floodplain will convey storm flows downstream of the bridge, with major floods diverted through the planned spillway into the marina basin located near the travel lift well, prior to the channel constriction upstream of the confluence with Parker Creek.

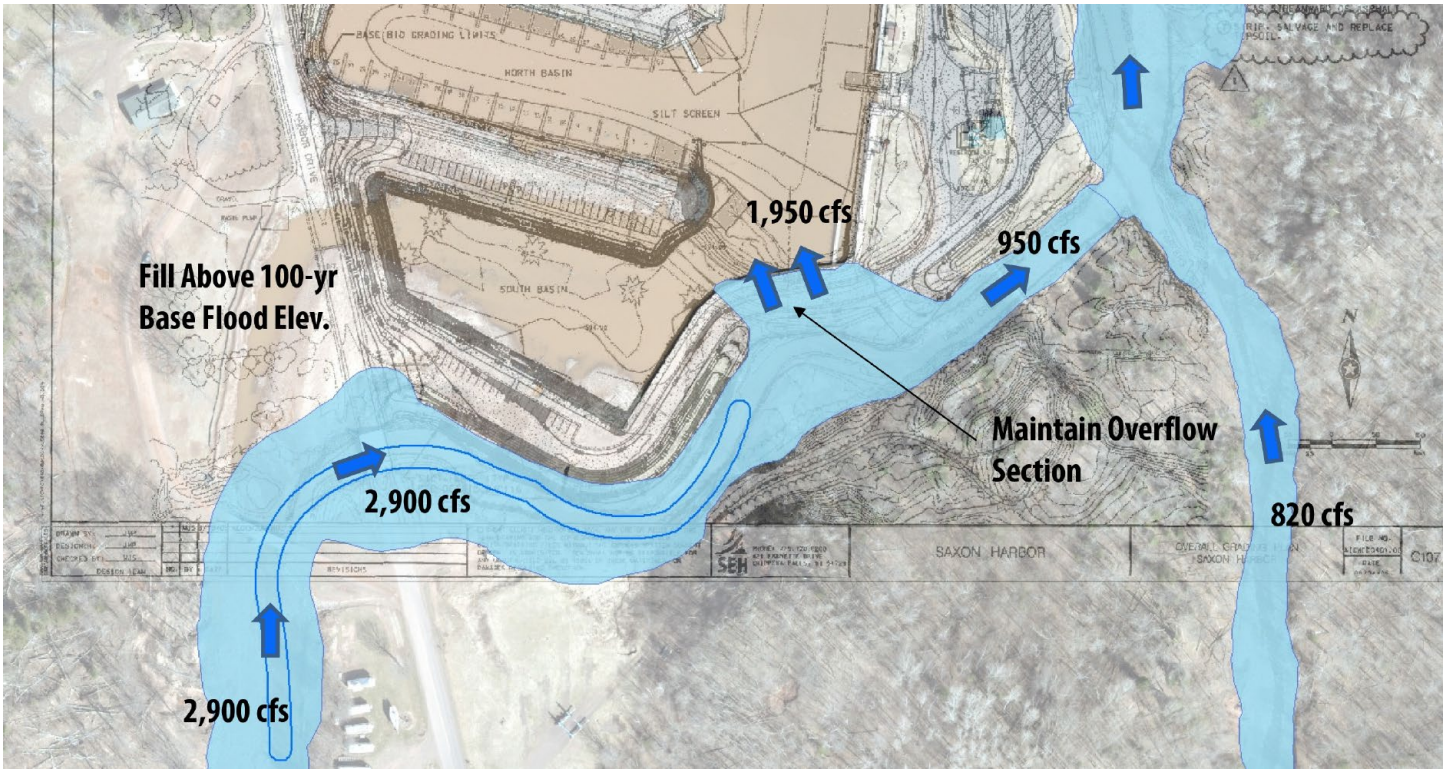
To assess the various campground relocation alternatives, the hydraulic analysis also looked at possible flood elevations resulting from a blockage of Parker Creek by debris buildup at the confluence with Lake Superior. Even under extreme scenarios, the area located south of confluence of Oronto and Parker Creeks remained above flood levels, as the creek would overflow into the marina basin before the proposed campground site could flood. This evaluation showed that the rustic campsites at the confluence of the streams are out of the floodplain.



Significant wave height (feet) for the 10-year return period from the NNE.



Pre-flood flow distribution for 100-year storm event.

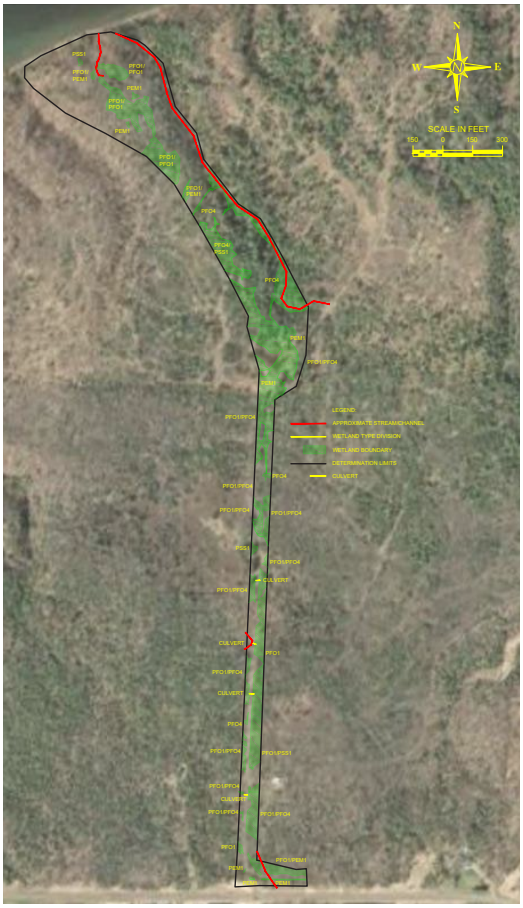


Post-flood flow distribution for 100-year storm event.

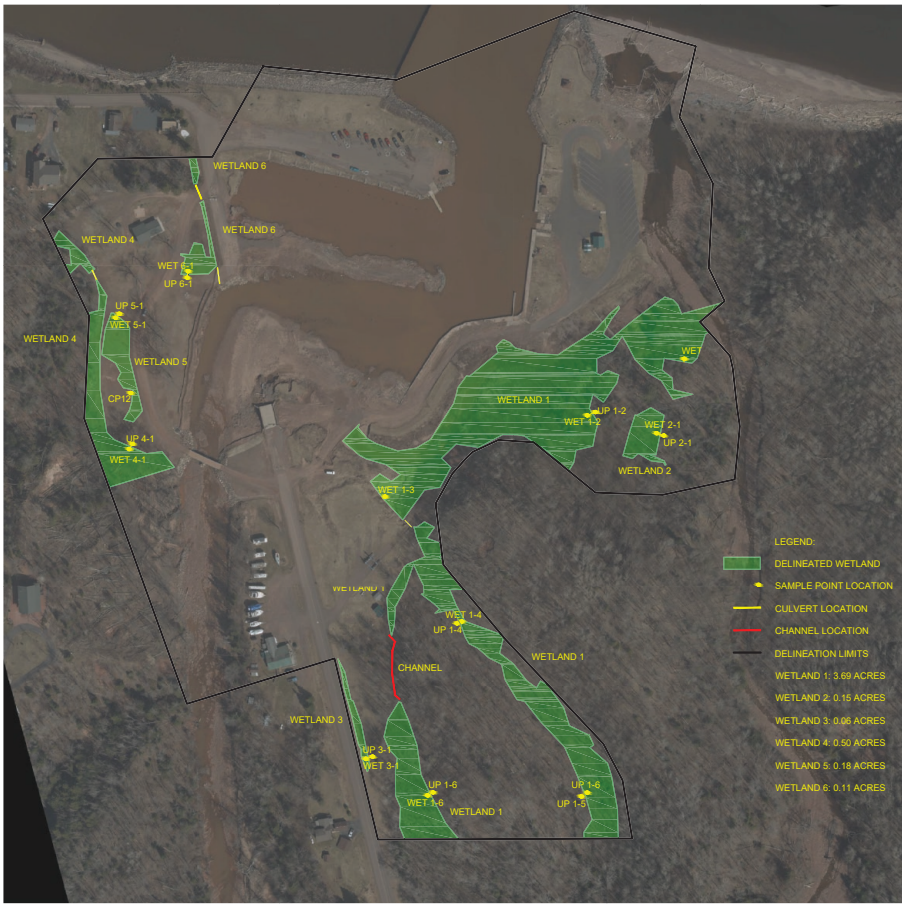
Wetland Delineation

Wetlands and Waterways, LLC provided wetland delineation services for the Saxon Harbor reconstruction project. Based on an initial alternative to relocate the campground to a site on top of the bluff east of the marina, a preliminary assessment was performed in early May 2017 to estimate the potential wetland disturbance associated with this concept. The resulting map showed that a large portion of the proposed campground and access roads likely met wetland criteria, which was a major factor in the decision to look at alternate sites closer to the marina.

A full wetland delineation was conducted in September 2017 for the campground relocation sites under consideration and the marina project area. The study showed that the catastrophic storm event in July 2016 had significant impacts on the area wetlands, including evidence of flooding, erosion, and deposition of soils. Six wetland areas were delineated at the site. Wetlands 1, 2, and 3 located south of Oronto Creek and west of CTH A were determined to be relatively undisturbed and have normal wetland circumstances. Wetland 1 is classified as a forested, broad-leaf deciduous, palustrine, floodplain complex community (T3Kr), with pockets of scrub-shrub (S3Kw) and emergent (E1Kw) vegetation. This is generally regarded as the highest quality of the six delineated wetlands. Wetland 2 is classified as a forested, broad-leaf deciduous palustrine community (T3K). Although Wetland 3 was also undisturbed by the storm event, it is a man-made ditch along CTH A that is classified as a scrub-shrub, broad-leaf deciduous, palustrine community (S3K). Wetlands 4, 5, and 6 were considered to be Significantly Disturbed by the flood event, and were therefore delineated using best professional judgment based on remnant vegetation and topographic position. Each of these areas are smaller and are located east of existing CTH A near the former campground area. Wetland 4 is classified as a forested, broad-leaf deciduous palustrine floodplain complex (T3Kr), but the entire area had areas of significant erosion and deposition which altered hydrology and soils. Wetlands 5 and 6 are classified as emergent-wet meadow, persistent, palustrine, floodplain complex communities (E1Kw) and appeared to have been created by the recent, post-flood earthwork and cleanup activities. The findings of the delineation were noted to be preliminary and subject to verification by USACE and WDNR.



Preliminary Wetland Delineation for Bluff Campground Site



Delineated wetlands, September 2017.

