ABONMARCHE

Sammie L. Maletta Public Marina

Marina Master Plan

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Table of Contents

List of Appendices

1.0 MARINA BACKGROUND

The City of Portage Public Marina is located on Burns Waterway, one mile upstream of its confluence with Lake Michigan. From the marina, access to Lake Michigan is restricted by several bridges, including US-12, Midwest Steel Bridge, two railway bridges, and a pipe bridge. These overhead crossings restrict access to and from the marina by only power boats and sailboats equipped with folding or removable masts.

The marina contains a four-lane boat launch, 214 seasonal slips (including T-head docks) and 400 linear feet of broadside dockage along the north basin wall. The steel sheet pile basin, boat launch, buildings, and site infrastructure were initially constructed in the mid-1990s.

Figure 1: Marina overview, looking north

2.0 EXISTING SITE UTILITIES

Underground site utilities include potable water, sanitary sewer, storm sewer, electric, and communications.

2.1 POTABLE WATER

A 16-inch water main parallels SR-249 adjacent to the marina. A 6-inch tap and ductile iron water main were constructed in 1996 to supply the facility. Water distribution pipes extend around the basin for both potable use and fire protection.

2.2 SANITARY SEWER

Two sanitary lift stations are located on site, one at each restroom building. The lift stations pump through 2.5-inch PVC force mains until they reach a sanitary manhole near the trailer parking spaces along the boat launch entry drive. From this manhole, the gravity sewer then discharges to a lift station at Crisman Road and SR-249. The sanitary sewers and lift stations are in good condition.

2.3 STORM SEWER

Site stormwater includes three small enclosed pipe systems and a series of leaching basins. The leaching basins are located primarily within paved parking areas and access drives between the large gravel trailer lot and the marina basin. The enclosed pipe systems collect storm runoff through catch basins and empty directly into surface waters. One outlet is located at the eastern wall of the basin, near the boater services building, and another outlet empties into the circulation tube which connects Burns Waterway to the basin. The third outlet is located near the southeast corner of the basin.

2.4 ELECTRIC

The primary electric line enters the site from the north east corner of the site, where a 12.5 KV primary pedestal is located atop the hill. Primary continues on to two transformers, one located near the main building and the other located near the secondary restroom building.

2.5 COMMUNICATIONS

Information regarding communications feeds (telephone, internet, cable) is limited and therefore communications lines are not detailed herein.

2.6 HIGH TENSION WIRES

Nipsco high tension wires run through an easement across the property, just south of the marina basin and over some of the entry/parking areas. Overhead timber trusses are located across the site roadways, apparently to ensure vehicle/trailer heights are below a height that could result in arcing (Figure 2). The trusses were likely required when the marina was originally built and any proposed changes to them should be coordinated with Nipsco. The trusses are in poor condition, but were undergoing repairs during the site visit.

Figure 2: Overhead timber truss

2.7 HARBOR DEPTHS AND NAVIGATION

On the Great Lakes, elevations are typically reported with respect to low water datum, which is elevation 577.5' (IGLD 1985). The current Lake Michigan water level is at approximately +3.25' Low Water Datum (LWD). The depths reported on the bathymetric survey are reported with respect to LWD, as well, so the actual depth of water is 3.25' greater than the depth reported on the bathymetric survey. In summary, actual depths within the basin range from approximately eight feet to ten feet, which is more than adequate for the vessels which moor in the basin.

Based upon record documents and the depths measured in 2017, the basin bottom elevation remains close to the original basin design depth. Some shoaling may be occurring near A Dock, B Dock, and a small portion of K Dock as bottom elevations are at LWD -6' or shallower.

The basin is calm and well-protected from the coastal conditions on Lake Michigan. Armor stone breakwaters protect the mouth of Burns Waterway and the marina is located just over a mile upstream from the mouth. Basin conditions are well below the wave agitation levels to which basins are typically designed, so additional protection and calming measures are not needed.

Several bridges are located between the basin and Lake Michigan (Figure 3), including (list order from upstream to downstream):

- Dunes Highway/US-12 (two bridges)
- Amtrak Rail (two rail lines)
- Norfolk Southern Rail (two rail lines)
- Pipe bridge
- Midwest Steel Bridge and rail spur

These bridges restrict vessel heights that can travel to and from Lake Michigan to all of the Burns Waterway marinas, including the Portage Marina.

Figure 3: Dunes High way bridge downstream of marina, looking north

2.8 BASIN SEAWALL & LADDERS

The basin steel sheet pile wall appears to be in fair condition overall. Several local issues were observed:

- Near B Dock, the steel sheet piling appears to have bowed towards the basin. In addition, the adjacent promenade concrete is settling and voids are present below the concrete. This could indicate a failed anchor and/or the loss of fines from behind the wall.
- Along the H Dock gangway, a short section of the steel sheet pile cap extends towards the basin from the edge of concrete. This could indicate some bowing in the wall or it could have been installed in that position.
- A broken weld was observed in the cap on top of the wall along the transient dock (T Dock). This could indicate movement of the wall caused by a failed anchor. Steel ladders are located along the basin seawall throughout the marina and appear to be in good to fair condition. The ladders provide a means for egress from the water if a person falls into the basin. Additional ladders are located on the floating docks and are discussed below.

Figure 4: Typical promenade

2.9 RETAINING WALLS

The facility contains many block retaining walls to create grade separations and space for parking, roadways, and infrastructure (Figure 5). The walls appeared to be in good condition and no apparent signs of settlement or

Figure 5: Block retaining wall

drainage issues were observed. Some backfill voids are visible in areas of tight radius transitions by the main building. Block patterns and gaps appear to be consistent throughout the walls observed, indicating that little to no movement has occurred.

2.10 PROMENADE

The promenade that surrounds the marina, parking lots, and buildings is in fair condition, on average. Many of the concrete surfaces are in good condition with few cracks or irregularities. However, some concrete surface joints are exhibiting differential settlement, creating the potential for trip hazards, and possibly signaling underlying issues.

Steel railings line the basin-side of the sidewalk which surrounds the marina and provide edge protection. The railings are in good condition and remain well anchored. No unstable or loose areas were observed after spot checking the railing throughout the facility.

2.11 GANGWAYS, GATES AND LANDINGS

Gangways provide ingress and egress from the land-side of the facility to the floating docks. They provide support to the utilities which serve the docks, as well. Several different gangways were observed on site:

- Docks A, B, C, D, J, K: Aluminum square tube-framed, manufactured by Technomarine
- Dock F, D, H, I: Aluminum round tube-framed, manufactured by Flotation Docking Systems (FDS)

Figure 6: Gangway platform gap

The gangways are in good to fair condition. The newer FDS gangways are generally in better condition than the apparently older Technomarine gangways. Decking on the Technomarine gangways is aligned longitudinally along the path of travel, creating the potential for trip hazards due to deck board ends and due to less traction. Some of the gangways include 18-inch wide wood pleats, intended to provide traction. However, these pleats are not ADA-compliant and future deck and/or gangway replacements should remove the pleats. Alternate products are available for improving traction.

At the top of the gang ways, small, wood-decked platforms extend out from the face of the basin seawall. The platforms are supported by welded steel struts and appear to be in fair condition. However, where the platforms meet the concrete promenade/sidewalk, gaps were observed that exceed 1-1/2 inches (Figure 6). This size of gap is not ADA-compliant and, since decking is also in generally poor condition, the decking should be replaced and the gaps minimized. A steel or aluminum threshold may be needed to span the gaps.

Gate systems are located on the floating docks near the gangway landing areas to provide access control and security (Figure 7). With the exception of F Dock, the gates are a white-painted tube construction, with galvanized chain link panels. The panels extend out over the water to minimize the potential for a trespasser to bypass the gate. The F Dock gate appears to be of newer construction and is constructed of welded, unpainted, aluminum tube. Access to all gates is controlled by key-pad.

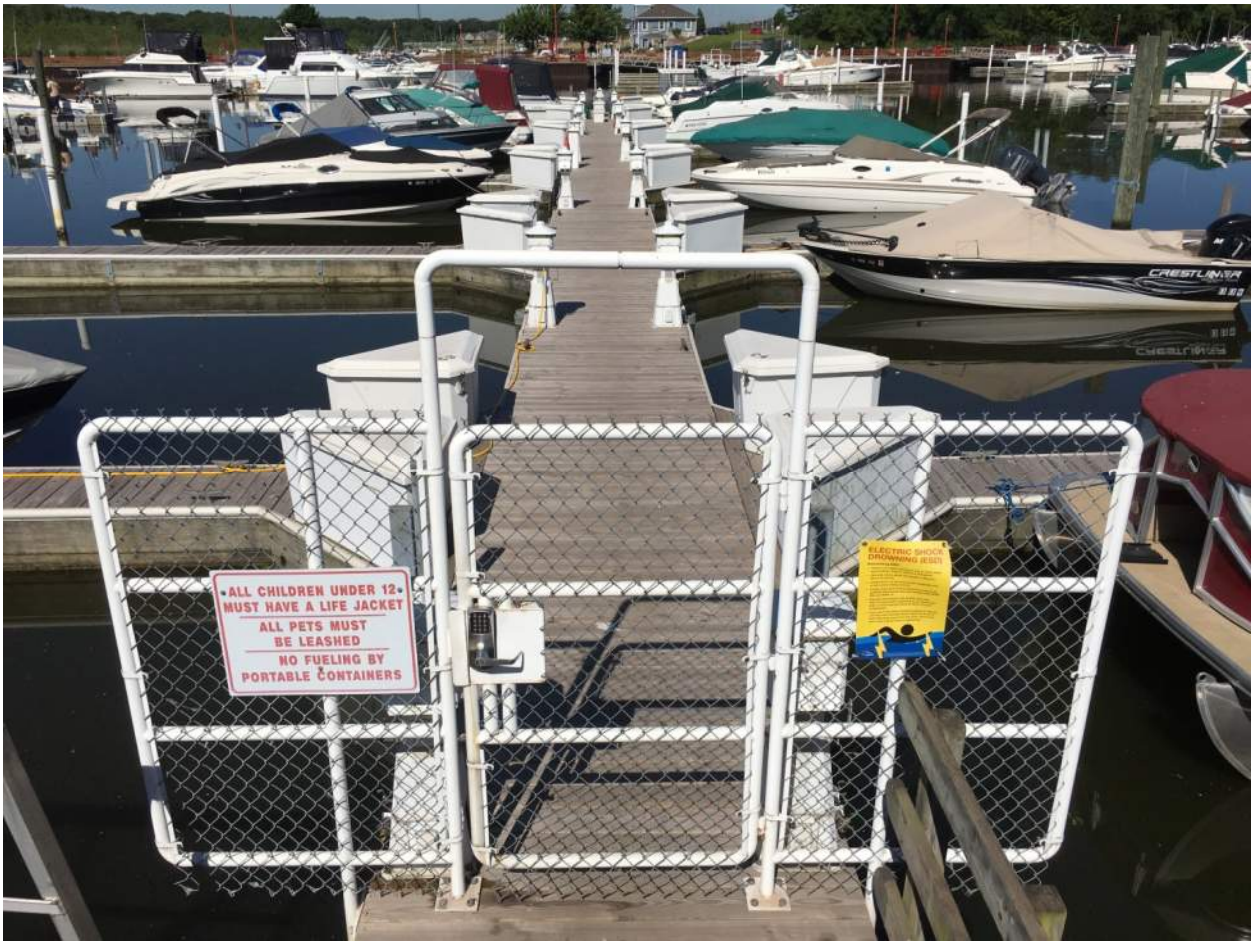


Figure 7: Typical gate & signage

Gate systems within marinas help to control access and provide security, but providing full access control is usually not achievable since trespassers have the ability so simply jump into the basin and swim to the dock.

The gate systems provide the opportunity for important signage and typically each gate included the following signage:

- Children under 12 must have a life jacket
- Pets must be leashed
- No fueling by portable containers
- Electric Shock Drowning prevention information

2.12 Floating Docks

The floating docks are comprised of a timber and steel hybrid frame, integral polystyrene floatation with sheet steel lamination, and timber decking. All steel components are galvanized to minimize corrosion. The docks were all manufactured by Flotation Docking Systems of Cedarville, Michigan and were originally installed in the mid to late 1990s, although some docks were later added, replaced, or repaired. All floating docks include white, vinyl edging along the edge of the decking to prevent boat hulls from contacting the timber deck edge. The edging is anchored with approximately one-inch-long staples. At broadside dockage areas such as the transient pier and most of the T-head piers (except for F Dock and G Dock), vertical 4"x6" timber fenders were mounted to the floating dock in lieu of the vinyl edging. The vertical timber fenders typically rise four feet above the surface of the decking and have a beveled top. Vinyl edging and vertical timber fenders serve the same function and it is typically a matter of boater preference that leads the decision to install one or the other.

Figure 8: Typical main pier

Each finger pier is braced horizontally by two steel braces, one on each side, which connect to the frame of the main pier. These braces provide strength to the finger pier and allow it to resist impact loads from vessels. The angle braces are covered by decking and fascia board. The resulting triangular decked areas provide the space for triangular dock boxes discussed below.

Typically, each finger pier contains six bullhorn mooring cleats and two more cleats are mounted to the main pier for each pair of double-loaded slips. Therefore, each slip typically contains a total of four cleats (one on main pier and three on finger pier). Driven fender piles are present between most sets of double-loaded slips, separating vessels and providing another mooring point. The marina contains a mix of fender piles; typically either a timber pile or a steel pile with a white PVC cover. Timber piles driven in-line exhibit different top elevations (Figure 9), possibly indicating ice-jacking. Ice jacking occurs when ice forms around a pile and the water level rises. The buoyancy of the ice and its bond with the timber will result in the pile "jacking", or pulling, out of the marina basin bottom. Loose piles should be re-driven or replaced.

Ladders are affixed to the ends of finger piers, typically on alternating finger piers. They appear to be of galvanized steel construction and include vertical extensions to provide a reach point when exiting the water. Most of the ladders in the marina appear to be in good shape, but several have significant damage and should be replaced.