Archaeological Investigation

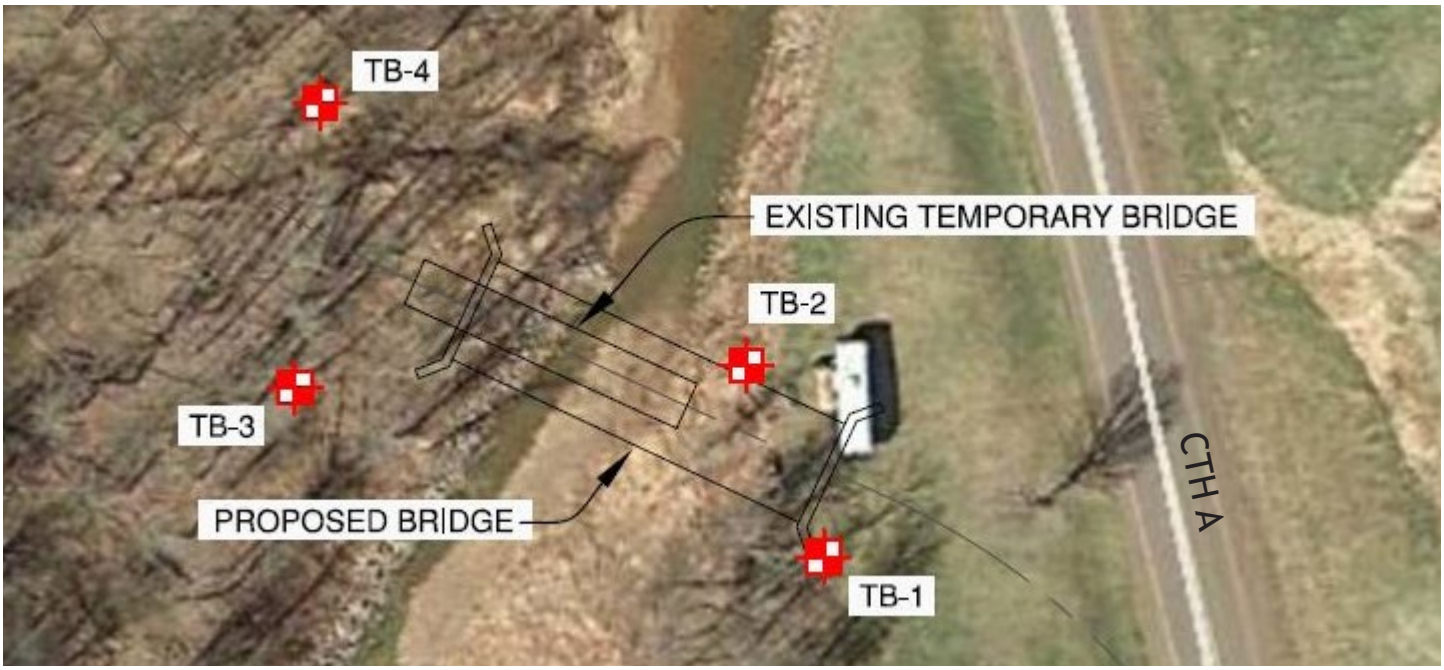
A Phase I Archaeological Investigation was completed by Archaeological Research, Inc. in May 2017. Background research suggested that three previously reported archaeological sites existed in or adjacent to the Area of Potential Effect (APE), including a fur trading post, a Native American birching station cultural site, and a Native American campsite. Intensive field investigations were completed on May 25-26, 2017, and failed to encounter any archaeological remnants or subsurface features suggesting prehistoric or historic occupation of the site. The report concluded that no further investigation of the site is recommended, and the report author submitted an updated site correction form for the Wisconsin ASI to document that no evidence exists for the trading post site record. If unanticipated cultural resources are encountered during construction, work will halt immediately to contact the appropriate agency for direction.

Geotechnical Investigation

A geotechnical report was conducted by Coleman Engineering Company in October 2017 for the proposed Oronto Creek CTH A bridge replacement by WisDOT. Borings were proposed to be drilled to a depth of 40 feet at four locations around the proposed bridge structure. One boring met refusal at 35 feet. The samples were then lab tested for particle size to characterize site subsurface conditions relative to scour design. Exploration results determined the existing embankment was composed of silty sand fill material to 9.5 feet in depth. Below the surficial fill, medium to very dense glacial silty sand overlaid weathered bedrock formations at 33 to 37 feet in depth. Groundwater was noted at depths between 7.5 feet and 10 feet which corresponds to the surface water level in Oronto Creek.

Coleman Engineering also completed an analysis of the condition of the sheet pile walls on the east side of the harbor in September–October 2016. Water jetting indicated that riprap toe protection along the wall at the designed overflow location from Oronto Creek was likely scoured out by the flood event and requires replacement. However, borings taken on the landward side indicated that the remainder of the sheet pile walls do not require repair.

Additional geotechnical investigations were completed by U.P Engineers & Architects from December 2017 to January 2018. Results are summarized as follows: REPORT TO BE PROVIDED BY UPEA.



WisDOT Geotechnical Investigation boring locations.

Design Alternatives

Program Considerations

The design program for the marina and campground is primarily based on the facilities that existed prior to the July 2016 flood to align with FEMA funding requirements. The base program for the marina and campground are as follows:

Campground Program and Design Requirements

- The campground facility cannot be located in a mapped floodplain.
- RV campsites, driveways, retaining walls, and restroom facilities must be setback 75-feet from navigable waterways per Iron County Shoreland Ordinance. The setback from CTH A is 75-feet from the road centerline for the campsite pads where RVs will be parked.
- Target of 33 total campsites with electrical service. (26 were destroyed).
- Interior roads and campsite pads are gravel surfaced.
- Provide campsite amenities including a picnic table, fire ring, and water / electric hookups.
- Optimal size of standard campsites is 65 feet x 16 feet. Minimum length for a Class A site is 45 feet. Campsites are graded at a maximum 2% slope along the long direction of the pad for drainage.
- Per WDNR accessibility guidance, provide 3 accessible campsites for a campground of 26-50 total spaces. Accessible sites shall be 65 feet x 20 feet, and include accessible amenities.
- Minimum spacing between campsites is 10 feet per Wisconsin state code (Chapter ATCP 79). Sites shall be a maximum of 400 feet from a restroom facility and potable water source.
- Restroom / Shower Building requires 3 toilets per gender for a campground of 16-30 total spaces, and 4 toilets per gender for 31-45 total spaces.
- Replace the playground area in close proximity to the campground.
- Iron County Land Use Ordinance requires a 15-foot hedge or evergreen screen to buffer the site.
- Rustic campsites at confluence of Oronto and Parker could either remain or be replaced at a new site.
- Lakeside tent sites are not desirable based on community comment wanting increased public access to the shoreline.

Marina Program and Design Requirements

- Target of 91 seasonal rental slips, but may reduce overall number to change size configuration.
- Fingers shall be floating.
- ADA guidelines require a minimum of 3 accessible slips, which are either side tie or provided with a 5-foot wide finger pier.
- Utility service to docks including electric and water. Dock electrical service requirements:
  - 40-foot slips: 50 amp + 20 amp GFCI.
  - Other slips: 30 amp + 20 amp GFCI.
- Provide transient docks along side tie areas only.
- Replace fuel system due to code requirements and damage.
- Replace sanitary pump out station due to damage.
- Include pay stations for launch and fuel.
- Provide 3 total restroom fixtures per each gender based on number of wet berths. These may be located in the existing pavilion or in the replacement restroom facility.
- Provide a minimum of 10 day use parking spaces along the lakefront.

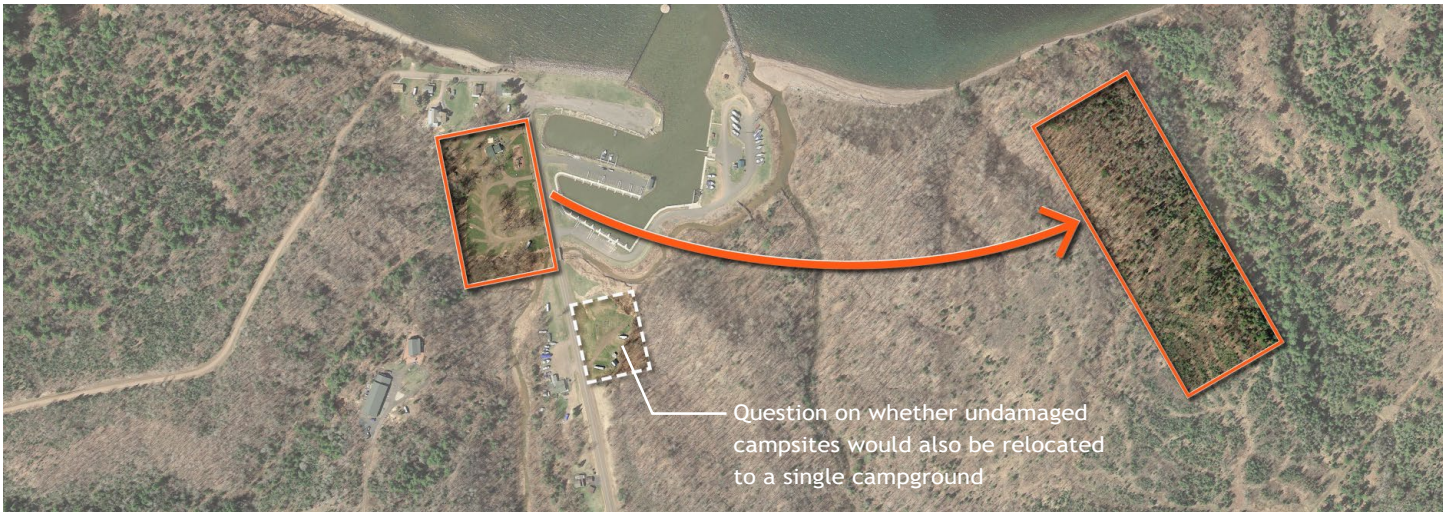
Although FEMA funding is limited to the damaged portion of the park, the rebuild also provides the County with an opportunity to evaluate the functionality of the marina and campground, ensuring the facilities meet the needs of the recreational users going forward into the future. In particular, the older docks along the north side of the North Basin and the boat launch at the end of the peninsula were identified as elements needing upgrades. The slip mix provided by the previous dock arrangement also did not align with the size of boats currently residing in the harbor. Other ideas provided by the Saxon Harbor Boating Club included:

- Launch parking improvements and better launch configuration. (Standard is to provide 20 auto-trailer stalls per launch lane.)
- Improve accessibility with grade change.
- Deeper draft for sailboats – 13-foot depth minimum.
- Better pump out station / backflow preventer.
- Wider pavement area at the travel lift well.
- Kayak launch separate from larger vessel area.
- Additional transient slips (dredge on east side).
- Better security lighting.

Bluff Campground Relocation Alternative

Given the need to locate the campground out of the floodplain, the design team first explored relocating the facility to the top of a bluff approximately 1,400 feet east of the marina. The site would be accessed via a currently unimproved logging road from CTH A. Although the right-of-way for the access is cleared, approximately 2,800 linear feet of road with base, culverts, and surfacing would need to be installed to the edge of the campground. Electrical service would either need to be provided from CTH A (3,800 linear feet) or from the marina. New trail connections through steeply wooded terrain to the marina would be required to link the park facilities.

Public comment was decidedly against the proposed campground site, as respondents felt the location was too distant from the harbor. Initial investigations revealed that a substantial portion of the proposed access road and campground site is likely wetland, and an active eagle nest is located near the lake at the site. Due to these environmental constraints, the increased cost to provide access and electrical service, and expressed public opinion, this site was removed from consideration. Alternatives for the campground focused instead on the area immediately adjacent to the marina on the south side of Oronto Creek.



Bluff campground relocation alternative.

Eagle nest at proposed bluff campground site (center pine tree in fog).

Alternative A

Reconstruction Alternative A locates the campground along CTH A south of Oronto Creek, replacing and expanding the existing 6 site campground area. Based on grading and wetland constraints surrounding the site, this alternative provides 26 campsites, which matches the number destroyed by the flood but falls short of the target of 33 total spaces.