The ladders are connected to brackets by two pairs of bolts. By removing one bolt from each side of the ladders, they can be removed from the water during the winter to avoid resulting ice damage to both the ladders and the docks. Ladders left in the water during the winter provide an attachment point for ice, often resulting in damage.

Figure 9: Fender/spring piles

The docks are anchored with steel telescoping spud piles. This type of anchorage allows the docks to move vertically with changes in water levels while constricting horizontal movement. Telescoping spud piles are well-suited for shallow water basins (less than 12 feet) that are not exposed to current or wave action, like the Portage Marina. Segments of the spud pile are of different sizes and they slide within each other like a telescope. The advantage to telescoping spud piles is that the sliding interface is typically located more than five feet below the waterline, and therefore below the bottom of winter ice formation, allowing free vertical movement of the floating docks as the water level rises and falls.

The docks are protected during winter with a forced-air, "bubbler" system for ice suppression. This type of system minimizes ice buildup on moving parts, and provides pressure relief to the compressive forces of ice within the mostly enclosed basin. The system is only in operation during winter months, so the condition has not been reviewed. Based upon general feedback from marina staff, the system requires constant maintenance. During the boating season, pumps are disconnected and stored in the marina services building.

Individual dock sections are of varying age and exhibit minor variations in construction or condition. Therefore, additional observations regarding each dock are provided below.

In some locations, the hinged connections between dock sections appear to be loosening after years of use. Worn connections are normal in dock systems nearing or exceeding twenty years of age. Since the basin is not exposed to severe wind and wave conditions, mildly loosened connections are not a significant concern.

2.12.1 A Dock

A Dock appears to be in fair condition and the following are additional observations:

- Finger pier widths are 2'-8" and main pier width is 5'-10".
- Decking appears to be new pine decking, but some deck boards are not secured.
- New decking is attached to the dock with what appears to be staples. Staples provide inadequate resistance to warping, twisting, and waning of deck boards in a dynamic marine environment. Deck boards should be screwed to the dock frame.
- The main pier is close to level, however the south side freeboard is slightly more than the north side freeboard.
- The ends of the finger piers have greater freeboard than the main pier, indicating the main pier floatation is losing buoyancy.
- The gangway landing at the dock is listing towards the north. The freeboard at the gangway is 1'-3" and the freeboard at the north edge is 1'-0". Supplemental floatation is located under the gangway and it is supplementing the landing floatation.

2.12.2 B Dock

B Dock appears to be in fair condition and the following are additional observations:

- Finger pier widths are 2'-8" and main pier width is 5'-10".
- Decking on the main pier and fingers appears to be less than five years old. The gangway decking appears to be original decking.
- Decking is attached to the dock with galvanized nails and screws should be used.

2.12.3 C Dock

C Dock appears to be in fair condition and the following are additional observations:

- Finger pier widths are 2'-8" and main pier width is 5'-10".
- Decking on the main pier and fingers appears to be less than five years old. The gangway decking appears to be original decking.
- Decking is attached to the dock with galvanized nails and screws should be used.

2.12.4 D Dock

D Dock appears to be in fair condition and the following are additional observations:

- Finger pier widths are 2'-8" and main pier width is 5'-10".

- Decking does not appear to be original, but it is nailed to the dock, allowing boards to twist and warp and creating trip hazards.
- A broken conduit was observed below D Dock. The insulated electric conductor is at risk of rubbing between ends of the conduit and could result in stray current in the water since the issue is close to the surface of the water. A licensed electrician needs to address this issue as soon as possible.

2.12.5 F Dock

F Dock appears to be in good condition and the following are additional observations:

- The main pier width is 7'-10" and finger pier widths vary (two are 3'-0" wide; three are 5'-2" wide; T-head is 5'-2" wide).
- F Dock is the newest dock and appears to be approximately three to five years old.
- The gangway landing area is very close to the steel sheet pile seawall and a 4"x4" timber has been placed between the two to minimize rubbing. The timber is chafing and the dock anchors may require adjustment to pull the dock further away from the seawall. This problem will likely become worse during winter ice formation.
- EZ-Dock personal watercraft cradles are placed within the first slip, likely due to the odd slip shape at the angled basin wall. The cradles are anchored with their own spud piles and are bracketed to the dock. With proper connections to the dock, the EZ-Dock spud piles are redundant and should not be necessary.
- Anchorage spacing along F Dock differs from A-D Docks in that telescoping spud piles are not located in between double loaded slips. The piles are located on more of an even spacing along the main pier.
- No fire extinguisher is present near the dock-end of the gangway.

2.12.6 G Dock

G Dock appears to be in fair condition and the following are additional observations:

- Most of the decking is in fair condition however some deck boards are badly warped. Decking is screwed to the dock frame. Some of the decking appears to have been recently replaced.
- Finger pier widths are 3'-0" and main pier width is 5'-10".
- EZ-Dock personal watercraft cradles are placed within the first slip, likely due to the odd slip shape at the angled basin wall. The cradles are anchored with their own spud piles and are bracketed to the dock. With proper connections

to the dock, the EZ-Dock spud piles are redundant and should not be necessary.

2.12.7 H Dock

H Dock appears to be in fair condition and the following are additional observations:

- The main pier width is 7'-10" and typical finger pier widths are 3'-0". The first eastern finger pier and the T-head piers are wider and measure 5'-0" wide.
- EZ-Dock personal watercraft cradles are placed within the first slips. The cradles on the east side do not have much clearance between the first finger pier and the seawall. This could lead to binding or damage. The cradles should be reconfigured to allow gaps between the cradle and the seawall. The H Dock cradles are moored to the dock cleats using dock lines.

2.12.8 I Dock

I Dock appears to be in fair condition and the following are additional observations:

- Decking on the main pier and fingers is generally in poor/fair condition.
- The gangway decking appears to be original decking. Timber railing is present around the upper gangway landing area and is in poor/fair shape.
- Decking is attached to the dock with a varying combination of screws and nails.
- A small fish cleaning station was noted at the base of the gangway to I Dock. This system contained a small plastic table w/ water faucet, trash receptacle, and a small plastic wagon.
- Spring piles between I4/I6 were noted to be leaning due to improper mooring and/or ice damage. These piles should be addressed and corrected.
- Several safety ladders on I Dock were noted to have damage and should be replaced. Ladders located at dock I10/I12 and I18/I20 have noticeable damage. Safety ladder located at I9/I11 was also noted to be of a different style that all others observed during our condition assessment.
- A timber fender post was noted to be broken, and one recently replaced on slip I18/I20. The broken fender should be replaced.

2.12.9 J Dock

J Dock appears to be in fair condition and the following are additional observations:

- Decking on the main pier and fingers is generally in poor/fair condition. Several deck boards show significant signs of wear and should be replaced.

- The gangway decking appears to be original decking. Timber railing is present around the upper gangway landing area and is in poor/fair shape.
- Decking is attached to the dock with a varying combination of screws and nails. Several of the deck boards that are secured by nails are loose and often removable with little effort. This was noted on the main pier between J3 and J4 slips.
- A deck board on the corner fillet of J3 is cracked and needs replacement.
- During a check of the fire extinguisher at the end of J Dock, it was noted that it expires in July of 2017. All other fire extinguishers within the marina also have the same expiration date.

2.12.10 K Dock

K Dock appears to be in fair condition and the following are additional observations:

- Decking on the main pier and fingers is generally in poor/fair condition. Several deck boards show significant signs of wear and should be replaced.
- The gangway decking appears to be original decking. Timber railing is present around the upper gangway landing area and is in poor/fair shape.
- Decking is attached to the dock with a varying combination of screws and nails. Several of the deck boards that are secured by nails are loose and often removable with little effort.
- A marina basin safety ladder is located approximately ½ way down the gangway between the gangway and steel sheet wall. This ladder is not usable and should be removed and relocated.
- At the lower end of the gangway, it was noted that several communication lines run loose along the south edge of the main pier. These lines should be placed into a conduit and protected from potential damage.
- Several sections of vinyl edging were noted to be damaged and/or missing near the jet ski and fire rescue boat located at slip K1.
- An electrical extension cord was observed running over to a jet ski sitting on the floating jet ski dock. This cord was above the deck surface and ran through one of the support brackets securing this dock to the main dock. During vertical movement, or changing water levels, this electrical line would be subject to damage.

2.12.11 Transient/Pumpout Dock (T Dock)

The transient/pump-out dock, known as T Dock, is in fair condition for its age (Figure 10). Decking appears to be original and will require replacement soon as cracks, warping, and trip hazards are prevalent.

Figure 10: T Dock, looking west

Ladders located on the southern (mooring) face of T Dock extend nearly as far from the edge of the dock as the vertical timber fenders, creating the opportunity for boat hulls to directly contact the metal ladders and the risk of damage. Fenders should be added on either side of the ladders to minimize this risk.

Within the pump out area, no atmospheric vacuum breakers were observed on the hose connections. Atmospheric vacuum breakers are crucial in ensuring that the potable water doesn't get contaminated, particularly within the sanitary pump-out area where hoses are used to wash down after pumping sewage. In addition, pump-out wash down hoses should be clearly labeled as "Wash water only – non-potable" to prevent boaters from using the potentially contaminated hoses for filling the potable water tanks on vessels.

The pump-out area contains two Keco "Pump-A-Head" units. The pump-outs were not tested, however they appear to be as old as the marina. As the T Dock is eventually repaired or replaced, new, more efficient pump-out units should be installed as replacements. Grant funding is likely available for replacement of these units through the Clean Vessel Act (CVA) Pumpout Program.

2.13 Dock Utilities & Pedestals

The Portage Public Marina provides electricity, water, cable television, and telephone connections to each of its slips through pedestals located on the docks. Typically each pedestal will provide service to the two adjacent boat slips. The cable television and telephone connection signals were not tested for each of the pedestals for this assessment. The models and electrical configuration of the utility pedestals varied from dock to dock. The condition of the pedestals also varied from dock to dock; with docks F, G, H, I, J, and K all being in good condition while docks A, B, C, and D being in fair condition. All of the pedestals are very dirty and could use some cleaning, especially underneath the various covers on the pedestal (Figure 11).

Figure 11: Typical utility pedestal receptacles

The typical model for docks A, B, C, and D is the Lighthouse Utility Station Model LH 3050 produced by Innovative Marine Products. The typical configuration of these pedestals includes the following on each side:

- 30 Amp electrical connection
- Water hose connection
- Cable television and telephone connection

There are exceptions where there are different configurations than the typical model. The entire North side of dock A has two 30 Amp connections on each side of the pedestals. On the far end of docks A, B, and C there are 30 and 50 Amp connections on both sides to serve slips 23 and 24. The entire South side and end of dock D has two 30 Amp connections serving each side. Docks A, B, C, and D have a total of 12 broken bottom panels (Figure 12), and only 7 atmospheric vacuum breakers of the total 104 hose connections. Three pedestals were observed leaking water which can lead to premature rotting of the deck

Figure 12: Damaged utility pedestal

boards and frame. On Docks A, B, C, and D, the breaker switches were not legible to determine the receptacle amperage levels. Each of the breakers should be labeled to avoid confusion.

The typical pedestal model found on Docks F and G is the Lighthouse Utility Station Model LH3050 manufactured by Eaton/Marina Power and Lighting. The typical configuration of these pedestals includes the following on each side:

- Two 30 Amp electrical connections (Dock F)
- One 30 Amp electrical connection (Dock G)
- Water hose connection
- Cable television and telephone connection

Dock G has 3 broken CATV/Telephone connection covers. The pedestals serving slips 13/15, 12/14, and 17/19 on Dock G have two 30 Amp connections on one side and a single 30Amp connection on the other side. No atmospheric vacuum breakers were observed on Docks F or G.

Figure 13: Typical pedestal

The typical pedestal model found on Docks H, I, J, and K is the Lighthouse Utility Station Model LH3050 manufactured by Marina Power and Lighting. The typical configuration of these pedestals includes the following on each side:

- Two 30 Amp electrical connections
- Water hose connection
- Cable television and telephone connection

Deviations from the typical configuration occur at the start of Dock H where H1 and H2 have a 30 Amp connection and a 20 Amp connection on each side. Pedestal K13/15 has two 30 Amp connections facing slip 13 and two 50 Amp connections facing slip 15. On Dock K there is a CS-50 Mini Center that is at the very beginning of the dock that has two 30 Amp connections. There are a total of 19 broken CATV/Telephone connection covers on these four docks and only 2 atmospheric vacuum breakers were observed.

Overall, the majority of the utility pedestals are in fair condition, but they could use thorough cleaning and maintenance to extend their useful life. The addition of atmospheric vacuum breakers to all hose connections would minimize the risk of contaminating the water system.

The electric system that supplies power to the docks needs to be reviewed in more detail to identify all electrical issues. While updates to the National Electric Code (NEC)

for marinas and boatyards are ongoing, comments herein are relative to the 2014 NEC Article 555, as it is the most widely referenced/accepted standard for marinas.

No overcurrent ground-fault protection systems complying with NEC 555 were observed at substations, although some of the panels did contain trip devices and not all panels could be reviewed. A ground-fault protection system is critical for preventing stray current and for minimizing the risk of electric-shock drowning (ESD).

In addition to the electric system needs discussed above, routine maintenance and inspections of all electric systems should be completed at least annually per NFPA 5.20. In addition, the signage posted at each gate will help to educate boaters and minimize the risk of electric shock drowning (ESD). "No swimming" signs should be mounted at each dock, as well, to keep people from entering the water. Several brochures are available for download or copy to help educate boaters about the ESD risk and how to prevent it.

Figure 14: Typical Fire Extinguisher cabinet

2.14 Dock Fire Protection

National Fire Protection Association (NFPA) 303 sets the standards for fire protection in marinas and boatyards, although local fire departments or code authorities typically confirm how the standards are locally interpreted/enforced. NFPA requires that fire extinguishers are located within 75' of every moored vessel. In addition, they are required at all connections from the dock to the land-side of the facility.

All docks contain fire extinguisher cabinets as the primary form of fire protection. Fire extinguishers appear to be spaced sufficiently according to NFPA, with the exception of F Dock, where not fire extinguisher is located at the gangway landing. One fire extinguisher should be added at this location.