The entrance to the campground is close to the existing driveway, and divides the site into two internal roadway loops. A smaller loop is located primarily on the flat terrace with the existing campsites, while a larger loop to the south requires extensive grading to remove the existing bluff. A 7 to 9-foot retaining wall with a 3H:1V slope above is necessary to transition grade up to the property line at the far southern edge. The existing west channel of the non-navigable stream is routed through the center of the campground loop, which provides an interesting natural feature as well as potential stormwater treatment and additional privacy spacing between campsites. A new restroom and shower facility with playground are located near the entrance from CTH A, which is just within the 400 foot limit from the south campsites. Parking adjacent to the restroom services the building as well as the trailhead to the existing rustic campsites at the confluence of Parker and Oronto Creek. This trail is maintained, while the bluff above is stabilized to prevent a future failure from blocking flow in the creek.

For the marina, the basin is reconstructed as it existed prior to the flood, except that the slips along the north side of the North Basin have been replaced with floating slips and a perimeter walk to match the rest of the harbor. To transition grade between the walk and parking area, an approximately 4 foot high retaining wall is required at the west end of the site that slopes down to match grade at the boat launch. Tent camping is replaced at the lakefront with an expanded day use area. The north boat ramp is integrated with a kayak launch, and the parking area is reconfigured to define 7 auto-trailer stalls, a turnaround for launch retrieval, 17 stalls for seasonal slip users, and 14 day use parking stalls for the beach area.

The new curved alignment of CTH A creates a larger area between the roadway and South Basin. For this alternative, the restroom from the center peninsula is relocated to an open lawn day use area in this space. Parking is provided along the east side of CTH A adjacent to the restroom and playground, while a pull-off lane on the west side allows temporary parking and access to the existing pavilion.

Proposed section for slips and parking along the north edge of the North Basin

Reconstruction Alternative A.

Alternative B

Reconstruction Alternative B also locates the campground south of Oronto Creek, but splits the campground into two pods located along CTH A and at the confluence of Oronto and Parker Creeks. This alternative provides 30 total campsites, which still falls short of the target of 33 total spaces.

The campground located along CTH A again replaces and expands the existing 6 site campground area with 14 campsites arranged within two internal loops. The south loop is smaller than in Alternative A and does not require the large retaining wall to meet grade. A new access road connects to a third loop at the creek confluence, which provides 16 additional campsites. Construction of this road requires more intensive stabilization and setback of the eroding bluff above. The rustic campsites which were previously located at the confluence are replaced elsewhere, potentially at the remote bluff site originally considered for the campground.

Compared to Alternative A, the campground alternative for the confluence site adds substantial cost to the reconstruction project. The access road to the site is longer and the existing trail bench at the base of the bluff along Oronto Creek must be significantly widened to allow for two-way RV traffic. Although stabilization of the bluff is likely to be necessary under Alternative A to prevent future sloughing into the channel, methods for this work could include less expensive alternatives if the bluff is not also required to be cut back to allow for the campground access road construction. Additionally, two shower/restroom buildings would be needed to serve the camping areas, as code requires no more than 400 feet from the furthest site to the restroom. This not only impacts the initial capital improvement budget, but also ongoing maintenance for cleaning and upkeep of two new structures in addition to the existing building located near the marina. Based on the initial schematic-level grading plans completed for the campground alternatives, Alternative A with campsites located only along CTH A impacts approximately 0.75 acres of wetland while Alternative B at the confluence impacts approximately 1.75 acres of wetland, which is more than double the impacts of Alternative A which requires additional cost for wetland mitigation. In all, it is conservatively estimated that the Alternative B campground configuration adds approximately $800,000 to $1,000,000 to the overall project costs.

For the marina, Alternative B takes advantage of the new curved alignment of CTH A to relocate the boat launch to the west end of the South Basin. Although this replaces the two smallest finger piers, the new location resolves the challenges with wave climate that both launches currently experience, making retrievals easier in harsh wind conditions. The restroom is located adjacent to the launch, with 2 accessible auto stalls and 20 auto-trailer stalls.

Slips along the north side of the North Basin are similar to Alternative A, with a separate kayak launch at the former boat launch location. The kayak launch is configured to include a lift for universal accessibility. By removing trailer traffic from the north peninsula, the parking provides 17 stalls for seasonal slip users, 22 stalls for day use, and a drop-off turnaround at the kayak launch. The expanded lakefront day use area includes a restroom or pavilion, with playground and picnic area.

Reconstruction Alternative B.

Consensus Plan

Public and Regulatory Comments

Alternatives were presented at a public information meeting on October 10, 2017. Citizens at the meeting expressed concern with the boat launch relocation to the South Basin, given the larger slip sizes and boat turning movements in this basin. Direction was given for the design team to evaluate if the launch could be moved to a more sheltered location in the North Basin instead. Citizens also stated their preference for a campground reconstruction alternative located at the confluence of Oronto and Parker Creeks, with additional sites located along CTH A to meet the 33 total sites that existed prior to the July 2016 storm event. The presenters at the meeting cautioned that, due to the substantial additional wetland impacts associated with this alternative, the design team would follow up with WDNR regulatory staff to determine the feasibility of obtaining a permit for the confluence alternative.

As mentioned previously, Alternative B at the confluence site more than doubles the impacted acreage of wetland over campground Alternative A. Assuming that Alternative B was expanded along CTH A to provide 33 total campsites, it would likely impact approximately 2 total acres of wetland. This number is preliminary, and does not include any impacts due to the marina reconstruction, CTH A realignment, or Oronto Creek floodplain expansion. Per the opinion of the wetland delineator, the confluence site also contains the highest quality wetlands located within the delineation boundary.

A conference call was held with WDNR staff on October 23 to discuss the alternative locations. Although WDNR staff cannot officially state a position until a permit application is submitted for a project, the staff involved in the call stated that it would be very difficult to justify doubling wetland impacts to gain a limited number of campsites over Alternative A. At a minimum, pushing for the confluence campground alternative would lengthen the permit process, and may not result in a successful application. Based on the feedback received from WDNR, the considerable additional capital and operational costs, associated cost increase resulting from required mitigation, and concerns over timeline, the County decided to pursue campground Alternative A with campsites located along CTH A.

Marina and Campground

The revised concept for the marina and campground was approved by the Forestry Committee at a public meeting on November 7, and refined into the final consensus plan. The campground layout is similar to Alternative A, with 26 total campsites. All campsites meet the requirements of a Class A RV space, and are as long as possible given grading and wetland constraints. The current distribution of campsite sizes is:

- 45-foot: 6 sites
- 50-foot: 3 sites
- 55-foot: 3 sites
- 60-foot: 2 sites
- 65-foot: 12 sites (3 of these are ADA compliant at 20' wide, including the only pull-through site)
- Total: 26 sites

Other campground modifications included refinements to the parking layout and landscaping. In Alternative A, all extra parking stalls were located immediately adjacent to the restroom building. To better accommodate the existing drainage corridor, the parking was revised to provide two stalls (including one ADA compliant) at the restroom. The five stalls serving the rustic campsites at the confluence were moved to a flatter location between the campground and Oronto Creek that is still close to the trailhead. Landscape restoration at the campground includes a dense buffer of native trees and shrubs along CTH A required by zoning ordinance. Restoration-grade trees and shrubs are also planned to begin reforestation of the steep slope at the south end of the site. Mown turf is designated for only the areas immediately surrounding the campsites, while native seed mixes provide soil stabilization and wildlife habitat for the steep slopes and intermittent stream corridors.

The final marina layout includes relocation of the boat launch to the west edge of the North Basin. The restroom building is located near the launch, along with 19 auto-trailer parking stalls (2 ADA). Other improvements are similar to Alternative B, with a kayak launch at the former boat launch location, and a day use picnic area along the lakefront with 49 total parking stalls to serve both seasonal slips and day users (3 ADA). A memorial to the flood event and the life of Assistant Fire Chief Mitch Koski will be located in the day use area along the lakefront. The playground is relocated close to the existing pavilion, with 10 parking stalls (1 ADA) along CTH A to serve the building. A new office and storage building is planned south of the playground, and the gravel drive around the back of the pavilion is widened to serve as a one-way loop for service access and campground registration.

Saxon Harbor Reconstruction Consensus Plan.

Dockage

The majority of the slips at Saxon Harbor are leased on a seasonal basis, and spaces are available for transient boaters along the east wall of the marina basin. New marina slips are organized within the two marina basins based upon size and navigation requirement. The north edge of the North Basin will have the existing fixed docks replaced with floating docks in a similar type to the remaining areas of the marina. The Schematic Design plan illustrates 81 slips of various lengths and widths to accommodate the existing mix of seasonal boaters as well as current boat trends. Slip sizes range from 24-foot to 40-foot.

The floating dock surfaces will be treated southern yellow pine. Polyethylene encapsulated floats will be used for flotation of the docks. Docks 32-feet long and greater will have the ends pile restrained for greater stability in response to the projected wave climates within the basin. The connection of the piers to the land-side abutment will be by a 12 foot long tapered ramp. Finger widths will also vary between 3 and 4-feet depending on slip lengths.

Building Architecture

((TEXT TO BE PROVIDED BY FOTH. INCLUDES MARINA RESTROOM, CAMPGROUND RESTROOM, AND OFFICE STRUCTURES.))

Utilities

((TEXT FOR SITE UTILITIES TO BE PROVIDED BY UPEA AND/OR FOTH, INCLUDING WATER, ELECTRICAL, SANITARY, AND FUEL SYSTEM IMPROVEMENTS.))

Dock utilities will be replaced in a like-kind fashion to those damaged by the July 2016 flood. Utilities on the docks will include potable water and shore electrical service. The lighted dockside utility centers (DUCs) will be located in the center of each double-well berth on the concrete head-walk, providing electric and water service to each slip. The integrated lights of the DUCs will provide uniform and safe lighting conditions along the basin edge.

The electrical service available at each slip will vary to match typical demands based on vessel size. Each DUC will have a 20 amp convenience outlet. Smaller slips will have single 30 amp service, and larger slips will have either dual 30 amp or single 50 amp service or a combination of 30 amp and 50 amp receptacles.

Stormwater Management

Per Wisconsin standards, the redesign of the marina and campground facilities are required to meet post-construction standards for stormwater quality. In a conversation with agency staff on January 8, 2018, WDNR stated that they would waive peak discharge attenuation requirements for both the campground and marina, based on the immediate proximity of Lake Superior as the receiving water body. Based on preliminary soil assessments, infiltration of stormwater is not an option for the site given the low infiltration rate of the clay subsoil. For the marina site, biofiltration areas are planned to capture runoff in the narrow strips between parking and the edge of the basin, where it will infiltrate through engineered soil before conveyance to the lake via a perforated underdrain. The campground site may include a variety of stormwater BMPs including biofiltration basins, vegetative swale filter strips, and a regenerative stormwater conveyance system along the stream channel through the center of the site. Native plants are planned for all stormwater BMPs on site to help filter water while providing habitat for pollinators and other animals.

Project Implementation

Regulatory and Permitting Process

((TEXT TO BE PROVIDED BY FOTH))

Phasing / Construction Schedule

((TEXT TO BE PROVIDED BY FOTH))

Opinion of Probable Construction Cost

((IN PROGRESS BY FOTH, SGJJR, AND UPEA. FOTH TO LEAD TEXT FOR REPORT.))

Placeholder for architecture or docks graphic

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Attachment 2

Custom Soil Resource 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 Iron County, Wisconsin

May 30, 2018

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

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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: 1:4,980 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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

MAP 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 1:12,000.

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: Iron County, Wisconsin
Survey Area Data: Version 13, Oct 10, 2017

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

Date(s) aerial images were photographed: Dec 31, 2009—Jul 27, 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
7C	Beaches, 2 to 12 percent slopes	26.2	20.9%
444B	Gichigami-Oronto complex, 0 to 6 percent slopes	30.5	24.3%
5285F	Rockland-Arnheim, frequently flooded complex, 0 to 70 percent slopes	45.8	36.5%
Totals for Area of Interest		**125.6**	**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.