In addition, several of the fire extinguishers appeared to have expiration dates in 2017, so replacements are required soon and a review/replacement program must be implemented, if one is not already in place. A recent fire at Hammond Marina is a reminder that accidents do occur and highlights the need to be able to respond quickly to a fire.

Figure 15: Dry standpipe hydrant

Fire hydrants are also located adjacent to the promenade which surrounds the marina. Two are located along the east side of the basin; two are located along the south side of the basin; one is located near T Dock; and two are located along the west side of the basin.

T Dock is the only dock that contains a dry standpipe fire suppression system. A fire hydrant is located near T Dock's connection to land. The connection point to the dry standpipe is located within twenty feet of the hydrant and standpipe hydrants are located along T Dock. The system should be tested to ensure it is in working order. Several of the standpipe hydrants are not aligned vertically, indicating the system may have been damaged in the past (Figure 15).

Figure 16: Rectangular dock box

2.15 Dock Boxes

Fiberglass triangular dock boxes with stainless steel latches have been anchored to each of the resulting triangular decked areas. The dock boxes are in fair condition, although many are in need of washing after years of use. Local repairs to the dock boxes are needed and include hinge replacement, surface patching, or latch replacement.

Rectangular dock boxes are located near the end of all of the docks, except F Dock and G Dock (Figure 16). They are anchored to the center of the main pier, leaving minimal clear space to get around the boxes. These dock boxes could lead to accidents and, if not completely necessary, should be removed or replaced with an alternate solution.

2.16 Launch and Skid Piers

In general, the concrete launch ramp appears to be in good condition. Minimal cracks are present in the visible sections of these slabs. Water seepage is present on both the north and south edges of the ramp and should be addressed (Figure 17). The seepage on the north side of the ramp is of greater magnitude than the south side a poses some concerns in regards to safety. At this location, algae

Figure 17: Water issue at T Dock/launch

and running water has caused the area to be very slippery. This seepage was noted over a portion of the existing asphalt pavement, concrete launch ramp, and concrete sidewalk running along the north edge of the transient/pump out dock. This issue was resolved/repaired during the course of the study.

The skid piers themselves appear to be in fair shape and not in need of any major work. It was noted that the skid piers should be pulled up the launch ramp slightly, as sections of decking surface at the landside connection were located just inches above the water level.

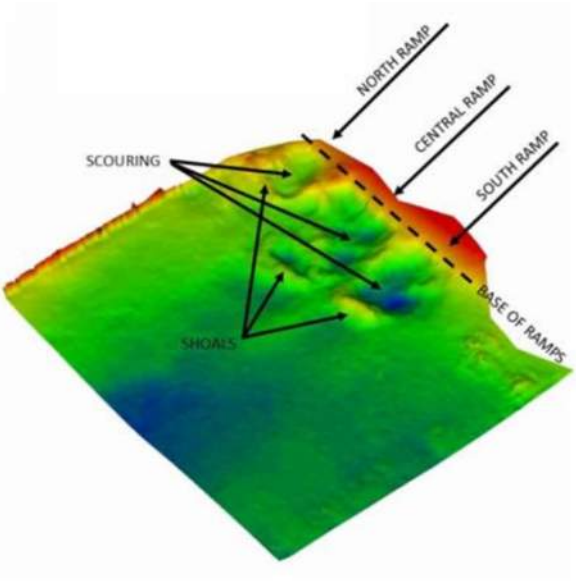


Figure 18: Bathymetric survey imaging of launch ramp scour holes

The bathymetric survey completed identified large scour holes at the base of the launch ramp (Figure 18). These scour holes are likely from power loading during lower water conditions. At current water conditions, trailers probably do not need to extend to the end of the concrete ramp surface. However, at low water conditions, the scour holes will trap trailers and create significant issues. The scour holes should be addressed soon, but certainly if water levels decrease.

Boats moored at A Dock also experience increased water agitation and traffic due to heavy launch traffic. This issue makes A Dock a candidate for reconfiguration or may be a reason to consider alternate launch locations.

2.17 General Site & Landscape

Landscaping, amenities, lighting, and other general site features are all beginning to show their age. Underutilized amenities such as the fishing pier are in need of heavy maintenance and repairs. The red site amenities, lights, and railings which are found throughout the facility are faded to more of a pink color. Red-colored site amenities are often the most difficult to maintain, due to fading. As these features are addressed, it is likely the red-colored items will continue to need frequent re-painting. Alternate colors could be considered to minimize long-term maintenance needs.

Figure 19: Fishing pier, looking north

2.18 Wayfinding and connectivity

The large sign signals the location of the marina at the intersection of Marina Court and IN-249, however the sign is easy to miss due to vegetation, traffic, and the width of IN-249 (Figure 20). Additional signage leading to the marina is recommended.

Wayfinding and signage within the facility is achieved with smaller, white signs with red lettering, providing clear direction to visitors. However, the signage is plain and the opportunity exists for upgrading the signs along with the overall aesthetics of the facility.

Connectivity to nearby attractions is poor. The Portage Lakefront and Riverwalk, part of the National Lakeshore and Indiana Dunes, is located less than a mile away, yet non-vehicular access does not exist. In addition connections to other local trails as part of the IN-249 corridor would enhance the marina and provide increased opportunities to boaters and the public to connect all of these waterfront opportunities.

Figure 20: IN-249 sign at right of photo

Figure 21: Typical existing wayfinding

3.0 BUILDING OBSERVATIONS

3.1 MAINTENANCE BUILDING

Overall condition of maintenance building is good to fair. There are no major problems/issues with the building but several things needed that should be addressed in the near future. Exposed wood trim at fascia and doors needs immediate painting and some replacement. One piece of siding is missing.

Some minor improvements could be made to the interior such as adding a protective material over exposed insulation and replacing ivory socket lights with utility grade led lighting. The building is heavily utilized and additional storage space is needed.

3.2 RESTROOM/SHOWER BUILDING

The overall condition of the building is very good. Signs of age are obvious but there are no significant problems/repairs required. Minor repairs are needed as well as some work that is a result of a different heating and cooling system having been installed – since the original construction date.

Figure 22: Restroom/shower building, looking south

Major expenses anticipated due to the age of the building include: roof and water heater replacement within the next 1-5 years, replacement of the HVAC equipment, plumbing fixture flush valves, faucets and countertops is anticipated.

3.3 MARINA OFFICE/SUPPORT BUILDING

The overall condition of this building is also very good. Like the other support buildings, there are obvious signs of age but no major problems to address. Minor repairs are needed and outlined in the cost summary. The building's masonry should be thoroughly cleaned. The EIFS siding at the upper tower and dormers also needs to be cleaned and a fresh finish coat applied. The vinyl soffits at all overhangs also need to be cleaned.

At all limestone wall caps, including at steel columns, the joints should be ground out and sealant installed. The stone caps also should be cleaned and then sealed. Sidewalks at building perimeter have pulled away from foundations and require backer rod with sealant.

In the interior, most flooring at offices requires replacement as well as suspended ceiling pads. Since the building was not designed originally for year-round occupancy, some improvements are needed to enhance staff comfort levels and energy efficiency. Exterior doors should be replaced at the office with insulated glass units. Exterior walls at the utility room/water service should be insulated. In the attic area (in tower), a ceiling should be installed and insulation installed above, due to the roof area not currently being insulated. The exterior wall at the stairway in this room also should be insulated.

Several interior improvements are needed in the toilet and shower rooms. Ceiling and wall heaters need replacement as well as countertops and suspended ceiling pads. In the laundry room, flooring and the wall heater are in need of replacement.

Major expenses anticipated in the next ten years include: roof, furnace, and A/C unit replacement. Also, plumbing flush valves and faucets will need replacement.

Figure 23: Marina office/support building

At the interior, most flooring at offices requires replacement as well as suspended ceiling pads. Since the building was not designed originally for year-round occupancy, some improvements are needed to enhance staff comfort levels and energy efficiency. Exterior doors should be replaced at the office with insulated glass units. Exterior walls at utility room/water service should be insulated. At attic area (in tower), a ceiling should be installed and insulation installed above – roof area currently is not insulated. The exterior wall at the stairway in this room also should be insulated.

Several interior improvements are needed at the toilet/shower rooms. Ceiling and wall heaters need replacement as well as countertops and suspended ceiling pads. At laundry room, flooring and wall heater are in need of replacement.

Major expenses anticipated in the next 5-15 years include: roof, furnace, and A/C unit replacement. Also, plumbing flush valves and faucets will need replacement.

4.0 ADA OBSERVATIONS

4.1 CODE CHANGES SINCE ORIGINAL CONSTRUCTION

When the facility was constructed, ADA-accessibility in marinas was described in a set of guidelines. With the adoption of the revised, accessibility standard called the 2010 ADA Standards for Accessible Design, the U.S. Department of Justice incorporated requirements pertaining to marinas and other recreational facilities. Previously ADA Standards did not contain requirements that pertained directly to marinas. All improvements to the facility must comply with the 2010 Standards. In addition, where the facility is not in compliance with the 2010 Standards, a plan should be in place to achieve compliance and this document will provide direction.

4.2 OBSERVATIONS

Several issues are highlighted in other sections of the conditions assessment. A summary of the issues observed related to ADA compliance are as follows:

- Slip hose bibbs were not at proper reach heights
- Some slips provide adequate clear widths, however, hose bibb heights must be adjusted in order to provide fully accessible slips
- Gangways containing wood pleats are not compliant
- Gaps between gangway platforms and concrete surfaces must be corrected
- Specific issues are mapped in Appendix E to identify locations where corrections are necessary

5.0 MARINA MARKET EVALUATION

5.1 METHODOLOGY

Unless otherwise noted, the data in this report was collected during 2017 through informal interviews and conversations with harbor masters and/or responsible municipal staff, as well as from the websites of various state agencies and municipalities, site visits and physical inspections of the marinas and other miscellaneous publicly available data, such as marina waiting lists. During the course of the market analysis, all of the marinas were physically inspected to assess the general conditions of the facility and adjacent amenities.

5.2 STUDY AREA

The primary market area for study area consisted of the Northern Indiana market between the communities of Hammond and Michigan City. This market analysis contains information regarding the following six marinas viewed as the best benchmarks to which the Portage Municipal marina could be compared:

- Hammond Port Authority - Hammond, Indiana
- East Chicago Marina – East Chicago, Indiana
- Marina Shores – Portage, Indiana
- Washington Park Marina – Michigan City, Indiana
- Trail Creek Marina – Michigan City, Indiana
- Sprague Point Marina – Michigan City, Indiana

Figure 24: Market study area

5.3 INDUSTRY AND MARKET AREA TRENDS

Recreational boating took a downturn during the "Great Recession" of 2008. Since that time, the industry has rebounded with boaters returning to the waters and recreational boating remains a popular pastime in northern Indiana and an economic contributor to local economies.

Specific trends, both in successes and challenges, in the marina market for Lake Michigan have been identified through various recent market analyses. These include:

- Occupancy in slips 35' and longer is much higher than slips less than 35' in length and the number of larger boats has increased steadily over the last twenty years. The overall demand of the market now generally calls for marinas that support slip configurations geared towards larger boats. The marinas that have been renovated in the last five to ten years to meet this demand are generally more successful and profitable, despite the fact that larger slips leave room for fewer slips overall. There are exceptions to this where physical limitations along waterways limit the sizes of boats which can reach a particular marina.

- The fundamental marina business model is still effective, even in our current economic times: those that focus on basic marina functions remain successful, contrasting with those that became encumbered with debt from adjacent boat sales businesses or adjacent real estate developments that failed with the housing market.

- It is not uncommon for boaters with existing slips to place their name on the transfer list for a larger slip within their own marina or on the waiting list for another marina that is in a preferred location and/or with higher quality docks, amenities, and services.

- Differences in slip rates are generally not the key deciding factor in the success of a marina as compared to quality of facility and nearby amenities

- The inventory of amenities provided by public marinas is reasonably consistent across the region, causing age and quality of maintenance as well as nearby amenities to be a greater factor in boaters' choices. As marinas have become increasingly incorporated into the hospitality industry, boaters have come to expect friendly, competent and helpful marina staff as an intangible amenity associated with the marina industry. Regardless of these factors, however, slip availability is the deciding factor when demand for slips significantly exceeds supply.

- Where slip demand exceeds supply to a high degree and waiting lists exceed three years, demand can become artificially depressed as many potential boaters give up due to the long wait for a slip. In these areas, construction of additional slips can actually increase demand in a market.

- Transient slip demand has decreased in recent years. Transient slips require more staff time compared to resident seasonal boaters and in general transient slips are more labor intensive to maintain. Transient slip occupancy is driven by the following influences:

    - Location of the transient marina. Transient marinas located directly along a transit route generally see more activity than marinas located at the end of confined waters regardless of the quality of the destination and nearby recreational options.

    - Quality of the destination and adjacent recreational opportunities. Transient marinas located adjacent to exceptional destinations see more activity than those without significant attractions nearby.

5.4 MARKET ASSESSMENT

Six marinas (seven including the Portage Public Marina) within the region were studied in the course of this market analysis. A wide range of criteria and characteristics are addressed in the following pages, which can be broken down into the following sections:

1. *Slip analysis* includes the general characteristics of slips at the marinas studied, specifically relating to slip availability, size and mix, rate structure, occupancy, waiting list, presence of buoy moorings, dry rack storage and winter storage.

2. *Marina proximity* and the characteristics associated with location and convenience are identified for each of the twenty marinas, including proximity to population centers, adjacency/distance to downtown shopping and commercial services and proximity of the marina to regional boaters cruising "transit" routes.

3. *Marina infrastructure* elements are identified for each of the studied marinas, including components such as the overall condition of the facility and presence of boat launches, parking, shore power, water, pump-out, fuel, and cable television.

4. *Services and amenities* offered at the marinas studied are listed and contrasted, including lift/haul-out service, repairs, boat rental, and conditions of shower/restroom facilities, laundry, boater lounge, and ship's store.

The factors contributing to slip availability are identified as: a breakdown of wet slips between transient and seasonal slips; slip size; lease rates; occupancy for transient and seasonal slips; and existence of a waiting list with supporting data as available.

5.4.1 Slip Analysis

Slip Breakdown

The marinas studied in the market area are home to over 2,200 slips broken down as follows.

Marina	Slip Count
Hammond Port Authority Marina	918
East Chicago Marina	160
Portage Public Marina	214
Marina Shores	250
Trail Creek Marina	67
Sprague Marina	30
Washington Park Marina	540
TOTAL:	2,209

Note: Several of the marinas contain personal watercraft (Jet Ski) slips which are excluded from the total number of slips above.

The number of slips in the market area represents a significant number of slips and a vital part of the region's economy. As a comparison, the Northern Michigan marina market centered on Traverse City and considered one of the strongest marina markets on Lake Michigan contains slightly less slips at around 2,000.

Two of the marinas studied provided fewer than 100 slips, three of the marinas provide between 150 and 250 slips, and two marinas provide more than 500 slips. The smallest in the region is Sprague Marina at 30 slips. The Hammond Port Authority, at 918 slips, is easily the largest marina in the market area. The average marina studied in the region is roughly 126 slips, which is large enough to create critical mass needed for high quality amenities and efficiency of operation.

Of the slips studied, the majority were seasonal which carried a far higher demand than transient slips. Five of the seven marinas evaluated had waiting lists.

Slip Size/Mix

Five of the seven marinas assessed provided a range of slip sizes (with the exception of the two smallest which only have 25' slips), the configuration of which is referred to as the "slip mix." Slip mix is important to the overall financial performance of the marina as slip rates are generally based on linear footage; therefore various sizes affect not only the various rates but also the total number of slips. Overall, larger slips are more profitable: larger boats mean linear foot slip rates are higher but also means fewer boaters in a given space, which in turn reduces the burden on marina staff. Few slips are open at Portage, but the ones that are vacant are larger slips. This

is contrary to typical market trends, but likely a symptom of the bridge clearances that limit boat size.

Slip Rates

There are a variety of slip rates in the market area depending on the marina. The seasonal rates of the various marinas assessed based on size are as follows:

Hammond Port Authority Marina							
Slip Size	30'	35'	40'	45'	50'	55'	60'
Cost	$2,225	$2,570	$3,035	$3,615	$4,160	$4,800	$5,350

Jet Ski Dock: $550 per season
Season Ramp Pass: $200
Daily Launch Fee: $20.00

East Chicago Marina						
Slip Size	20'	25'/28'	30'	44'	60'	65'
Cost	$1,313	$1,927	$2,058	$2,877	$3,465	$3,990

Oversize Charge: $90/ft
Daily Launch Fee: $15-$20 depending on size
Contract Fee: $200 in addition to annual slip fee

Marina Shores				
G-Wall				
Slip Size	30'	35'	40'	
Cost	$2,150	$2,480	$2,680	
Docks A-F				
Slip Size	30'	35'	40'	45+'
Cost	$2,370	$2,850	$3,330	$3,980

10% discount if paid by April 1st

Portage Public Marina				
Slip Size	25'	30'	35'	40'
Cost	$1,500	$1,800	$2,100	$2,400

Jet Ski Dock: $507.50 per season
Slip Overage: $60.00/ft.
Daily Launch Fee: $10.00
Season Ramp Pass: $75.00 resident/$150.00 non-resident

Washington Park Marina							
Slip Size	30'	35'	40'	45'	50'	60'	100'
Cost	$2,125	$2,490	$2,990	$3,570	$3,950	$4,950	$8,700

Jet Ski Dock: $540 per season
Slip Overage: $100/ft.

Trail Creek Marina				
Slip Size	25'			
Cost	$1,240			
Seasonal Outside Rack Service				
Size	21' & under	up to 24'	up to 27'	up to 30'
Cost	$905	$1,090	$1,395	$1,710

Daily Ramp Fee: $10.00
Seasonal Ramp Pass: $100.00
Slip Overage: $80.00/ft.

Sprague Pointe Marina	
Slip Size	25'
Cost	$1,240

Daily Ramp Fee: $10.00
Seasonal Ramp Pass: $100.00

Northern Indiana Market Slip Rate Comparison						
	Size					
	25'	30'	35'	40'	45'	50'
Market Average	$2,076.00	$2,397.00	$2,670.00	$3,058.00	$3,721.00	$4,055.00
Portage Marina	$1,500.00	$1,800.00	$2,100.00	$2,400.00	N/A	N/A

As the above information illustrates, the Portage Public Marina has rates below the market area average across the board. By raising rates to a level in-line with current market conditions, the Portage Marina will generate additional revenue to make needed improvements to the facility making it more desirable to boaters in the area and in turn improving the long term financial viability of the facility.

Transient Rates

Hammond Port Authority Marina							
Slip Size	30'	35'	40'	45'	50'	55'	60'
Daily Cost	$35	$40	$45	$50	$55	$60	$65
Weekly Cost	$210	$240	$270	$300	$350	$400	$450

East Chicago Marina						
Slip Size	up to 30'	31'-35'	36'-40'	41' - 45'	46' – 50'	51'-55'
Daily Cost	$30	$35	$40	$45	$50	$55
Weekly Cost	$180	$210	$240	$270	$300	$330

Portage Public Marina				
Slip Size	25'	30'	35'	40'
Daily Cost	$30	$35	$40	$45

Michigan City Port Authority Marinas	
Washington Park Marina	Minimum of $35 per night up to 35' then $1 per/ft.
Trail Creek Marina	Minimum of $30 per night
Sprague Pointe Marina	$180 per month

As the data above illustrates, the transient fees charged by the Portage Public Marina are in-line with other marinas in the market area.

Seasonal Slip Occupancy and Waiting Lists

Seasonal Slip Occupancy among the seven marinas studied is very strong: five indicated 100% seasonal occupancy, four of which reported waiting lists. Of the marinas in the market area with waiting lists, there is a clear correlation between marinas with updated facilities and a good location having waiting lists versus marinas which are more isolated and showing signs of deferred maintenance.

Conversations with harbormasters at the other locations provided additional anecdotal information suggesting the greatest demand is for slips between 30' and 45', with stable or shrinking demand for smaller slips and growing demand for larger slips. One issue several harbormasters stated they are dealing with is people trying to put larger boats in smaller slips to save money.

Transient Occupancy

Virtually all the marinas studied offer transient slips, and the few that do not have designated transient slips generally make temporarily vacant seasonal slips available for transient use.

Transient slip occupancy is difficult to calculate and future demand is even more challenging to project as demand is dependent on the weather and changes significantly week to week over the course of the season, though peak demand is consistently over Independence Day and Labor Day weekends.

5.4.2 Location Analysis

In the context of this study, there are numerous population centers throughout the northern Indiana Lake Michigan coast that contain marinas. A marina's proximity to population centers creates accessibility for boaters and results in the most appealing marina locations.

Proximity to Downtown/Commercial Services

A marina's proximity to nearby shops, restaurants, bars, and other local destinations and land side attractions, is a factor in its convenience and attraction for boaters – particularly transient boaters without cars. Good restaurants within walking distance of a marina are very popular amenities that can make a difference in the perceived quality of a marina. This is both the greatest handicap and greatest potential to enhance the desirability of the Portage Public Marina. Located between the downtown and the lakefront, the marina has to potential for its users to access both areas. To achieve this and make boaters feel comfortable accessing these areas, a series of non-motorized trails could be built to create safe and easy access to the lakefront and business area. This would not only serve as an attractive amenity for the Portage Marina but would be an asset for the entire Portage community.

Proximity to Regional Cruising Transit Route

A marina's proximity is to well-traveled cruising routes directly affects the occupancy of transient slips, particularly during off-peak times, as boaters generally don't like to travel very far out of their way due to the length of time it takes to travel on water. Portage's location is within a reasonable distance from cruising routes further enhancing the attractiveness of the marina.

5.4.3 Quality of Facilities

Successful marinas are judged by the size and quality of their docks, the type and capacity of utilities provided and landside amenities, including the quality of the landscape, parking and boat launch facilities.

Simply put, in order to be viable in the marina market, it is necessary for marina facilities to provide the following: adequate parking, shore power suitable for the energy demands of the boats accommodated, water, sanitary pump-out, showers, restrooms, laundry, Wi-Fi, ship store and boater lounges, all of which must be kept very clean and well maintained. These elements are considered standard and the

distinction between marinas is determined through the quality and age of the marina facilities and amenities.

Other elements that make a difference to marina finances and operations, but not necessarily the popularity of the marina among seasonal boaters include boat launches, lift/haul-out service, on-site repairs, and boat rental.

It is essential for marinas to offer the most current technology in order to remain competitive in this modern market. The upside to this is that modern technology alleviates the need for some amenities that are no longer needed, such as phone lines to each slip and cable television.

Marinas should perform regular boater surveys to stay current on boater needs, as marinas committed to staying current are generally rewarded with strong boater loyalty. While this may not be critical in the current underserved market conditions, these factors will influence the boaters as they decide where to moor as the deficiency in slip supply is addressed by new marinas or the expansion of existing facilities.

Currently, the Portage Public Marina's facilities are showing signs of aging and need for re-investment. The types of amenities contained in the facility are on par with other marinas in the market but are in need of improvements and upgrades. Once this is done, the type and quality of facilities at the marina will be on par with others in the market.

5.5 ADDITIONAL MARKET AND REVENUE OPPORTUNITIES

In addition to market research around traditional marina operations for this market study, three specific opportunities were identified as areas to expand or assess the potential to enter into as a means to drive increased revenue and use of the Portage Public Marina

5.5.1 Personal Watercraft

One of the strongest areas in the northern Indiana marina market is the demand for personal watercraft (PWC) slips/docks with several marinas which offer them having waiting lists. This is a unique opportunity for several reasons as it is a growing but underserviced market where many slips for PWCs can be put into a fairly small area as well as some of the odd shaped areas of a marina basin which are not as conducive to creating slips for traditional boats.

Technological advancements in personal watercrafts has led to introduction of quieter and cleaner personal watercrafts. In addition, manufacturers are launching multi-passenger personal watercrafts in the market which offer state of art features and functions.

As those initial PWC buyers began having families and the expectation was that they would "move on to a real boat," watercraft manufacturers responded with luxury touring models and three-up family sportsters that could easily pull a wakeboarder. And as boats keep getting bigger and more expensive, the personal watercraft industry has gone the other way with innovative models designed specifically for price-sensitive, entry-level buyers.

According to the National Marine Manufacturers Association (NMMA), over the past three years new unit retail sales of personal watercraft have consistently outperformed total powerboat sales. In 2016 the PWC segment posted an average of 7.4 percent growth, compared to 6 percent growth for all other types of powerboats combined. In whole numbers, NMMA pegs annual sales of new personal watercraft at nearly 60,000 units, representing almost 24 percent of all new powerboats sold. Further, each year U.S. dealers sell an additional 130,000 personal watercraft on the pre-owned market.

Michigan-based Statistical Surveys, Inc. (SSI) supports that contention, noting that the Detroit Basic Trading Area (BTA) demonstrated the second-strongest growth in PWC sales in the country last year, with a year-over-year gain of 25.38 percent. The only BTA to top it was San Francisco-Oakland-San Jose, with a massive 43.26 percent sales jump in 2016. Other strong results in Northern markets were reported for the Philadelphia-Wilmington-Trenton BTA, with a 22.09 percent year-over-year gain, and New York City, with 2016 sales up by 20.9 percent.

SSI's national numbers closely echo those of NMMA. SSI reports total 2016 sales of personal watercraft at 57,274 units, which represents a 7.54 percent gain over the 53,254 units sold in 2015. Those are solid numbers, particularly for a market segment served by only three players. According to SSI, Sea-Doo currently enjoys 54 percent market share in the PWC space, followed by Yamaha with 40 percent and Kawasaki holding a 6 percent share.

With their low prices compared to traditional powerboats, personal watercraft have long been seen as a gateway product to bring new people into recreational boating. According to Info-Link, the average price in the United States today for a new personal watercraft is $11,000, while the average price of a pre-owned unit is just $2,600. New models that specifically target price-sensitive buyers, like the Sea-Doo Spark and Yamaha's EX Series, still retail for under $7,000.

That new generation of personal watercraft buyers is already making its presence felt on the sales floor where Baby Boomers remain the largest buying cohort in the personal watercraft category, they're steadily giving way to Millennials. The average age of PWC owners has lowered from 48 to 35 and likely will continue to push downward as younger and younger people discover and purchase PWCs

By not only working to develop slips and dock space for PWCs as well as creating landside amenities and activities to attract them, the Portage Public Marina can both generate additional revenue today while creating and grooming a new generation of traditional boat owner to lease slips as they age and move from PWCs to boats.

5.5.2 Boat Rentals/Boat Clubs

Much like Uber and Lyft, boat clubs have seen a significant amount of growth in the past few years. Currently, Uber serves 300 cities in 53 countries. By contrast, GetMyBoat can be found in 2,300 locations in 110 countries. By exploring a partnership with a boat rental or timeshare operator, the Portage Public Marina can both differentiate itself in the marketplace while generating new revenue and creating a potential new generation of boat owners

That first experience, when boaters are "hooked" into the lifestyle, is the aim of everyone in the boating industry. After that, boating sells itself. Boat clubs and sharing models have the same aim but offer an entry point for those who do not have the means to afford a new boat immediately. Freedom Boat Club currently operates from Washington Park Marina in Michigan City, demonstrating that there this is an opportunity in the market worth exploring further.

Boat clubs and boat sharing models also help open the door to a younger audience. Over 60 percent of visitors to boat sharing and rental sites are under the age of 44. This is lower than the average age of boat buyers across all categories, according to data from Info-Link Technologies.

Boat sharing and rental models allow owners to offset the costs associated with maintaining a boat, which is critical as affordability remains a significant obstacle for the industry. With one or two rentals a month, it covers their slip fees, it can cover their fuel costs, it can cover their maintenance costs, and it can help people think about getting into boating because now they know they can offset the cost of ownership when they go to buy that boat.