Iron County, Wisconsin

7C—Beaches, 2 to 12 percent slopes

Map Unit Composition

Beaches: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaches

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Psammaquents

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

444B—Gichigami-Oronto complex, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: v7vj
Elevation: 590 to 1,800 feet
Mean annual precipitation: 25 to 34 inches
Mean annual air temperature: 37 to 43 degrees F
Frost-free period: 100 to 140 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gichigami and similar soils: 70 percent
Oronto and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gichigami

Setting

Landform: Till plains
Landform position (two-dimensional): Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty and loamy till

Typical profile

A - 0 to 2 inches: silt loam
E - 2 to 7 inches: silt loam

E/B - 7 to 13 inches: silt loam
Bt - 13 to 29 inches: silty clay loam
Btk - 29 to 62 inches: silty clay loam
BC - 62 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B/D
Forage suitability group: High AWC, adequately drained (G092XY008WI)
Hydric soil rating: No

Description of Oronto

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and loamy till

Typical profile

A - 0 to 5 inches: silty clay loam
E/B - 5 to 9 inches: silt loam
B/E - 9 to 15 inches: silty clay loam
Bt - 15 to 23 inches: silty clay loam
Btk1 - 23 to 33 inches: silty clay loam
Btk2 - 33 to 60 inches: silt loam
BC - 60 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D
Forage suitability group: High AWC, high water table (G092XY007WI)
Hydric soil rating: No

Minor Components

Pickford
Percent of map unit: 5 percent

5285F—Rockland-Arnheim, frequently flooded complex, 0 to 70 percent slopes

Map Unit Setting
National map unit symbol: 1v4g1
Elevation: 590 to 1,800 feet
Mean annual precipitation: 25 to 34 inches
Mean annual air temperature: 37 to 43 degrees F
Frost-free period: 100 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition
Rockland and similar soils: 70 percent
Arnheim and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rockland

Setting
Landform: Slumps
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy rotational earth slide deposits

Typical profile
A - 1 to 5 inches: silt loam
Bw - 5 to 23 inches: silt loam
C - 23 to 80 inches: silt loam

Properties and qualities
Slope: 30 to 70 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Forage suitability group: High AWC, adequately drained with limitations (G092XY009WI)
Other vegetative classification: Acer Tsuga Dryopteris (ATD_1), Acer Viola Osmorhiza (AVO_1)
Hydric soil rating: No

Description of Arnheim

Setting

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

Typical profile

A - 0 to 5 inches: mucky silt loam
Cg - 5 to 10 inches: silt loam
C - 10 to 80 inches: stratified very fine sandy loam to silt loam to loamy fine sand to fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Forage suitability group: Frequently flooded, organics (G092XY010WI)
Other vegetative classification: Fraxinus Impatiens (FI_1), Fraxinus Mentha Carex (FMC_1)
Hydric soil rating: Yes

Minor Components

Pelkie

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Backslope, footslope, toeslope, summit, shoulder

Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex, linear
Other vegetative classification: Acer Osmorhiza Caulophyllum (AOC), Acer Viola Osmorhiza (AVO_1)
Hydric soil rating: No

Watton

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope, base slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex, concave
Other vegetative classification: Acer Viola Osmorhiza (AVO_1), Tsuga Acer Mitchella (TAM_1)
Hydric soil rating: No

Liminga

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope, base slope, crest
Down-slope shape: Linear
Across-slope shape: Linear, convex
Other vegetative classification: Tsuga Maianthemum Vaccinium (TMV_1), Tsuga/ Maianthemum (TM)
Hydric soil rating: No

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Attachment 3

Wetland Delineation Report

The full report is available upon request from Iron County or FEMA.

Wetlands & Waterways LLC

Wetland Delineation Report

Saxon Harbor Marina and Campground Reconstruction

Town of Saxon

Iron County, Wisconsin

October 26, 2017

WETLAND DELINEATION REPORT

SAXON HARBOR MARINA AND CAMPGROUND RECONSTRUCTION
TOWN OF SAXON
IRON COUNTY, WISCONSIN

October 26, 2017

Prepared for:

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Project Number: 444

Ann M. Key, PSS, PWS, CST
WDNR Professionally Assured Wetland Delineator

Table of Contents

Introduction

On behalf of the Iron County Forestry and Parks Department, Foth Infrastructure & Environment, LLC contracted Wetlands and Waterways, LLC to delineate wetlands on property located at and within the vicinity of the Saxon Harbor Marina and Campground. The study area is identified as being located in Part of the South ½ of Section 12, Township 48 North, Range 1 West, Town of Saxon, Iron County, Wisconsin. The overall study area was approximately 30 acres. See Figure 1 for the property location, study area and local topography.

The wetland delineation was conducted on September 8, 2017 by Ms. Ann Key, a Wisconsin Department of Natural Resources (WDNR) Professionally Assured Wetland Delineator. The objective of the wetland delineation was to identify potential areas for reconstruction of the campground and marina, which were destroyed by a torrential rainstorm on July 11, 2016. The campground and marina were essentially washed away by floodwaters from Oronto Creek and overland flow from the adjacent hillsides. This wetland delineation study was conducted to identify suitable and reasonable locations for a new campground and reconstruction of the marina and to take possible wetland impacts into consideration.

The property consists primarily of upland hardwood forest and hardwood/shrub wetland communities and the developed portions of the marina with parking areas and associated roads. The study area is owned primarily by Iron County and is bordered to the west and south by private lands, to the southeast by timber land and to the northeast by Iron County lands. County Highway A (CTH A) runs south-north through the study area, providing access to the campground, marina and boat launch area. Oronto Creek and Parker Creek flow from south to north through the study area, both ultimately draining into Lake Superior.

Given the recent catastrophic events, portions of the study area were considered to be Significantly Disturbed and did not have normal circumstances per wetland delineation terminology and guidelines. In areas that had evidently flooded and had significant erosion and/or deposition of soils from the storm event (Wetland 4), soils and hydrology were considered Significantly Disturbed and best professional judgment was applied based on remnant vegetation and topographic position. In other portions of the study area it was evident that debris removal and soil excavation has been conducted to restore conditions following the storm event. In these areas some wetlands were present (Wetlands 5 and 6) and appeared to have been created by the recent earthwork and clean-up activities. These wetlands and adjacent uplands were also considered to have Significantly Disturbed soils, hydrology and/or vegetation. Again, best professional judgment was applied based on all available information to identify which areas met wetland criteria. Wooded areas to the southeast near Wetlands 1, 2 and 3 appeared to be relatively undisturbed and were considered to have normal circumstances. A small portion of the study area in the vicinity of sample plot Up 1-3 consists of maintained lawn around the existing campground and was considered to have Significantly Disturbed vegetation and did not have normal circumstances per wetland delineation terminology. However, volunteer upland species were observed, soils in the yard area did not meet hydric soil indicators and no hydrology indicators were observed.

The WDNR Wisconsin Wetland Inventory (WWI) map was reviewed and identifies six small (< 2 acres) wetlands in the vicinity of the study area. The hydric soil layer associated with the WWI map identifies indicator soils throughout the majority of the study area with the exception of the original campground and marina. Indicator soils are soils which are commonly found in wetlands or have inclusions of soils that are commonly found in wetlands.

The WDNR Surface Water Data Viewer (SWDV) was also reviewed and identifies Oronto Creek along the west side of the study area, Parker Creek along the east side of the study area and Lake Superior to the north. Oronto Creek is identified as an Areas of Special Natural Resource Interest (ASNRI) Outstanding and Exceptional Trout Stream and Parker Creek is identified as an ASNRI Trout Stream. The northern portion of the original marina is identified as a Priority Navigable Waterway (PNW) Lake Less than 50 Acres. The portion of Lake Superior which abuts the study area is not identified as having any special designations. Most

of the study area is mapped as floodplain although no specific floodplain studies or data is available per the SWDV for this area.

Six wetlands (Wetlands 1 through 6) were delineated during the site visit. Per the WWI classification system, the wetlands are classified primarily as T3K (Forested, Broad-Leaved Deciduous, Wet Soil. Palustrine), S3K (Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) and E1K (Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine) wetland communities. The Wetland Data Sheets classify the wetlands according to the Cowarden *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service, 1979) classification system with the delineated wetland at the site being classified primarily as PFO1 (Palustrine, Forested, Broad-Leaved Deciduous), PSS1 (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous) and PEM1 (Palustrine, Emergent, Persistent) wetland communities.

Soils throughout the study area are considered naturally Problematic due to red parent material soils, which can mask redoximorphic features or other indicators of hydric conditions. However, most wetland sample plots met hydric soil indicators with the F21 Red Parent Material indicator being most frequently applied. Wetlands 5 and 6 did not meet hydric soil indicators due to the recent earthmoving activities that either scraped away existing hydric soils or created new wetlands due to slight depressional areas. Hydrology was also considered naturally Problematic in several areas where saturation and water table were not observed. However, in all cases at least one primary and/or two secondary hydrology indicators were met and therefore these areas met hydrology requirements. Much of the study area is also located within floodplains, which also typically have naturally Problematic soils, hydrology and vegetation. All available information was taken into account and best professional judgment was used to identify wetlands versus uplands.

None of the upland soil plots showed any indications of hydric soils, nor were any hydrology indicators observed in those areas identified as uplands. Most upland sample plots were dominated by non-hydrophytic vegetation as well with the exception of sample plot Up 3-1 which was tied for hydrophytic and non-hydrophytic dominants. In that case soils did not meet hydric soil indicators, no hydrology indicators were observed and topographic position consisted of a convex mound, all information indicating upland conditions.

An antecedent precipitation evaluation was conducted for the three months prior to the site visit (June through August 2017). The results of the WETS data evaluation indicate conditions were slightly wetter than normal at the time of the site visit based on available data from the Madeline Island WETS station. The Palmer Drought Index also indicates hydrological conditions were slightly wetter than normal (Moderately Moist +2.00 to +2.99) at the time of the site visit. Precipitation data for the area indicates that 0.62 inches of precipitation was recorded in the 2 days preceding the site visit. All available precipitation information was taken into consideration during evaluation of the site. The antecedent precipitation evaluation, WETS data and Palmer Drought Index reports for the area at the time of the site visit are included in Appendix B.

All wetland sample plots met hydrology indicators and the following indicators were applied throughout the study area; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B2 (Sediment Deposits), B3 (Drift Deposits), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test). Most wetland sample plots with the exception of Wetlands 5 and 6 met Hydric Soil Indicators and the following indicators were applied throughout the study area; F6 (Redox Dark Surface) and F21 (Red Parent Material).

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineering Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. The areas identified as wetland were identified based on topographical position, transitions from wetland to upland vegetation, hydrology indicators and hydric soil indicators, or lack thereof, in wetland areas versus upland areas. Best professional judgment was used to identify wetland boundaries based on all available information. See Figure 2 for the wetland delineation limits, wetland boundaries and sample locations. Wetland data sheets are included in Appendix A.

Study Methods

Available topographic maps, survey maps, WWI maps, Iron County Soil Survey maps, Hydric Soil maps and all available aerial photos were reviewed prior to visiting the property to identify potential wetland areas. The WWI map with wetland and hydric soil layers is included as Figure 3. The Iron County Soil Survey Map is included as Figure 4. In addition, antecedent precipitation information was evaluated through use of available local WETS data for the three months prior to the delineation to determine if conditions were within normal, wetter than normal or drier than normal at the time of the site visit. The Antecedent Precipitation Evaluation, WETS Data and the Palmer Drought Index reports are included in Appendix B.