Ever since the recovery began from the economic downturn of 2007/2007, we have seen a renewed desire by people who aren't willing to splurge to buy a boat of their own to get out on the water. Bareboat charters, or boats rented to be sailed personally, increased 24 percent in 2016 to $105 million in revenue while domestic production was up 19 percent overall in terms of units, driven by a 30 percent increase for boats under 20 feet in length. This fact is further underscored by the growth companies in the industry such as GetMyBoat and Freedom Boat Club have experienced.

GetMyBoat has seen explosive growth since the business was started in 2013 and now has 27,000 boats available, three times what it started with 4 years ago. Furthermore, about 75 percent of the reservations GetMyBoat has tracked are out-of-towners, seeking to see the place they are visiting from the water meaning that this approach may not only be a benefit to the marina but to the community as a whole in terms of another amenity to attract visitors to town to spend money supporting local businesses and jobs.

Contacts to explore partnership opportunities in this business line include:

- GetMyBoat (https://www.getmyboat.com)
- Freedom Boat Club (http://freedomboatclub.com)

The perception that boat clubs and boat sharing models are stealing customers has slowly begun to dissipate, particularly as these businesses continue to actively position themselves as an aid to getting more boaters on the water. At the end of the day boat dealers, marinas, manufacturers, and boat clubs are all selling the same thing and that is time on the water. The more these various entities can work together, the more the industry as a whole can grow, creating opportunities for everybody.

5.5.3 Winter Storage

The final area which could generate additional revenue and demand for slips at the Portage Public Marina is offering boat storage services. Within the United States, there are approximately 10,000 companies that operate one or more storage facilities (including boat storage facilities). Each year, these companies aggregately generate $3.6 billion of revenues while concurrently providing jobs to more than 30,000 people.

A typical price for outdoor boat storage seen at other marinas in the market area is around $25 per ft. and an extra $325-$350 per boat if the owner does not own a cradle/stands. Boat storage could be considered within the existing gravel trailer lot on Chrisman Road which is not used in the offseason, creating a potential additional revenue stream to support improvements and expansion plans for the marina. Using the conservative assumption that seventy-five (75) twenty-five foot (25') boats could be stored in this area, boat storage could generate an additional $46,875 in annual revenue and create better year round use of the facilities resources.

An additional benefit of this initiative is it could help create additional demand for slips at the marina. By offering additional services such as storage, the marina would be positioning itself as a one stop facility for both a slip and winter storage making the user's boating experience easier and thus creating additional demand at the facility.

6.0 PUBLIC/BOATER INPUT

6.1 METHODOLOGY

This master plan is intended to incorporate physical marina needs, opportunities for improvement, and feedback from the public and boaters that may utilize the facility. By incorporating the needs and wants of the public, the intent is to create a plan that can be implemented and utilized as improvements are phased. The planning process has provided many opportunities for interested individuals and parties to provide input and contribute to its development. A summary of the outreach conducted is as follows:

- Monthly boater meetings – July 1st, August 5th
- Monthly Port Authority public meetings – June 8th, July 13th, August 10th, September 14th , November 9th,
- Public Input Meeting – October 4th
- Public/Boater Survey – Online and hard-copy survey distributed via email and handouts at the Marina, City Hall, and City website

6.2 PUBLIC/BOATER SURVEY

When crafting the Marina Master Plan, it was important to gather feedback from the marina users. A survey consisting of ten questions was created using the online survey tool *Survey Monkey*. Notices regarding the survey were posted on both the City of Portage's website and the Marina's Facebook page. Signs encouraging survey participation were posted in various locations around the Marina. Two separate emails containing the link to the survey were sent to boaters whose email addresses were on file with the Harbor Master. The survey could be taken online via *Survey Monkey* or paper copies were available in the Marina office. In total, there were 66 respondents to the survey.

Outlined over the next several pages are the questions that were included in the survey as well as the results of the survey.

6.2.1 Question 1

In what city and state do you live?

Answered: 64 Skipped: 2

TAKEAWAYS:

Sixty-four (64) respondents chose to answer question 1. The majority of the respondents (40) reside in Porter County. The breakdown is as follows:

- 25 Portage
- 9 Valparaiso
- 3 Chesterton
- 2 Ogden Dunes
- 1 Porter
- A total of 14 respondents live in Lake County. The breakdown is as follows: 5 Crown Point, 3 Hobart, 1 Schererville, 1 Miller Beach, 1 Lowell, 1 Miller, 1 Munster, and 1 Gary.
- There are 7 respondents who reside in Illinois. There is 1 from each of the following Illinois communities: Burbank, Chicago Ridge, Lyons, Crete, Elgin, Oak Park, and Chicago. One respondent lives in Lafayette.
- Two of the respondents did not indicate the city in which they reside.

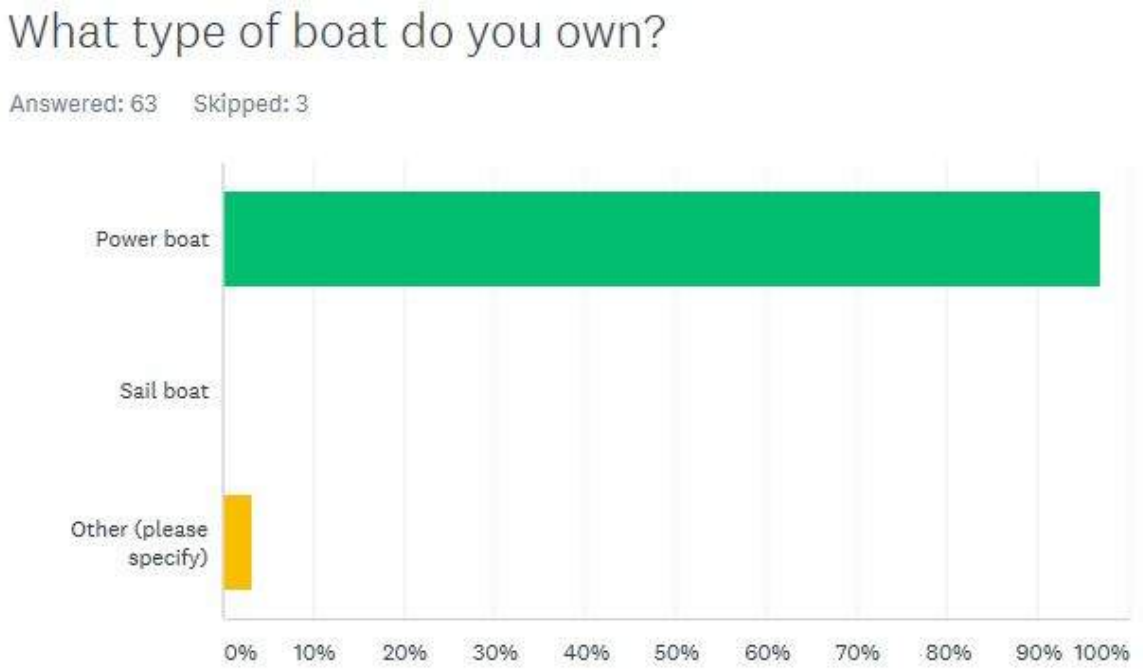
6.2.2 Question 2

ANSWER CHOICES	RESPONSES	
At home or on a trailer	19.05%	12
I don't have a boat	1.59%	1
Marina/ Harbor	79.37%	50
TOTAL		63

TAKEAWAYS:

Sixty-three (63) respondents chose to answer question 2. The majority of respondents (50 total) moor/store their boat at a Marina. Forty seven (47) of the fifty (50) respondents provided the name of the Marina. Forty (40) respondents keep their boat at the Sammie Maletta Public Marina. Three (3) are kept at Marina Shores. There is 1 at each of the following marinas: East Chicago, IWLA, Miller's and South Shore Marina.

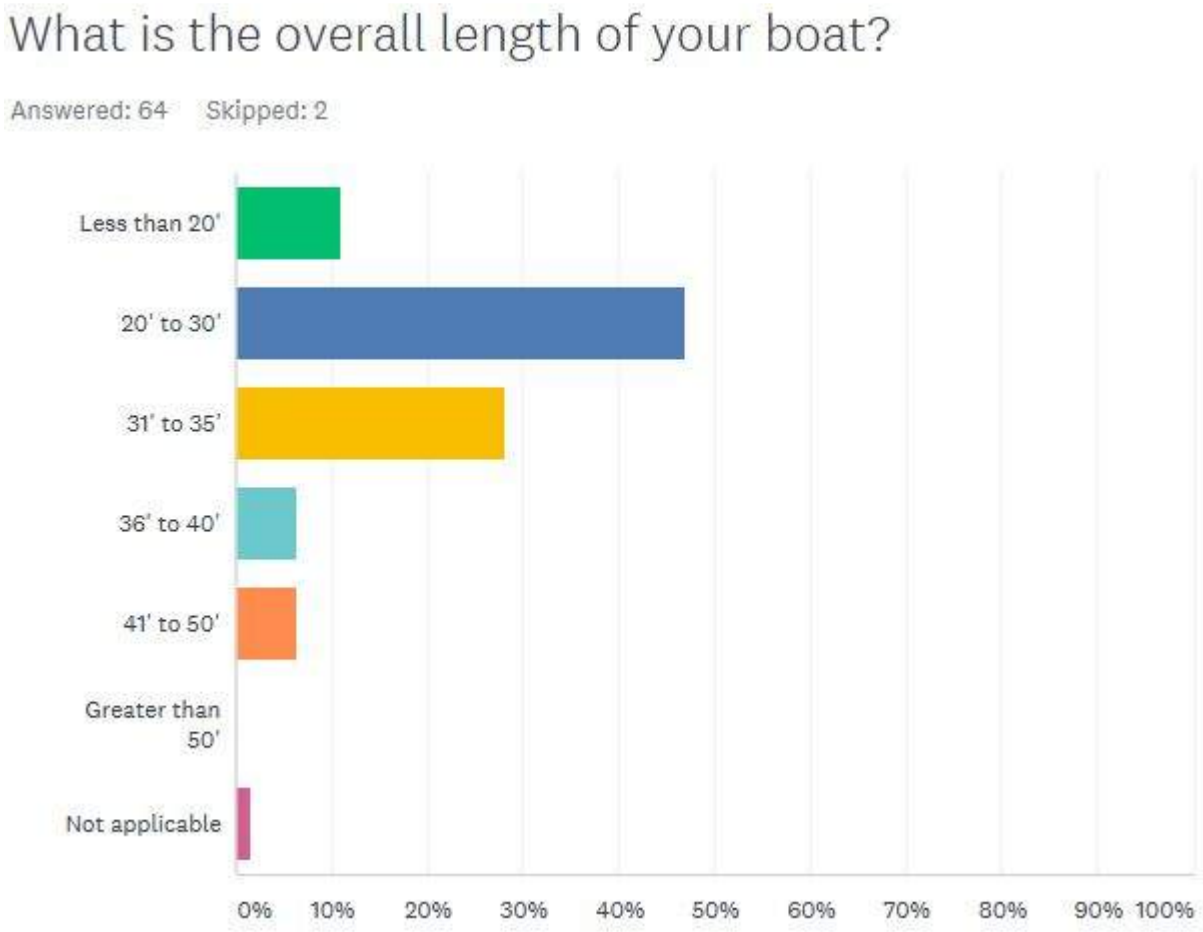
6.2.3 Question 3



TAKEAWAYS:

Sixty-three (63) respondents chose to answer question 3. Sixty- one (61) respondents or 96.83% own a powerboat. Only 2 respondents or 3.17% own a boat other than a power boat: one indicated a sailboat and the other a PWC.

6.2.4 Question 4

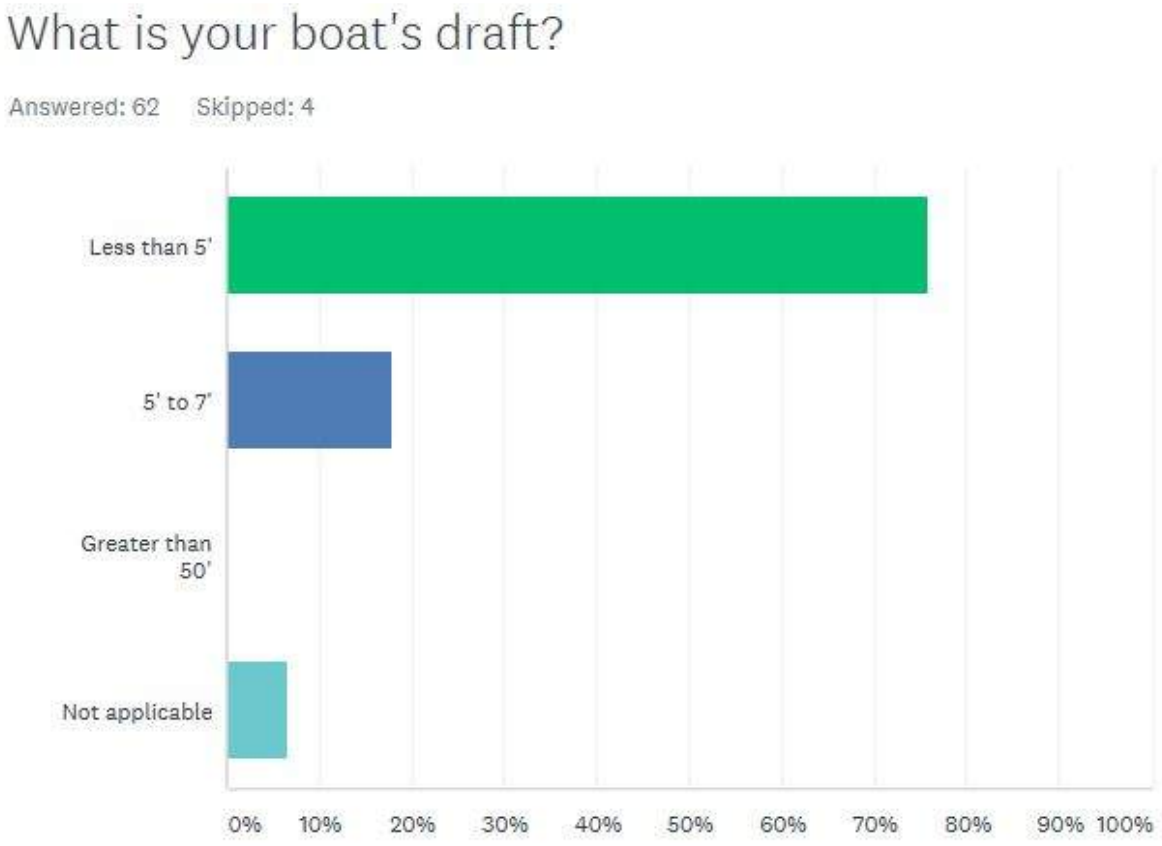


TAKEAWAYS:

Sixty-four (64) respondents chose to answer this question:

- Seven (7) respondents or 10.94% own boats that are less than 20 feet in length.
- Thirty (30) respondents or 46.88% have boats that are 20-30 feet in length.
- Eighteen (18) respondents or 28.13% own boats that are 31-35 feet in length.
- Four (4) respondents or 6.25% own boats that are 36-40 feet in length.
- Four (4) respondents or 6.25% own boats that are 41-50 feet in length.
- Only 1 respondent responded that this question was not applicable.

6.2.5 Question 5

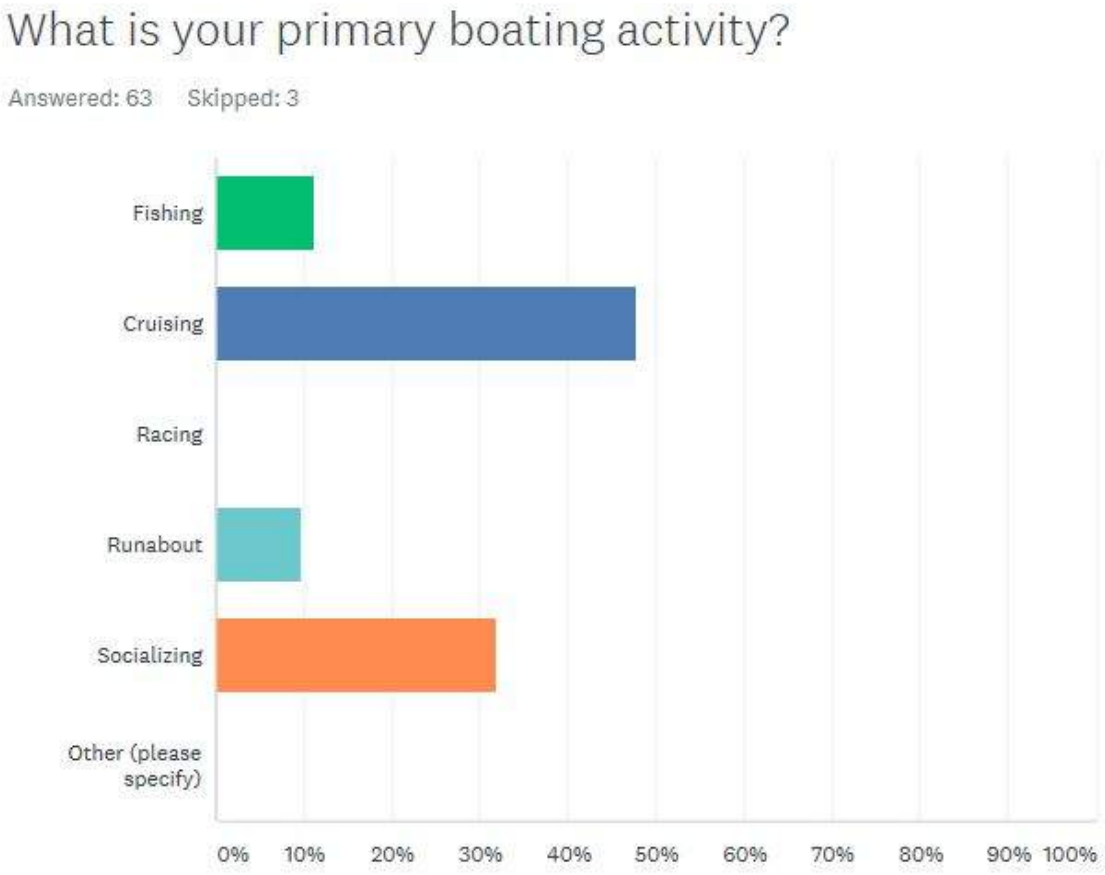


TAKEAWAYS:

Sixty-two (62) respondents chose to answer question 5:

- Forty-seven (47) or 75.81% of the respondents have boats with drafts less than 5 feet.
- Eleven (11) or 17.74% of the respondents have boats with drafts that are 5-7 feet.
- Four (4) or 6.45% of the respondents indicated that this question was not applicable.

6.2.6 Question 6

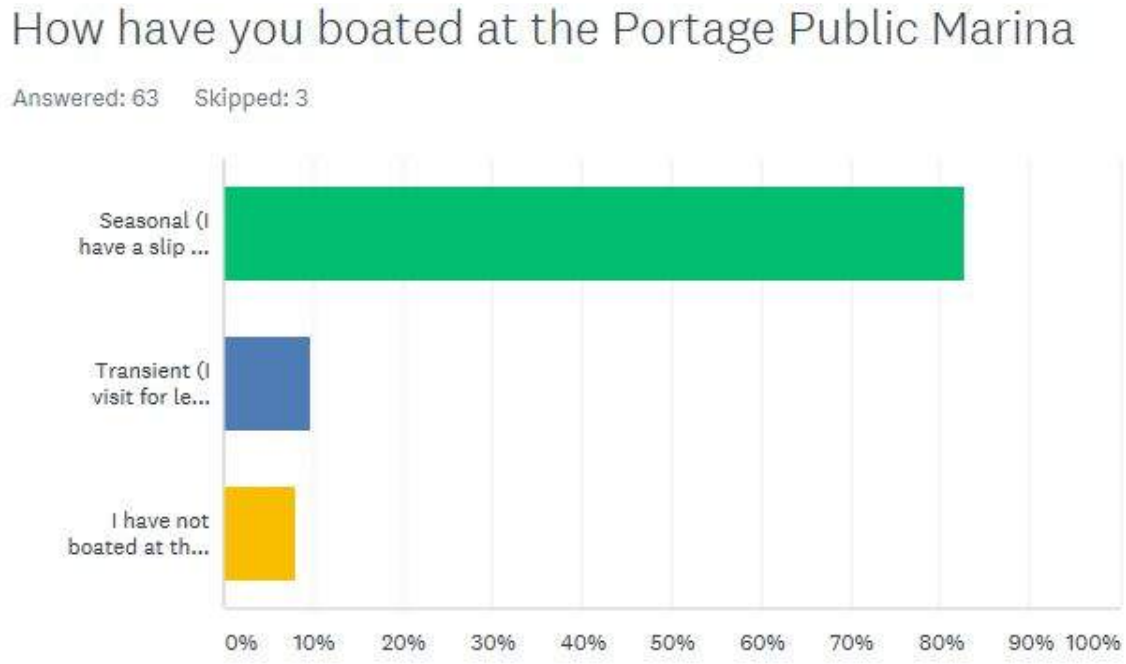


TAKEAWAYS:

Sixty-three (63) of the respondents chose to answer question 6:

- Seven (7) respondents or 11.11% indicated that their primary boating activity was fishing.
- Thirty (30) respondents or 47.62% indicated that their primary boating activity was cruising.
- Six (6) respondents or 9.52% indicated that their primary boating activity was to runabout.
- Twenty respondents or 31.75% indicated that their primary boating activity was socializing.

6.2.7 Question 7



TAKEAWAYS:

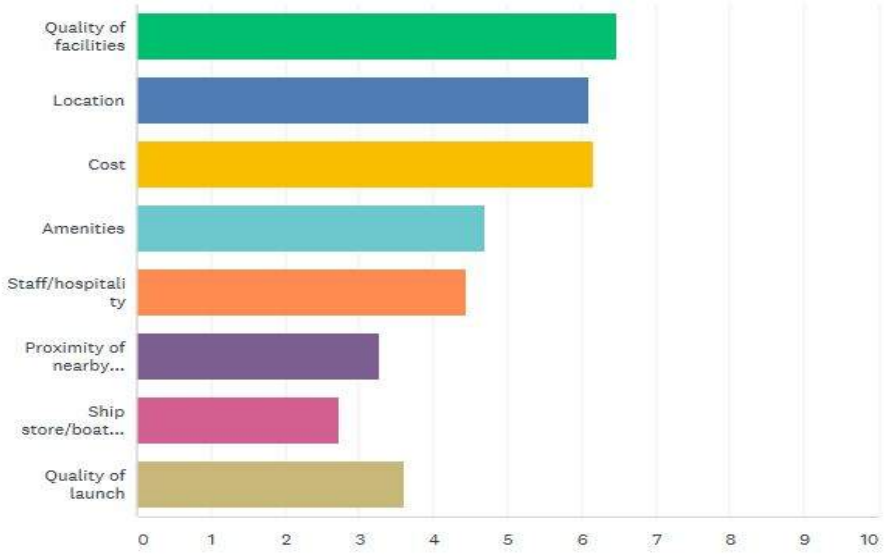
Sixty-three (63) respondents chose to answer question 7:

- Fifty-two respondents or 82.54% indicated that they have a slip all summer.
- Six (6) respondents or 9.52% indicated that they visit for less than a week at a time.
- Five (5) respondents or 7.94% indicated that they have not boated at the Sammie Maletta Public Marina.

6.2.8 Question 8

How do you select your seasonal dockage location? Please rank the following by level of importance (1 being most important; 8 being least important)

Answered: 61 Skipped: 5



	1	2	3	4	5	6	7	8	TOTAL	SCORE
Quality of facilities	37.78% 17	20.00% 9	20.00% 9	11.11% 5	0.00% 0	6.67% 3	4.44% 2	0.00% 0	45	6.47
Location	25.00% 12	25.00% 12	20.83% 10	16.67% 8	0.00% 0	4.17% 2	4.17% 2	4.17% 2	48	6.08
Cost	26.92% 14	23.08% 12	19.23% 10	15.38% 8	7.69% 4	1.92% 1	3.85% 2	1.92% 1	52	6.15
Amenities	4.08% 2	10.20% 5	16.33% 8	24.49% 12	22.45% 11	12.24% 6	8.16% 4	2.04% 1	49	4.69
Staff/hospitality	3.85% 2	5.77% 3	15.38% 8	13.46% 7	40.38% 21	11.54% 6	7.69% 4	1.92% 1	52	4.44
Proximity of nearby activities (IE: shopping, restaurants, parks. etc.)	1.96% 1	9.80% 5	3.92% 2	7.84% 4	9.80% 5	31.37% 16	11.76% 6	23.53% 12	51	3.27
Ship store/boat supplies	0.00% 0	3.64% 2	3.64% 2	5.45% 3	16.36% 9	14.55% 8	30.91% 17	25.45% 14	55	2.71
Quality of launch	14.29% 8	3.57% 2	8.93% 5	7.14% 4	10.71% 6	7.14% 4	17.86% 10	30.36% 17	56	3.59

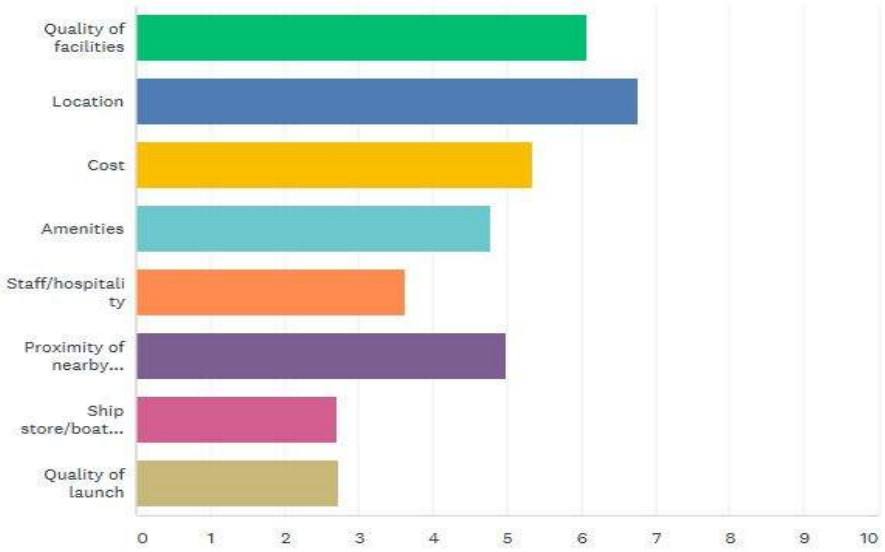
TAKEAWAYS:

Sixty-one (61) respondents chose to answer question 8. See chart above for breakdown of responses.

6.2.9 Question 9

How do you select your transient dockage destinations? Please rank the following by level of importance (1 being most important; 8 being least important)

Answered: 45 Skipped: 21



	1	2	3	4	5	6	7	8	TOTAL	SCORE
Quality of facilities	13.89% 5	33.33% 12	22.22% 8	16.67% 6	5.56% 2	5.56% 2	2.78% 1	0.00% 0	36	6.06
Location	51.35% 19	13.51% 5	18.92% 7	8.11% 3	0.00% 0	2.70% 1	2.70% 1	2.70% 1	37	6.76
Cost	18.42% 7	13.16% 5	15.79% 6	26.32% 10	7.89% 3	5.26% 2	7.89% 3	5.26% 2	38	5.34
Amenities	5.56% 2	2.78% 1	19.44% 7	30.56% 11	22.22% 8	16.67% 6	2.78% 1	0.00% 0	36	4.78
Staff/hospitality	0.00% 0	7.89% 3	5.26% 2	5.26% 2	23.68% 9	39.47% 15	15.79% 6	2.63% 1	38	3.61
Proximity of nearby activities (IE: shopping, restaurants, parks, etc.)	7.69% 3	17.95% 7	17.95% 7	10.26% 4	28.21% 11	7.69% 3	5.13% 2	5.13% 2	39	4.97
Ship store/boat supplies	0.00% 0	5.13% 2	5.13% 2	2.56% 1	5.13% 2	20.51% 8	46.15% 18	15.38% 6	39	2.69
Quality of launch	9.76% 4	9.76% 4	0.00% 0	4.88% 2	4.88% 2	2.44% 1	4.88% 2	63.41% 26	41	2.71

TAKEAWAYS:

Forty-five (45) respondents chose to answer question 8. See chart above for breakdown of responses.