Examination of vegetation, soils and hydrology, as outlined in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Northcentral and Northeast Regional Supplement, were used to characterize and determine wetland boundaries. The Natural Resources Conservation Service (NRCS) Field Indicators of Hydric Soils in the United States Guide was also utilized to help identify hydric soils at the site. All available information including aerial photos, antecedent precipitation analysis, reference sites, volunteer vegetation and topographic position, along with best professional judgment was applied. All wetland areas examined met Hydric Soils Indicators. Wetland edges were flagged with pink "Wetland Delineation" ribbon. Wetland boundaries and all sample locations were located with a Trimble Geo 7X Series Global Positioning System (GPS) with sub-meter accuracy and are shown on Figure 2.

Sample transects were established in a representative wetland to upland transition zone. The transects were comprised of two sample points located along a line running perpendicular to the wetland edge, with one point in obvious wetland and one point in obvious upland. A field data form was completed for each of the upland and wetland sample points. The sample locations were also located with a GPS and are indicated on Figure 2. Field data forms are included in Appendix A.

Wetland classification was performed according to Cowarden *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service, 1979) systems. Vegetation was identified using suitable keys (Eggers and Reed, 2014; Knopt, 1980; Courtenay/Zimmerman, 1972; Fassett, 1951; Chadde, 1998) and a plant's hydrophytic status was determined using the most recent Northcentral and Northeast Region – National Wetland Plant List (U.S. Army Corps of Engineers, 2016).

Results

OFF-SITE SURVEY

Prior to the site visit, all available maps including the United States Geological Survey (USGS) Topographical map, WWI map, Iron County Soil Survey, Hydric Soil maps and all available recent aerial photos were reviewed.

The USGS topographical map (Figure 1) indicates the original marina and campground areas were relatively level but areas surrounding the previously developed portions of the site consist of steep hillsides sloping towards Lake Superior with an approximate 40-foot drop in elevation from the highest points of the study area to the Lake Superior shoreline.

The WDNR WWI map (Figure 3) was reviewed and identifies six small (< 2 acres) wetlands in the vicinity of the study area. The hydric soil layer associated with the WWI map identifies indicator soils throughout the majority of the study area with the exception of the original campground and marina. Indicator soils are soils which are commonly found in wetlands or have inclusions of soils that are commonly found in wetlands.

The WDNR SWDV was also reviewed and identifies Oronto Creek along the west side of the study area, Parker Creek along the east side of the study area and Lake Superior to the north. Oronto Creek is identified as an ASNRI Outstanding and Exceptional Trout Stream and Parker Creek is identified as an ASNRI Trout Stream. The northern portion of the original marina is identified as a PNW Lake Less than 50 Acres. The portion of Lake Superior which abuts the study area is not identified as having any special designations

The Iron County Soil Survey (Figure 4) indicates that the following soil series are present within the study area:

7C – Beaches, 2 to 12% slopes (17.6 acres – 58.7 % of Area of Interest) - These soils are listed on the Wisconsin Hydric Soils list as Predominantly Non-Hydric with the following hydric inclusions;

- Pssamaquents, 0 to 5% of Unit – Found in depressions

444B – Gichigami-Oronto Complex, 0 to 6% slopes (5.7 acres – 19.0% of Area of Interest) – The Gichigami soils consist primarily of moderately well drained silt loam overlying silty clay loam soils. The Gichigami soils are typically formed on convex shoulders of till plains with level to gently rolling terrain. The Gichigami soils are classified as Frigid Oxyaquic Glossudalfs. The Oronto soils consist primarily of somewhat poorly drained silty clay loam overlying silt loam soils. The Oronto soils are typically formed on concave footslopes of till plains with level to gently rolling terrain. The Oronto soils are classified as Frigid Aeric Glossaqualfs. This soil complex is listed on the Wisconsin Hydric Soils list as Non-Hydric.

5285F – Rockland-Arnheim, Frequently Flooded Complex, 0 to 70% slopes (6.7 acres – 22.3% of Area of Interest) – The Rockland soils consist primarily of well drained silt loam soils. The Rockaland soils are typically formed on convex and linear shoulders and backslopes of slumps with extremely steep terrain. The Rockland soils are classified as Frigid Typic Eutrudepts. The Arnheim soils consist primarily of poorly drained mucky silt loam overlying silt loam over stratified very find sandy loam to silt loam soils. The Arnheim soils are typically formed on linear floodplains with level to nearly level terrain. The Arnheim soils are classified as Frigid Typic Fluvaquents. This soil complex is listed on the Wisconsin Hydric Soils list as Partially Hydric with the following hydric inclusions;

- Arnheim, 15 to 30% of Unit, found on floodplains

The hydric soils report for the study area, including minor components, indicates the following;

Report — Hydric Soil List - All Components

WI051-Iron County, Wisconsin

Map symbol and map unit name	Component/Local Phase	Comp. pct.	Landform	Hydric status	Hydric criteria met (code)
7C: Beaches, 2 to 12 percent slopes	Beaches	95-100	—	No	—
	Psammaquents	0-5	Depressions	Yes	2,3
444B: Gichigami-Oronto complex, 0 to 6 percent slopes	Gichigami	45-80	Till plains	No	—
	Oronto	15-35	Till plains	No	—
	Pickford	0-10	—	—	—
5285F: Rockland-Arnheim, frequently flooded complex, 0 to 70 percent slopes	Rockland	50-85	Slumps	No	—
	Arnheim	15-30	Flood plains	Yes	2
	Liminga	0-10	Outwash plains	No	—
	Pelkie	0-10	Flood plains	No	—
	Watton	0-10	Till plains	No	—

The Hydric Criteria codes 2 and 3 are described as follows;

2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:

   a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   b. Show evidence that the soil meets the definition of a hydric soil;

3. Soils that are frequently ponded for long or very long duration during the growing season.

   a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   b. Show evidence that the soil meets the definition of a hydric soil;

The Iron County Soil Survey map is included as Figure 4.

FIELD DELINEATION

Six wetlands (Wetlands 1 through 6) were delineated during the site visit. The following section describes the wetlands identified at the property and the basis for determining the wetland boundaries. See Appendix A for Wetland Data Forms. Refer to Figure 2 for the location of the wetlands and each sample transect. Site photos are included in Appendix C.

The Wetland Data Sheets classify the wetland according to the Cowarden classification system. The wetland boundaries were identified using procedures identified in the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of

transitions in wetland hydrology, vegetation and soils, as well as topographical position, aerial photo review and best professional judgment.

DELINEATED WETLAND BASINS

Wetland 1 is classified primarily as a T3Kr (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine, Floodplain Complex) community with areas of S3Kw (Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine, Floodplain Complex) and E1Kw (Emergent-Wet Meadow, Persistent, Palustrine, Wet Soil, Floodplain Complex) communities per the WDNR WWI Classification system. These wetland communities within Wetland 1 are classified as PFO1 (Palustrine, Forested, Broad-Leaved Deciduous), PSS1 (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous) and PEM1 (Palustrine, Emergent, Persistent) wetland communities per the Cowarden classification system. The wetland boundaries were identified using procedures from the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of the landscape position and observations of wetland hydrology, vegetation and soils.

No recent disturbances were observed throughout the majority of Wetland 1 with the exception of the original Oronto stream channel that was naturally rerouted at the time of the 2016 storm event. The alteration of the stream channel does not appear to have altered the hydrology of the adjacent wetlands since the wetlands are located at a higher elevation than the stream channel and primarily receive hydrology from runoff and precipitation and perching and retention of hydrology in the clay soils.

The wetland soils within Wetland 1 consist primarily of silty clay loam with redoximorphic features overlying high chroma/value clay loam and clay soils lacking redoximorphic features, mostly overlying shallow gravel and rock. Although several of the soil pits within Wetland 1 could not be advanced to a full 20 inch profile depth due to shallow gravel and rock, all sample plots met the hydric soil indicators based on evaluation of the upper portions of the soil profiles. Soils were considered Problematic throughout Wetland 1 and adjacent uplands due to red parent material which can mask hydric soil indicators. However, all wetland sample plots within Wetland 1 met the F21 (Red Parent Material) hydric soil indicator and all factors including vegetation, hydrology indicators, or lack thereof, and topographic position were also taken into consideration to identify wetlands versus uplands.

A few wetland sample plots (Wet 1-1 and Wet 1-2) lacked high water table and/or saturation at the time of the site visit and were considered to have Problematic hydrology. However, all wetland sample plots within Wetland 1 met the hydrology requirement of at least one primary indicator and/or two secondary indicators, met hydric soil indicators and had a dominance of hydrophytic vegetation. The following hydrology indicators were applied at associated sample plots within Wetland 1; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B3 (Drift Deposits), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

Upland soils consist primarily of silty clay loam and clay loam overlying clay soils lacking redoximorphic features. None of the upland sample plots met hydric soil indicators, nor were any hydrology indicators observed in any areas identified as upland.

Wetland/upland boundaries were identified based on all available information and best professional judgment based on years of experience working in the red clay plains along Lake Superior.

Wetland 2 is classified primarily as a T3K (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine) community per the WDNR WWI Classification system and as a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous) wetland community per the Cowarden classification system. The wetland boundaries were identified using procedures from the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of the landscape position and observations of wetland hydrology, vegetation and soils.

No recent disturbances were observed throughout Wetland 2 and the wetland and adjacent uplands were considered to have normal circumstances.

The wetland soils within Wetland 1 consist primarily of silty clay loam with redoximorphic features overlying high chroma/value silty clay loam soils lacking redoximorphic features, overlying shallow gravel and rock. Although the soil pit within Wetland 2 could not be advance to a full 20 inch profile depth due to shallow gravel and rock, the sample plot met the hydric soil indicators based on evaluation of the upper portions of the soil profile. Soils were considered Problematic throughout Wetland 2 and adjacent uplands due to red parent material which can mask hydric soil indicators. However, the wetland sample plot within Wetland 2 met the F21 (Red Parent Material) hydric soil indicator and all factors including vegetation, hydrology indicators, or lack thereof, and topographic position were also taken into consideration to identify wetlands versus uplands.

The wetland sample plot Wet 2-1 lacked high water table and/or saturation at the time of the site visit and was considered to have Problematic hydrology. However, the wetland sample plot met the hydrology requirement of at least one primary indicator and/or two secondary indicators, met hydric soil indicators and had a dominance of hydrophytic vegetation. The following hydrology indicators were applied at the associated sample plot within Wetland 2; B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

Upland soils consist primarily of silt loam soils lacking redoximorphic features. The upland sample plot did not meet hydric soil indicators, nor were any hydrology indicators observed.

Wetland/upland boundaries were identified based on all available information and best professional judgment based on years of experience working in the red clay plains along Lake Superior.

Wetland 3 is classified primarily as an S3K (Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) community per the WDNR WWI Classification system and as a PSS1 (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous) wetland community per the Cowarden classification system. The wetland boundaries were identified using procedures from the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of the landscape position and observations of wetland hydrology, vegetation and soils.

Although this wetland is comprised of a man-made ditch along the east side of CTH A, no recent disturbances were observed and the wetland was delineated based on current conditions.

The wetland soils within Wetland 3 consist primarily of silt loam with redoximorphic features overlying high chroma/value gravelly loamy overlying shallow gravel and rock. Although the soil pit within Wetland 3 could not be advance to a full 20 inch profile depth due to shallow gravel and rock, the sample plot met hydric soil indicators based on evaluation of the upper portions of the soil profile. Soils were considered Problematic throughout Wetland 3 and adjacent uplands due to red parent material which can mask hydric soil indicators. However, the wetland sample plot met the F6 (Redox Dark Surface) hydric soil indicator and all factors including vegetation, hydrology indicators, or lack thereof, and topographic position were also taken into consideration to identify wetlands versus uplands.