6.2.10 Question 10

What three improvements do you feel need to be made to the Portage Public Marina, seaside and landside?

Answered: 58 Skipped: 8

TAKEAWAYS:

Fifty-eight respondents chose to answer question 10. Many different topics were raised, but there were six particular topics that were mentioned by respondents at least 5 or more times:

- Security: Several of the respondents cited security as an area that needs addressed. Suggestions included adding security cameras, installing additional gates, installing additional lighting, and utilizing a fob system.
- Fish cleaning station: Many respondents expressed the need for a fish cleaning station.
- Wi-Fi: Several of respondents voiced the need to "fix" the existing Wi-Fi or upgrade it to a faster, more reliable service.
- Amenities: Suggestions ranged from adding larger picnic tables and more grills to building a restaurant and a pool. Other suggestions included shuttle service to and from the trailer lot as well as the addition of more family friendly events.
- Ship Store: Several respondents recommended expanding the ship store to include more food items as well as boating supplies.
- Maintenance and general cleanliness: This category covered a wide range of topics including the removal of weeds and invasive plants and adding flowers. Floating debris and garbage in the water was an issue that was mentioned by a couple of the respondents. Others mentioned the need to maintain the docks better.

Individual respondent answers are as follows:

Respondent 1: *Lighting, Security, Pool I do not see what my additional $300 has done. I challenge you to dock a 30' boat in G-3, yet I pay 30' rate*

Respondent 2: *Better wifi Security-key fobs Bathroom by K Dock*

Respondent 3: *Security-Key fobs Restrooms near K Dock Security at night*

(Question 10 responses – continued)

Respondent 4: *Need to actually be able to swim in the lake and not feel nasty and focus on the oil spills in Portage lakefront.*

Respondent 5: *Washrooms should be open longer on weekends. Someone should direct boaters not to pull up to long dock first. Empty launch-get trailer first.*

Respondent 6: *Security cameras. More dune flowers. Fish cleaning station.*

Respondent 7: *We do not store boat at Marina--only use launch ramp. On busy days, always have staff outside to collect ramp fee. Add golf cart shuttle service from ramp to parking lot. Keep responsible adult at ramp to make sure rules are being followed and for safety. Keep bathrooms open later. It's very frustrating to see lots of staff in the office while boats get backed up and inexperienced boaters make launching unsafe*

Respondent 8: *Require boating certification for all slipholders Marine patrol to enforce no wake policies Larger Ship Store Staff is wonderful! Always kind, helpful, and personable.*

Respondent 9: *Dogs on a leash. Keep up with wood on docks & painting. Permit holder signs properly mounted.*

Respondent 10: *We boat many weekends @ Portage and other Lake Michigan marinas. General attention to the ramp area is needed - land and seaside. Always debris floating in water and junk on ramps and all the marina kids all are right there in the office. City Marina vehicles ALWAYS unnecessarily parked right in launch / load area impeding an already tight traffic area.*

Respondent 11: *Better security cameras and wifi. Larger picnic table area and more picnic tables and seating near south bathhouse Spruce up landscaping with flowers and more timely with weeding and grass cutting*

Respondent 12: *Bus service to nearby activities, staff to help launch ramp, and better parking*

Respondent 13: *More amenities*

Respondent 14: *Landside - 1. Ensure all facilities are open April 1st. 2. Lighting was well maintained this year, please continue. 3. Better use of social media or other technology for information sharing and reminders. Seaside - none*

Respondent 15: *Wider fairways Increased ship store inventory, i.e. bulbs fuses Better quality wifi*

Respondent 16: *Needs fish cleaning station*

(Question 10 responses – continued)

Respondent 17: *Clean up the river, both branches. Too much debris and hazards*

Respondent 18: *More family events Pool for slip residents Restaurant*

Respondent 19: *It is good for the amount paid annually. Would only like to see the launch bubbled for duck season. Currently it freezes in December. Just police the boat launchers in the winter to make sure they pay to launch. This will help to pay to bubble the area and keep open to generate revenue.*

Respondent 20: *They need to knock down the no wake green bridge so taller boats can get down the river.*

Respondent 21: *Fish Cleaning Station for boaters and slip holders. Will be a big attraction to the marina. Will draw in lots of fisherman to slip at the marina. Pave the gravel parking lot as well.*

Respondent 22: *We ae in A1. Please take care of the weeds growing up though the water. Beginning of the season was nice, now it looks messy. Thank you In advance.*

Respondent 23: *Residents of portage should not be paying the same fees as out of state users. Staff is lazy and does nothing to help speed up launches. It's a free for all and people are not courteous. Need a fish cleaning station.*

Respondent 24: *Needs a restaurant, walking path, better organization for launching*

Respondent 25: *More reasonable pricing!*

Respondent 26: *Badly need fish cleaning facility. This would be very helpful.*

Respondent 27: *More cameras*

Respondent 28: *On the seaside prompt removal of trees, branches or debris which could damage your boat. Assigned parking for slip holders. Disperse handicapped parking so it's not clumped together.*

Respondent 29: *Spider control, Regular outlets at slip, Boat Supplies (waxes,cleaners,rags, ect.)*

(Question 10 responses – continued)

Respondent 30: *Cleanliness, Management staff attitude (kids are friendly and helpful however the marina managers leave much to be desired), and general running of marina as per rules and regulations (such as dogs off leash running all over the place and picking up after them as well as boat owners leaving their personal belongings all over the docks when they aren't even there.) Just an FYI: as far back as the opening of this marina through around 2008 this marina was the cleanest that I had ever seen or been a part of. Not so much any more. It's like there is no pride taken by anyone that is working there to continue what use to be the norm.*

Respondent 31: *Install a Fish Cleaning Station*

Respondent 32: *Security - people do not shut gates, people have been on our boat without our permission Parking - enforce stickers - tow violators! Enforce no gasoline on docks rule!*

Respondent 33: *more parking, lower cost*

Respondent 34: *Parking, launching / loading*

Respondent 35: *Security parking and boat Wifi Move the fishing dock elsewhere*

Respondent 36: Lighting in the parking lot. Parking in general

Respondent 37: *Security of docks, facilities and parking areas. Landscaping of marina area.*

Respondent 38: *Segregation of transient boaters. More 30 foot and above docks.*

Respondent 39: *Restaurant/Bar a park for kids*

Respondent 40: *Making sure the boards are nailed down on a dock*

Respondent 41: *Better parking fish cleaning station*

Respondent 42: *couple more outdoor grills As far as I am concerned, there is nothing to complain about. Staff are helpful and hospitable all the time, and the docks are in great shape.*

Respondent 43: *1) High speed internet 2) List of owners/contacts 3) Drain/clean/refill marina*

Respondent 44: *Gas pumps, landscape, reduced price for slip holders on extra boat like a dingy.*

Respondent 45: *More parking, soda machines around marina, fuel dock*

(Question 10 responses – continued)

Respondent 46: *Improve ship store/supplies*

Respondent 47: *1. Add a pool 2. Move garbage dumpsters to a location that would not ause obnoxius smells near the boats and picnic areas 3. Add restaurant*

Respondent 48: *Security! Put a gate with limited access to the parking lots! Fix the internet! We need a fish cleaning station*

Respondent 49: *1. Just take care of what we have! Now the stupid grass and weed the rock beds! 2. Allow for fuel to be brought to the docks. Marina shores charging an early $1 per gallon surcharge its absurd. Federal law already regulated spill proof gas cans be used and less gas is spilled transferring portable containers than high pressure gas pumps at marina shores. 3. Install a break wall camera with tvs in shop store viewable 24/7 so we don't have to cruise the whole channel just to see 4 foot waves and turn back around.*

Respondent 50: *I really do not have any that would be possible. But if you need 3. Closer parking for trailers. Bigger slip dock each side of boat. More room between docks. For leavening and entering slip with boat.*

Respondent 51: We think it is a pretty nice place as is. I guess more food supplies in the store, gas availability would be nice but not necessary.

Respondent 52: Pool Better picnic areas More parking Remove trailer ramp

Respondent 53: Overall it is a nice clean facility with a fair cost. It is getting somewhat crowded as more slips are added making navigation tricky.

Respondent 54: 110 volt power at the picnic/grilling areas. Complimentary soap/shampoo dispensers in the showers (like at the health club). Better rotten wood board replacement on the docks

Respondent 55: Stray electric current at marina / dockside, electrolysis issues at both D dock and K dock. Better supervision and control of boat launch area.

Respondent 56: Anything that can be made to keep the water clean on the dock area.

Respondent 57: Nothing

Respondent 58: We need a fish cleaning station

6.3 PUBLIC COMMENTS

A public input meeting was held on October 5, 2017 to present the draft master plan, to review the survey feedback received, and to solicit any additional feedback from the public. The meeting was well attended (Figure 25) and feedback included generally positive comments and support for efforts to update the facility.

Figure 25 – Public input meeting pre-meeting image

Those that attended engaged in discussions about the facility and provided feedback. There was significant support for trail connectivity and aesthetic improvements to the marina. Several mentioned the need to introduce a fish cleaning station to the facility and to improve trailer parking. Other comments generally included:

- Replace lighting with more efficient lighting
- Address fading red railings and other site accessories
- Consider composite/plastic decking as docks and piers are replaced
- Transition away from bubbler ice suppression system eventually to using a water circulator system (ice eaters)
- A fish cleaning station is needed
- Pave the trailer lot and designate lanes and parking spaces
- Add site amenities in the facility to improve access to the water
- Currently, nearby activities are limited for transient boaters; create opportunities such as dining
- Once commenter asked if a public trail could increase potential for vandalism. Mayor Snyder indicated that once improvements were made to another public park (Countryside Park), that the increased traffic has resulted in a decrease in vandalism to that park.
- Explore potential options for a floating walkway under the Burns Waterway bridge crossings.

7.0 IMPROVEMENT RECOMMENDATIONS

7.1 GUIDING PRINCIPLES/GOALS

As the Sammie L. Maletta Public Marina begins to exhibit its age, this master plan is intended to serve as a roadmap for improvements and opportunities for enhancing the public waterfront. Portions of the facility will require replacement and/or repair soon and opportunities exist for expansion of the facility and its uses. This document will help guide the Portage Port Authority as it seeks to implement the needs and wants that have been identified. In order to maximize available funding, improvements will need to be prioritized and phased based upon both need and upon potential funding opportunities. Concurrently, additional revenue sources should be sought.

7.2 NEEDS – SAFETY, ADA, MAINTENANCE, REPAIRS

As detailed above, the facility is in need of heavy maintenance, improvements, and repairs. Key components that will require significant improvement efforts are summarized as follows:

7.2.1 Floating Dock Replacements

Most of the floating docks are original and after over two decades they are reaching the end of their design lives. Phased dock replacements will be necessary in the near future, along with electric ground fault protection improvements. As replacements are completed, alternate decking materials such as Kebony or composite decking products are recommended.

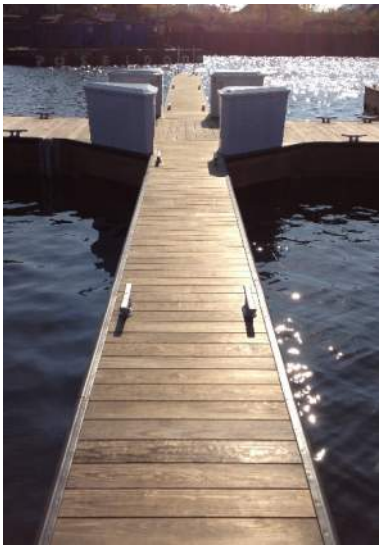


Figure 26: New floating dock with Kebony decking

Prior to completion of the market evaluation, new slip layouts were evaluated to meet industry trends towards larger vessels. Preliminary layouts are included in the Appendices for reference. However, bridge heights over the Burns Waterway have dampened the demand for larger slips because larger boats generally require more clearance. Significant changes to the existing marina layout are not necessary at this time and any replacements should consider opportunities to improve minimum navigation clearances.

7.2.2 Seawall Investigation & Repairs

A portion of the east basin seawall is exhibiting apparent movement and adjacent sidewalks have settled. Destructive testing is likely needed to identify the extent of the issue and a plan for repair, if warranted.

7.2.3 Amenities Upgrades/Maintenance/Aesthetics

In order to modernize the facility, several key items were identified, including:

- Color Scheme: A new color scheme will be implemented, intended to replace the red color which has exhibited consistent fading issues. See Appendix H
- Additional railing is needed along the sidewalk which borders the north limit of the basin. This railing would provide edge protection and could be either surface mounted or potentially bracketed to the steel sheet pile wall.
- All railing and other red-painted surfaces would be re-painted to match the new color scheme, intended to minimize the fading that is common with red paint. The selected color could be incorporated into other improvements such as steel roofs, light fixtures and poles, and other amenities.
- Wayfinding improvements would include a package intended to modernize and beautify signage throughout the facility, as well as along the IN-249 corridor.
- Landscaping improvements would include new trees and an overhaul of overgrown areas, such as the area bordering Burns Waterway. Plantings should include native and low-maintenance plantings.

7.2.4 ADA Improvements

Throughout the facility, improvements are possible for improving ADA accessibility. The improvements would include local sidewalk replacements in key areas; fishing pier decking and railing replacements, ADA accessible route signage, and parking improvements.

7.2.5 Building Improvements/New Roofs

All three buildings are in need of repair and/or modifications to better accommodate current uses. Some repairs and equipment replacements have already been completed in 2017, yet many remain. These items are further quantified and listed on the attached concept cost estimate.