The wetland sample plot Wet 3-1 lacked high water table and/or saturation at the time of the site visit and was considered to have Problematic hydrology. However, the wetland sample plot within Wetland 3 met the hydrology requirement of at least one primary indicator and/or two secondary indicators, met hydric soil indicators and had a dominance of hydrophytic vegetation. The following hydrology indicators were applied at associated sample plot within Wetland 3; B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

Upland soils consist primarily of sandy loam, loamy sand and sand soils all lacking redoximorphic features. The upland sample plot did not meet hydric soil indicators, nor were any hydrology indicators observed in areas identified as upland.

Wetland/upland boundaries were identified based on all available information and best professional judgment based on years of experience working in the red clay plains along Lake Superior.

Wetland 4 is classified primarily as a T3Kr (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine, Floodplain Complex) community per the WDNR WWI Classification system and as a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous) wetland community per the Cowarden classification system. The wetland boundaries were identified using procedures from the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of the landscape position and observations of wetland hydrology, vegetation and soils.

Given the recent catastrophic events, this wetland community and adjacent uplands were considered to have Significantly Disturbed hydrology and soils and did not have normal circumstances per wetland delineation terminology and guidelines. This area had evidently flooded and had significant erosion and deposition of soils from the storm event, thereby altering soils and potentially altering hydrology. Although vegetation was likely buried and/or washed away at that time, the area had revegetated and the tree canopy and shrub layer were still intact. Although the wetland sample plot did meet hydrology and hydric soil criteria, this area was complicated due to the storm event and in addition, with naturally Problematic soils and vegetation due to being located in a floodplain. Therefore, best professional judgment was applied based on remnant vegetation and topographic position.

The wetland soils within Wetland 4 consist primarily of a layer of sand overlying buried hydric soils with redoximorphic features overlying high chroma/value very fine sandy loam soils lacking redoximorphic features. Despite the Significantly Disturbed soils, the buried hydric horizon still met the F21 (Red Parent Material) hydric soil indicator.

The wetland sample plot lacked high water table and/or saturation at the time of the site visit and was considered to have Problematic hydrology. However, the wetland sample plot met the hydrology requirement of at least one primary indicator and/or two secondary indicators, met hydric soil indicators and had a dominance of hydrophytic vegetation. The following hydrology indicators were applied at associated sample plot within Wetland 4; B2 (Sediment Deposits), B3 (Drift Deposits), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

Upland soils consist primarily of silty clay loam and clay loam overlying clay soils lacking redoximorphic features. None of the upland sample plots met hydric soil indicators, nor were any hydrology indicators observed in any areas identified as upland.

Wetland/upland boundaries were identified based on all available information and best professional judgment based on years of experience working in the red clay plains along Lake Superior.

Wetlands 5 and 6 are classified primarily as E1Kw (Emergent-Wet Meadow, Persistent, Palustrine, Wet Soil, Floodplain Complex) wetland communities per the WDNR WWI Classification system and as PEM1 (Palustrine, Emergent, Persistent) wetland communities per the Cowarden classification system. The wetland boundaries were identified using procedures from the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of the landscape position and observations of wetland hydrology, vegetation and soils.

Wetlands 5 and 6 were considered to have Significantly Disturbed soils, hydrology and vegetation due to the recent storm event, and more so due to the clean-up activities following the storm event. It is apparent that excavators were used to clear debris and level areas of eroded and deposited soils in these areas, followed by planting of vegetation to stabilize soils. In addition, soils were naturally Problematic due to red parent material which can mask hydric soil indicators. Soils in Wetlands 5 and 6 did not meet hydric soil indicators due to the recent earthmoving activities that either scraped away existing hydric soils or created new wetlands due to slight depressional areas. Despite the recent disturbances, all available

information was taken into consideration and best professional judgment was used to identify wetlands versus uplands.

The wetland soils within Wetlands 5 and 6 consist primarily of high chroma/value clay soils lacking redoximorphic features. Soils within these wetland communities did not meet hydric soil indicators but based on a dominance of hydrophytic vegetation and hydrology indicators, best professional judgment was used to assume that hydric soils would form under the current conditions.

Several hydrology indicators were observed in both Wetland 5 and 6 and included; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

Upland soils consist primarily of clay soils lacking redoximorphic features. None of the upland sample plots met hydric soil indicators, nor were any hydrology indicators observed in any areas identified as upland.

Wetland/upland boundaries were identified based on all available information and best professional judgment based on years of experience working in the red clay plains along Lake Superior.

Vegetation found within representative wetland areas throughout the site includes the following:

Scientific Name	**Common Name**	**Indicator**
Abies balsamea	Balsam Fir	FAC
Acer rubrum	Red Maple	FAC
Acer saccharum	Sugar Maple	FACU
Alisma subcordatum	American Water Plantain	OBL
Alnus incana ssp. rugosa	Speckled Alder	FACW
Arisaema triphyllum	Jack-in-the-Pulpit	FAC
Aronia melanocarpa	Black Chokeberry	FAC
Betula allegheniensis	Yellow Birch	FAC
Betula papyrifera	White Birch	FACU
Bidens cernua	Nodding Beggarticks	OBL
Bromus ciliatus	Fringed Brome	FACW
Caltha palustris	Marsh Marigold	OBL
Carex bromoides	Brome-Like Sedge	FACW
Carex crinita	Fringed Sedge	OBL
Carex gracillima	Graceful Sedge	FACU
Carex intumescens	Bladder Sedge	FACW
Carex scoparia	Broom Sedge	FACW
Cirsium arvense	Canada Thistle	FACU
Cyperus esculentus	Yellow Nut Sedge	FACW
Dryopertis intermedia	Evergreen Wood Fern	FAC
Echinochloa crus-galli	Barnyard Grass	FACU
Eleocharis obtusa	Blunt Spike Rush	OBL
Equisetum arvense	Meadow Horsetail	FAC
Equisetum sylvaticum	Woodland Horsetail	FACW
Fraxinus nigra	Black Ash	FACW
Geum aleppicum	Yellow Avens	FAC
Impatiens capensis	Orange Jewelweed	FACW
Juncus effusus	Soft Rush	OBL
Juncus tenuis	Path Rush	FAC
Matteuccia stuthiopteris	Ostrich Fern	FAC
Mentha arvensis	Field Mint	FACW
Myosotis scorpoides	Forget-Me-Not	OBL
Onoclea sensibilis	Sensitive Fern	FACW

Parthenocissus quinquefolia	Virginia Creeper	FACU
Persicaria lapathifolium	Curlytop Knotweed	FACW
Phalaris arundinacea	Reed Canary Grass	FACW
Poa palustris	Fowl Meadow Grass	FACW
Rubus pubescens	Dwarf Raspberry	FACW
Rubus idaeus	Red Raspberry	FAC
Rumex crispus	Curly Dock	FAC
Salix exigua	Sandbar Willow	OBL
Schoenoplectus tabernaemontani	Soft-Stem Bulrush	OBL
Scirpus atrovirens	Dark Green Bulrush	OBL
Solidago gigantea	Giant Goldenrod	FACW
Symphyotrichum lateriflorum	Calico Aster	FAC
Thalictrum dasycarpum	Tall Meadow Rue	FACW
Ulmus americana	American Elm	FACW

Vegetation found within representative upland areas throughout the site includes the following:

Scientific Name	**Common Name**	**Indicator**
Abies balsamea	Balsam Fir	FAC
Acer rubrum	Red Maple	FAC
Acer saccharum	Sugar Maple	FACU
Alnus incana ssp. rugosa	Speckled Alder	FACW
Arctium minus	Common Burdock	FACU
Betula allegheniensis	Yellow Birch	FAC
Betula papyrifera	White Birch	FACU
Bromus inermis	Smooth Brome	UPL
Carex gracillima	Graceful Sedge	FACU
Carex pensylvanica	Pennsylvania Sedge	UPL
Cirsium arvense	Canada Thistle	FACU
Cornus canadensis	Canada Bunchberry	FAC
Corylus americana	American Hazelnut	FACU
Dryopertis intermedia	Evergreen Wood Fern	FAC
Elymus repens	Quackgrass	FACU
Equisetum arvense	Meadow Horsetail	FAC
Eurybia macrophylla	Large-Leaf Aster	UPL
Geranium maculatum	Wild Geranium	FACU
Gymnocarpium dryopteris	Common Oak Fern	FACU
Hieracium canadense	Canada Hawkweed	UPL
Maianthemum canadensis	Canada Mayflower	FACU
Matteuccia stuthiopteris	Ostrich Fern	FAC
Osmunda claytoniana	Interrupted Fern	FAC
Phalaris arundinacea	Reed Canary Grass	FACW
Phegopteris connectilis	Northern Beech Fern	FACU
Plantago lanceolata	Narrow-Leaved Plantain	FACU
Plantago major	Common Plantain	FACU
Poa pratensis	Kentucky Bluegrass	FACW
Populus grandidentata	Big-Tooth Aspen	FACU
Populus tremula	Quaking Aspen	FAC
Pteridium aqualinum	Bracken Fern	FACU
Rubus idaeus	Red Raspberry	FAC
Rubus parviflorus	Thimbleberry	FACU
Rumex acetosella	Sheep Sorrel	FACU
Solidago canadensis	Canada Goldenrod	FACU
Symphyotrichum lateriflorum	Calico Aster	FAC

Taraxacum officinale	Common Dandelion	FACU
Trientalis borealis	American Starflower	FAC
Trifolium hybridum	Alsike Clover	FACU
Trifolium repens	White Clover	FACU
Trillium grandiflorum	Great White Trillium	UPL
Triticum x aestivum	Winter Wheat	UPL

The wetland edges were flagged based on the transition from upland vegetation to wetland vegetation and transitions in soil and hydrology observed at upland and wetland sample points.

Conclusions

The wetland delineation was conducted on September 8, 2017 by Ms. Ann Key, a WDNR Professionally Assured Wetland Delineator. The objective of the wetland delineation was to identify potential areas for reconstruction of the campground and marina, which were destroyed by a torrential rainstorm on July 11, 2016. The campground and marina were essentially washed away by floodwaters from Oronto Creek and overland flow from the adjacent hillsides. This wetland delineation study was conducted to identify suitable and reasonable locations for a new campground and reconstruction of the marina and to take possible wetland impacts into consideration.

The property consists primarily of upland hardwood forest and hardwood/shrub wetland communities and the developed portions of the marina with parking areas and associated roads. The study area is owned primarily by Iron County and is bordered to the west and south by private lands, to the southeast by timber land and to the northeast by Iron County lands. CTH A runs south-north through the study area, providing access to the campground, marina and boat launch area. Oronto Creek and Parker Creek flow from south to north through the study area, both ultimately draining into Lake Superior.

Given the recent catastrophic events, portions of the study area were considered to be Significantly Disturbed and did not have normal circumstances per wetland delineation terminology and guidelines. In areas that had evidently flooded and had significant erosion and/or deposition of soils from the storm event (Wetland 4), soils and hydrology were considered Significantly Disturbed and best professional judgment was applied based on remnant vegetation and topographic position. In other portions of the study area it was evident that debris removal and soil excavation has been conducted to restore conditions following the storm event. In these areas some wetlands were present (Wetlands 5 and 6) and appeared to have been created by the recent earthwork and clean-up activities. These wetlands and adjacent uplands were also considered to have Significantly Disturbed soils, hydrology and/or vegetation. Again, best professional judgment was applied based on all available information to identify which areas met wetland criteria. Wooded areas to the southeast near Wetlands 1, 2 and 3 appeared to be relatively undisturbed and were considered to have normal circumstances. A small portion of the study area in the vicinity of sample plot Up 1-3 consists of maintained lawn around the existing campground and was considered to have Significantly Disturbed vegetation and did not have normal circumstances per wetland delineation terminology. However, volunteer upland species were observed, soils in the yard area did not meet hydric soil indicators and no hydrology indicators were observed.

The WDNR WWI map was reviewed and identifies six small (< 2 acres) wetlands in the vicinity of the study area. The hydric soil layer associated with the WWI map identifies indicator soils throughout the majority of the study area with the exception of the original campground and marina. Indicator soils are soils which are commonly found in wetlands or have inclusions of soils that are commonly found in wetlands.

The WDNR SWDV was also reviewed and identifies Oronto Creek along the west side of the study area, Parker Creek along the east side of the study area and Lake Superior to the north. Oronto Creek is identified as an ASNRI Outstanding and Exceptional Trout Stream and Parker Creek is identified as an ASNRI Trout Stream. The northern portion of the original marina is identified as a PNW Lake Less than 50 Acres. The portion of Lake Superior which abuts the study area is not identified as having any special designations. Most of the study area is mapped as floodplain although no specific floodplain studies or data is available per the SWDV for this area.

Six wetlands (Wetlands 1 through 6) were delineated during the site visit. Per the WWI classification system, the wetlands are classified primarily as T3K (Forested, Broad-Leaved Deciduous, Wet Soil. Palustrine), S3K (Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) and E1K (Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine) wetland communities. The Wetland Data Sheets classify the wetlands according to the Cowarden *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service, 1979)

classification system with the delineated wetland at the site being classified primarily as PFO1 (Palustrine, Forested, Broad-Leaved Deciduous), PSS1 (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous) and PEM1 (Palustrine, Emergent, Persistent) wetland communities.

Soils throughout the study area are considered naturally Problematic due to red parent material soils, which can mask redoximorphic features or other indicators of hydric conditions. However, most wetland sample plots met hydric soil indicators with the F21 Red Parent Material indicator being most frequently applied. Wetlands 5 and 6 did not meet hydric soil indicators due to the recent earthmoving activities that either scraped away existing hydric soils or created new wetlands due to slight depressional areas. Hydrology was also considered naturally Problematic in several areas where saturation and water table were not observed. However, in all cases at least one primary and/or two secondary hydrology indicators were met and therefore these areas met hydrology requirements. Much of the study area is also located within floodplains, which also typically have naturally Problematic soils, hydrology and vegetation. All available information was taken into account and best professional judgment was used to identify wetlands versus uplands.

None of the upland soil plots showed any indications of hydric soils, nor were any hydrology indicators observed in those areas identified as uplands. Most upland sample plots were dominated by non-hydrophytic vegetation as well with the exception of sample plot Up 3-1 which was tied for hydrophytic and non-hydrophytic dominants. In that case soils did not meet hydric soil indicators, no hydrology indicators were observed and topographic position consisted of a convex mound, all information indicating upland conditions.

An antecedent precipitation evaluation was conducted for the three months prior to the site visit (June through August 2017). The results of the WETS data evaluation indicate conditions were slightly wetter than normal at the time of the site visit based on available data from the Madeline Island WETS station. The Palmer Drought Index also indicates hydrological conditions were slightly wetter than normal (Moderately Moist +2.00 to +2.99) at the time of the site visit. Precipitation data for the area indicates that 0.62 inches of precipitation was recorded in the 2 days preceding the site visit. All available precipitation information was taken into consideration during evaluation of the site.

All wetland sample plots met hydrology indicators and the following indicators were applied throughout the study area; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B2 (Sediment Deposits), B3 (Drift Deposits), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test). Most wetland sample plots with the exception of Wetlands 5 and 6 met Hydric Soil Indicators and the following indicators were applied throughout the study area; F6 (Redox Dark Surface) and F21 (Red Parent Material).

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineering Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. The areas identified as wetland were identified based on topographical position, transitions from wetland to upland vegetation, hydrology indicators and hydric soil indicators, or lack thereof, in wetland areas versus upland areas. Best professional judgment was used to identify wetland boundaries based on all available information.

The findings of this wetland delineation report are only valid for the site conditions which existed at the time of this investigation. All wetland boundaries and jurisdictional determinations presented in this report are preliminary and subject to verification by USACE. The final authority for wetland boundaries and permit requirements rests with the government agencies which have jurisdiction over this project. Findings of this wetland delineation are subject to revision based upon natural or induced changes in weather, vegetation management, land use, topography, surface water flow, subsurface drainage, stormwater management, within or near the project site which may affect the soils, hydrology, or vegetative community on the project site.

This report provides a description of existing wetland conditions within the Project area and does not include quantification of any temporary or permanent impacts to wetlands or waterbodies. Such impacts would require review and approval from a variety of agencies. Activities which impact or potentially impact jurisdictional wetlands, are currently regulated at several levels of government. Federal (USACE), State (WDNR) and local government agencies may all be involved in reviewing a single project. To avoid potential penalties and project delays it is necessary to acquire necessary permits and approvals from all jurisdictional agencies before initiating

activities in wetlands. It is important to obtain USACE concurrence on the wetland boundaries prior to proceeding with activities at the site.

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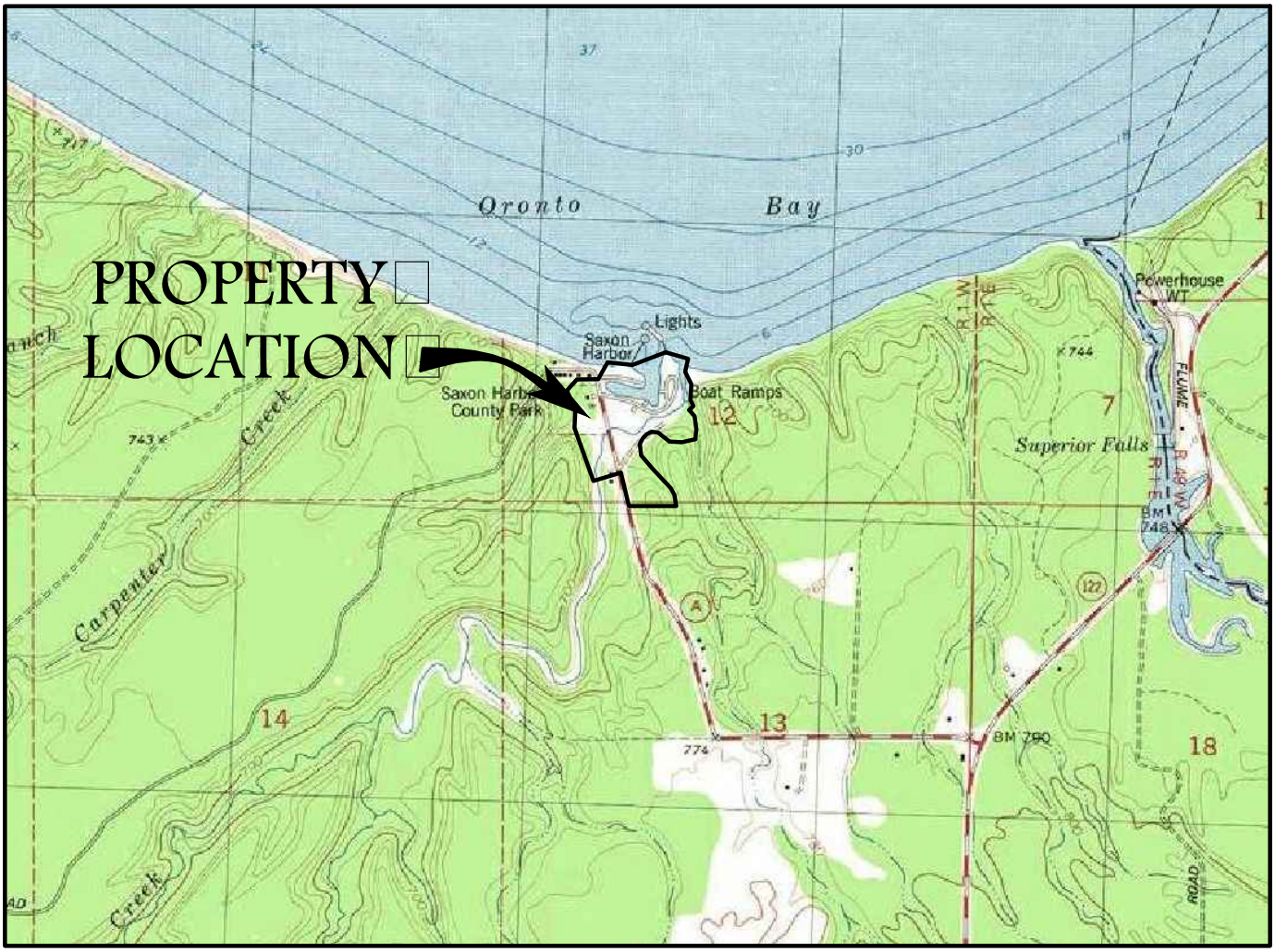


N

W E

S

SCALE IN FEET

1" = 2000'

0 1000 2000 3000 4000 5000 6000 7000 8000

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

BASE MAP SOURCE: USGS 7.5 MINUTE QUADRANGLE, OROTNO BAY, WISCONSIN, 1980 (NATIONAL GEOGRAPHIC HOLDINGS, INC.)

SITE LOCATION & LOCAL TOPOGRAPHY	APPROVED BY: AMK DRAWN BY: NLB	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 444
SAXON HARBOR MARINA & CAMPGROUND SEC. 12, T48N, R1W, TOWN OF SAXON, IRON COUNTY, WISCONSIN	DATE: 4-13-17 SCALE: 1"=2000'			FIGURE NO. 1

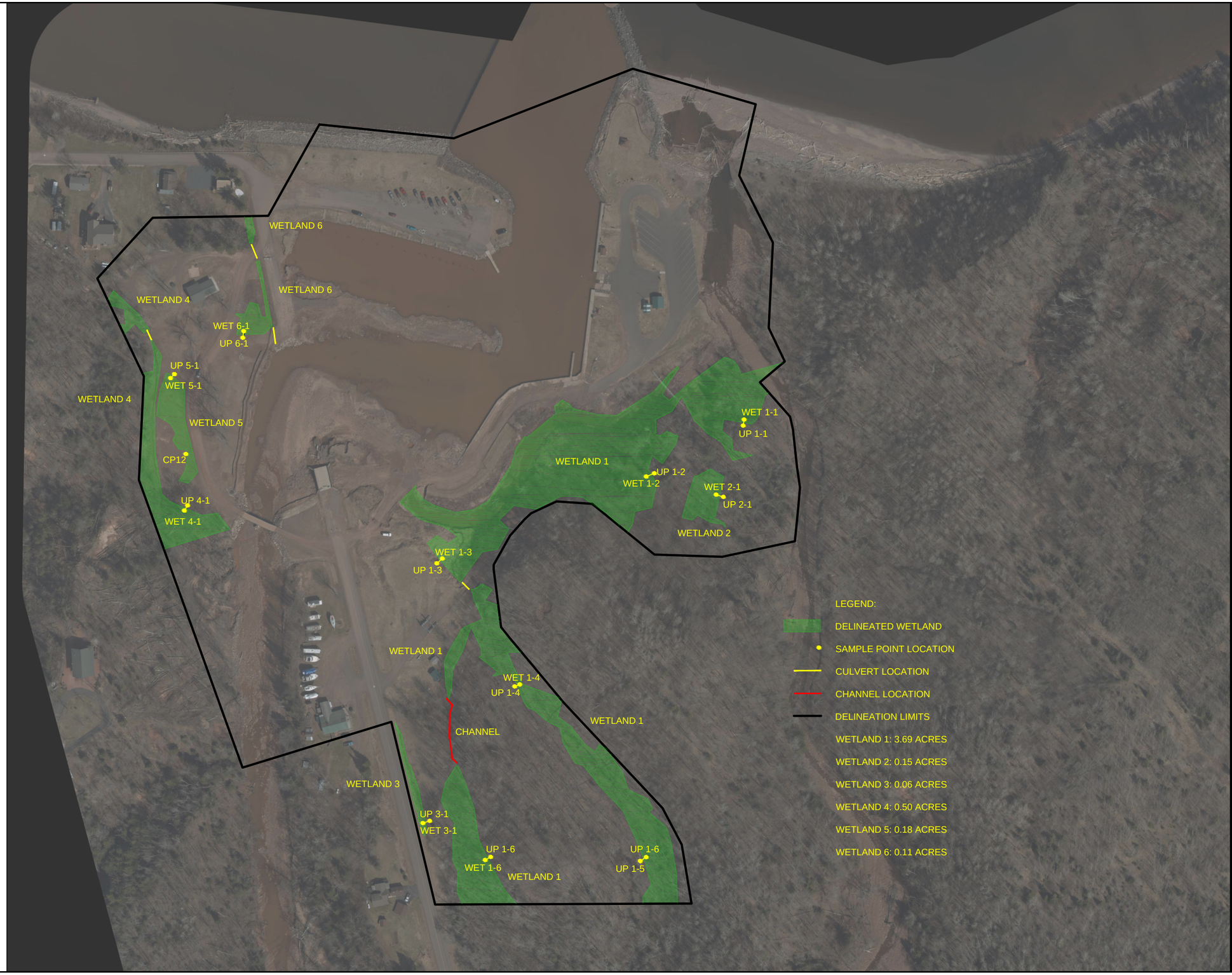
N

W E

S

SCALE IN FEET

100 0 100 200



PROJECT NUMBER: 444

FIGURE NO. 2

Wetlands & Waterways LLC

APPROVED BY: AMK

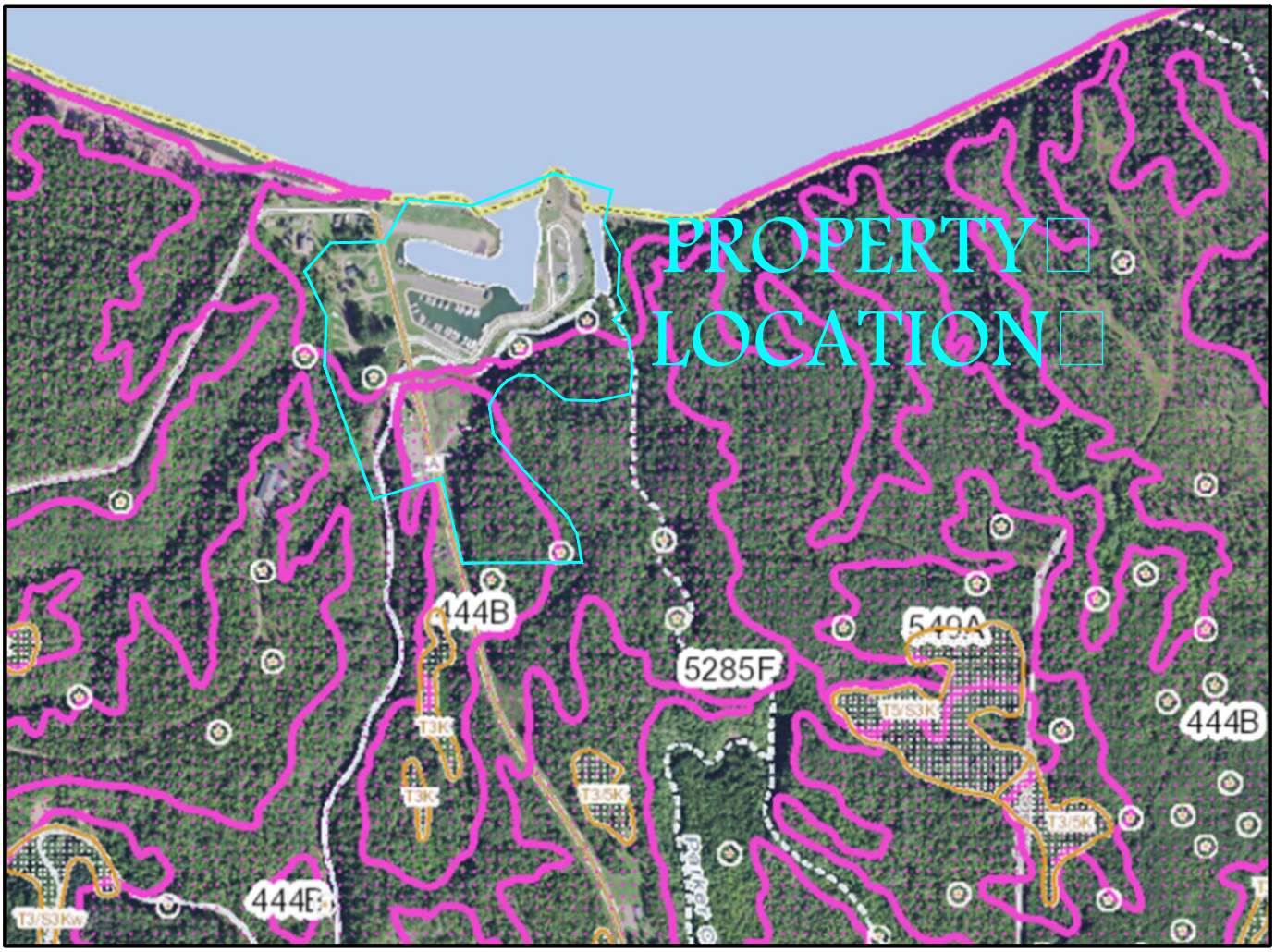
DRAWN BY: NLB

DATE: 9-13-17

SCALE: 1"=200'

WETLAND LOCATION MAP

SAXON HARBOR MARINA & CAMPGROUND
SEC. 12, T48N, R1W, TOWN OF SAXON, IRON COUNTY, WISCONSIN



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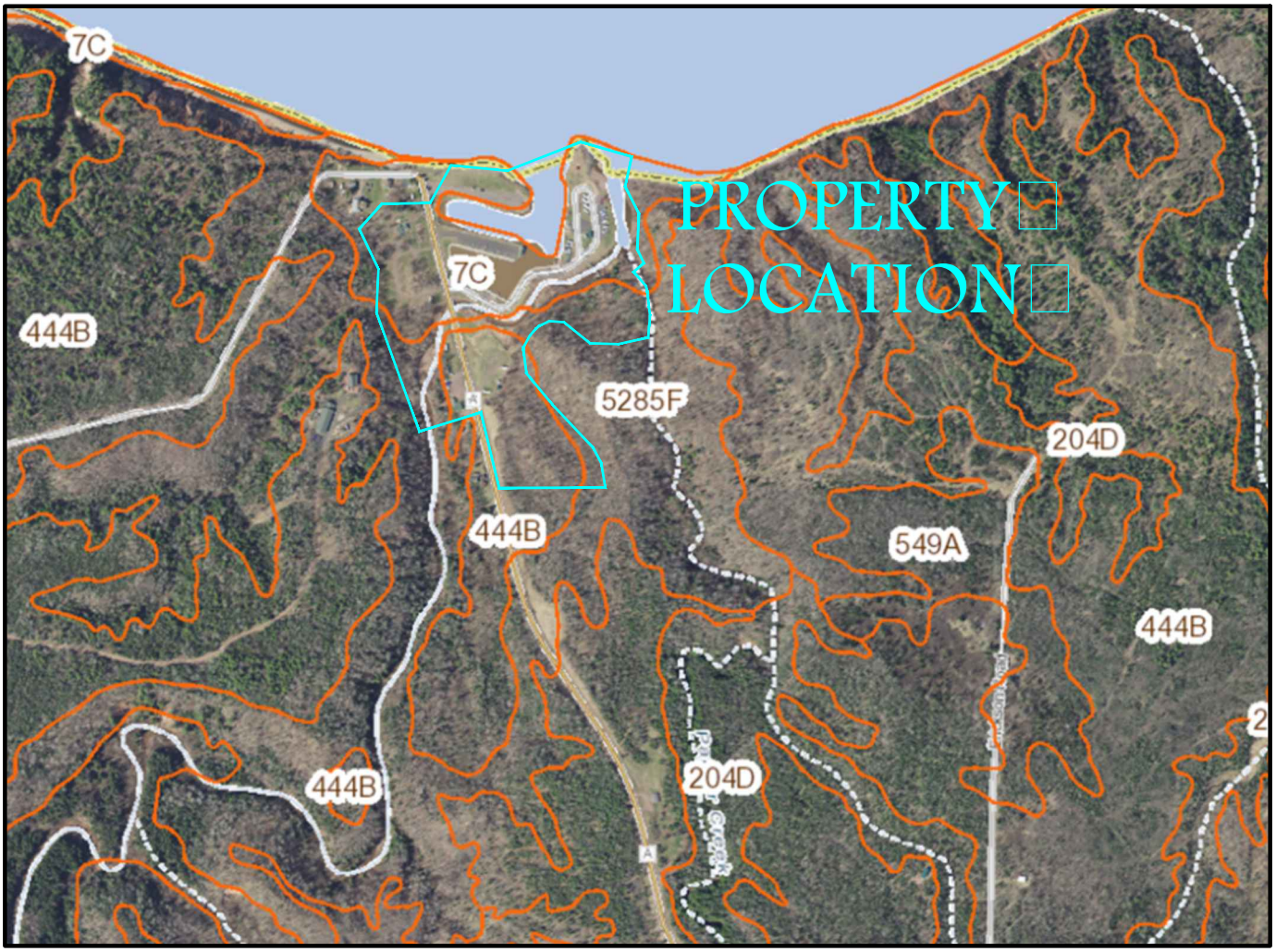
QUADRANGLE LOCATION

BASE MAP SOURCE: WISCONSIN WETLAND INVENTORY MAP

WISCONSIN WETLAND INVENTORY MAP	APPROVED BY: AMK	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 444
	DRAWN BY: NLB			FIGURE NO. 3
SAXON HARBOR MARINA & CAMPGROUND SEC. 12, T48N, R1W, TOWN OF SAXON, IRON COUNTY, WISCONSIN	DATE: 4-13-17			
	SCALE: NONE			



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SOILS LEGEND:

7C Beaches, 2 to 12 percent slopes

444B Gichigami-Oronto complex, 0 to 6 percent slopes

5285F Rockland-Arnheim, frequently flooded complex, 0 to 70 percent slopes

QUADRANGLE LOCATION

BASE MAP SOURCE: IRON COUNTY SOIL SURVEY MAP

IRON COUNTY SOIL SURVEY MAP	APPROVED BY: AMK DRAWN BY: NLB	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	PROJECT NUMBER: 444
SAXON HARBOR MARINA & CAMPGROUND SEC. 12, T48N, R1W, TOWN OF SAXON, IRON COUNTY, WISCONSIN	DATE: 4-13-17 SCALE: NONE	Wetlands & Waterways LLC	FIGURE NO. 4

APPENDIX A – FIELD DATA SHEETS

The full report is available upon request from
Iron County or FEMA.