In addition, new roofs will be needed soon for each of the buildings and steel roofs are being considered, both for efficient life-cost and for aesthetic improvement opportunities. Steel roofs would be intended to match the color scheme selected, utilizing a fade-resistant color.

Figure 27: New steel roof installation example; City of South Haven, South Side Marina

7.2.6 Boat Launch Repairs

As identified above, a large scour hole exists at the end of the launch ramp. While the hole is not currently causing issues due to elevated water levels, it will require eventual repair.

7.2.7 Security

Unfortunately, in a marina, gates and fences cannot prevent someone from swimming from the promenade to a dock. Therefore, the next best approach is to include additional cameras that would both deter nuisance activities and help to record and identify those actions, if they were to occur. Cameras would be installed at key locations to allow the greatest camera coverage.

7.2.8 Pavement Repairs/Replacements

Some paved areas are in need of full replacement and some may soon need resurfacing. In all cases, the continuous maintenance of paved surfaces will be required. The concept cost estimate includes the eventual resurfacing and/or paving of all pavement within the marina.

7.2.9 Dredging

Based upon the most recent U.S. Army Corps of Engineers water level bulletins (November 2017), Lake Michigan water levels are approximately three feet above low water datum and eighteen inches above the long-term average water level, yet they remain approximately two feet below the record high levels recorded in 1986. Water depths with the basin are sufficient for all vessels utilizing the facility, however if and when water levels return to low levels, dredging will eventually be necessary and the concept cost estimate reflects an average dredge depth of eighteen inches throughout the basin and basin entrance. It is important to note that dredge costs are highly dependent upon the dredge material and marine construction market.

7.3 ENHANCEMENTS – NEW IMPROVEMENTS

In addition to the needs above, several potential enhancements to the facility have been identified. These enhancements would better serve boaters; increase the public use and access to the waterfront; increase the visibility of the facility, and elevate the overall quality of the facility to match and exceed other similar regional facilities. These improvements are depicted on the master plan layout in the Appendices. While these components are further detailed in the attached conceptual cost estimate, they are summarized as follows:

7.3.1 Fish Cleaning Station

Survey feedback, public comments, high launch usage, and staff observations all indicate that fishing is a popular activity for boaters utilizing the marina. Yet, currently no fish cleaning station is provided. Fish are still cleaned on site, at personal/folding cleaning tables, or, in some cases, at picnic tables. Fish remains are discarded near the shore or in trash receptacles, creating a nuisance odor. A new fish cleaning station would serve as an additional draw to the facility, would support the boaters and public, and allow the proper disposal of fish remains. A grinder capable of handling the types of fish commonly caught on Lake Michigan would be incorporated.

Figure 28: Modern, secure fish cleaning station example

7.3.2 New Building

The master plan includes a new building near the entrance to the marina. It would include restrooms, a board room/meeting room, and additional storage for marina operations. It would also include a vertical "beacon" feature reflective of a maritime theme and intended to function as a waypoint for driving to the marina. Site lines and lane widths along IN-249 make it difficult to see the existing, large-format sign which memorializes the entry to the marina. A tall beacon feature would provide the opportunity to create an interesting entry to the facility and one that would be visible along the busy IN-249 corridor.

While the original intent of the existing main building included a board room/meeting room on the second floor, the room is not ADA accessible. A new meeting room would be included in the new building to provide a place for regular

monthly meetings and potentially a space for public use on a reservation basis. The room would have the potential to create another revenue source to the marina.

Accessible restrooms and storage space would also be included in the marina and it would likely become a new hub of activity due to its proximity to the marina entrance, eventual trail linkages, and the proposed fish cleaning station.

7.3.3 Trailer Parking Lot

The large 2.5-acre area located between IN-249 and Crisman Road is currently utilized for vehicle-trailer parking. It is comprised of a slag-gravel surface and no striping is possible to guide parking. The proposed plan would pave this lot to allow efficient and safe use of the space for all who come to the marina.

7.3.4 New Parking Lot for Cars

As included in original marina plans, a new vehicle parking lot is proposed within the facility to accommodate the high parking demand during peak boating months and to accommodate anticipated increased use of the facility as plans are implemented. Further coordination with Nipsco will be required due to the overhead power lines and existing easements.

7.3.5 Pavilions

The plan includes several new pavilions throughout the facility to provide shelter to facility users. These shelters have been well-used in other regional facilities and would improve the overall level of service.

Figure 29: Pavilion example, St. Joseph, MI

7.3.6 Site Amenities

Additional and improved site amenities planned as part of the improvements include grills, trash receptacles, dumpster screens, fountains with dog bowls, and pet waste stations.

7.4 OTHER – TRAILS & WATERFRONT DISTRICT

Features such as kayak launches, trails, and other enhancements would lead to greater viability for the marina and an enhanced public waterfront. And while the current footprint of the marina may not currently contain all of the space necessary to support these functions, there may be opportunities for implementing them through cooperative efforts with other governmental agencies, partnerships with private entities, and potential future land acquisitions over the long-term. Portions of the conceptual waterfront district already include some public rights-of-way that were recorded before the construction of the Burns Waterway. Potential long-term enhancements include:

Figure 30: 2012 USACE Oblique image, Burns Waterway

7.4.1 Trail Connectivity

As discussed above, creating a direct connection from the marina to the Lake Michigan waterfront via non-motorized trails would make the facility a more attractive place to moor. Such a connection would also improve the trail connectivity in the community, a pursuit that other organizations are also seeking. The trail concept is included in the Appendices and includes a connection from the Sammie L. Maletta Public Marina along Burns Waterway to a connection to the Portage Riverwalk and eventually to the Portage Lakefront Park. In addition, the trail plan includes an extension of the trail south from the marina, along Crisman Road, and across Burns Waterway via a proposed rehabilitated Crisman Road bridge (Figure 31). This southern connection would be the final segment between the Portage regional trail system and the lakefront.

Figure 31: Chrisman Bridge, looking north

To further accommodate the public and users of the trail, components typically found in a trailhead are included in the master plan near the proposed building. These components include bike racks, restrooms, and picnic tables.

The proposed trail segments are not without challenges and, in particular, further evaluation of potential under-bridge crossings will need to be completed.

7.4.2 Waterfront District

To expand upon the already well-utilized public waterfront within the marina and to envision what could be a 'waterfront district', this plan includes potential expansion opportunities between Crisman Road and Burns Waterway. This area includes a mixture of public rights-of-way and private parcels. If and when parcels become available or opportunities for public-private partnerships arise, this plan is intended to help guide the implementation of new public features. These potential amenities are called out in the master plan layout drawing and include the following:

- Accessible canoe/kayak launch
- Canoe/kayak storage rack(s)
- Parking & roadway improvements
- Non-motorized trail spur
- Accessible fishing platform
- Public restroom

It is possible, that after these destinations are created, private interests may consider developing additional businesses within the 'waterfront district' area, including dining and or shopping opportunities.

Figure 32: New accessible kayak/canoe launch, City of South Haven, MI

7.5 CONCEPT COST ESTIMATE SUMMARY & PHASING EXAMPLE

A detailed cost estimate is included in Appendix C. The total estimated cost of all improvements identified herein is estimated to cost approximately 11.2 million dollars, which can be broken down into the following sub-categories:

- Repairs, maintenance, replacements $ 5.6 MM
  - Dock replacements
  - Seawall repairs
  - ADA improvements
  - Light replacements
  - Amenities/aesthetic upgrades
  - Building maintenance/repairs/roofs
  - Launch ramp repairs/new launch docks
  - Security cameras & gate lighting
  - Sidewalk replacements
  - Pavement overlays
  - Dredging

- New improvements/amenities $ 1.7 MM
  - New multi-use building
  - Fish cleaning station
  - Trailer parking lot
  - New car parking lot
  - Pavilions
  - Site amenities/furnishings

- Trail Connectivity $ 2.4 MM
  - Chrisman bridge rehabilitation
  - Trail – marina to Midwest Steel Bridge

- Future Opportunities/"harbor district" $ 1.5 MM
  - Land acquisition
  - Accessible kayak launch & parking
  - Accessible fishing pier
  - Restroom building & utility services
  - Roadway & parking improvements

Optimal phasing sequence and timing will depend upon bonding capacity, grant schedules, and need. The following is intended as an example of how the phasing could occur:

Phase 1 (Years 1-5)	**$ 3,600,000**
Port Authority Share	**$ 2,400,000**
Grant Share [1]	**$ 1,200,000**

- A,B,C,D Dock replacements
- Seawall repair
- ADA improvements
- Light replacements
- Amenities upgrades
- Steel roofs, 3 buildings
- Launch ramp repairs
- Security
- 25% pavement overlay
- Ground fault protection
- Ice eaters
- Trailer lot
- Fish cleaning station
- Picnic shade structures
- Dumpster screening

Phase 2 (Years 6-10)	**$ 2,700,000**
Port Authority Share	**$ 1,800,000**
Grant Share [1]	**$ 900,000**

- I,J,K,T Dock replacements
- Building improvements
- New launch docks
- 50% pavement overlay
- Ground fault protection
- Ice eaters
- New multi-use building
- Pavilions
- Site amenities

Phase 3 (Years 11-15)	**$ 2,600,000**
Port Authority Share	**$ 1,800,000**
Grant Share (1)	**$ 800,000**

- 25% pavement overlay
- New car parking lot
- Trails

Phase 4 (Years 16-20)	**$ 1,000,000**
Port Authority Share	**$ 650,000**
Grant Share (1)	**$ 350,000**

- Land acquisition
- Accessible kayak launch w/parking

Phase 5 (Years 21+)	**$ 1,000,000**
Port Authority Share	**$ 650,000**
Grant Share (1)	**$ 350,000**

- Accessible fishing pier
- Restroom building & utilities
- Roadway & parking "harbor district"

(1) Assumes approximately 33% of total phase cost is grant share

As grant opportunities arise, the phasing plan should be adjusted to maximize Port Authority dollars with grant matches. The above assumes a total grant cost share of 33%, however for many of the above elements, higher grant shares are likely feasible.

7.6 FUNDING & GRANT OPPORTUNITIES

In addition to traditional borrowing and bonding options to undertake improvements at the Portage Public Marina, the following grant programs are worth having discussion with the relevant granting agencies to assess the potential of offsetting a portion of the costs associated with the identified work.

State of Indiana Programs

Program: Lake and River Enhancement (LARE)

Protect and enhance aquatic habitat for fish and wildlife, to insure the continued viability of Indiana's publicly accessible lakes and streams for multiple uses, including recreational opportunities

Eligible Applicants:	State and local government agencies, universities, 501(c)(3)
Grant Cycle:	January 31
Grant Contact:	Greg Biberdorf; (317)233-1484; gbiberdorf@dnr.in.gov
Required Match:	10%
Additional Information:	http://www.in.gov/dnr/fishwild/2364.htm

Program:	**Recreational Trails Program**
Agency:	Indiana Department of Natural Resources
Purpose:	Acquisition and/or development of multi-use recreational trail projects
Eligible Applicants:	All units of government and agencies incorporated as not-for-profit corporations
Grant Cycle:	May 1st
Grant Contact:	Bob Bronson, bbronson@dnr.IN.gov
Grant Range:	$10,000 - $150,000
Required Match:	20%
Additional Information:	http://www.in.gov/dnr/outdoor/4101.htm

Program:	**The Land & Water Conservation Fund (LWCF)**
Agency:	Indiana Department of Natural Resources
Purpose:	Acquisition and/or development of outdoor recreation sites and facilities
Eligible Applicants:	Only park and recreation boards established under Indiana law are eligible. The park and recreation board must also have a current 5-year master plan for parks and recreation on file, approved at the Division of Outdoor Recreation.
Grant Cycle:	May 1st
Grant Contact:	Bob Bronson, bbronson@dnr.IN.gov
Grant Range:	$10,000 - $200,000
Required Match:	50% of project cost
Additional Information:	http://www.in.gov/dnr/outdoor/4071.htm

Federal Programs

Program:	**Healthy Watersheds Consortium Grant Program**
Agency:	Environmental Protection Agency
Purpose:	Funding key projects identified in existing watershed protection or conservation plans; building the sustainable organizational infrastructure, social support, and long-term funding commitments necessary for large-scale protection of healthy watersheds; and supporting innovative or catalytic projects that may accelerate or broadly advance the field of practice for watershed protection efforts.
Eligible Applicants:	Not-for-profit 501(c)(3)organizations, for-profit companies, tribes, intertribal consortia, interstates, state, and local government agencies including water utilities and wastewater facilities, and colleges and universities are eligible for funding. Public/private partnerships desirable.
Grant Cycle:	mid-March
Grant Contact:	Peter Stangel (peter@usendowment.org; 404-915-2763) or Jeff Lerner (jlerner@americanforests.org; 202-236-1883)
Grant Range:	$100,000 - $225,000
Required Match:	25%
Additional Information:	http://www.usendowment.org/healthywatersheds.html

Program:	**Boating Infrastructure Grant Program (BIG) – via IDEM**
Agency:	U.S. Fish and Wildlife Service
Purpose:	Construct, renovate, and maintain transient boating infrastructure facilities.
Eligible Applicants:	Public marinas
Grant Cycle:	Annual application cycle
Grant Contact:	fsaylor@idem.IN.gov
Required Match:	10%
Additional Information:	http://wsfrprograms.fws.gov/Subpages/GrantPrograms/

Program: **Lake Michigan Coastal Program (LMCP)**

Agency:	National Oceanic & Atmospheric Administration, Office of Coastal Resource Management
Purpose:	Funding for communities and organizations that seek out social, economic, and environmental solutions that promote partnerships and balance the use and protection of the coast's valuable, yet fragile resources
Eligible Applicants:	All units of local government, state agencies, state colleges and universities, area wide agencies, and not-for-profit organizations
Grant Cycle:	September 15th (pre-proposals due)
Grant Contact:	Maggie Byrnes, mbyrne@dnr.IN.gov
Grant Range:	$50,000 - $150,000
Required Match:	1:1
Additional Information:	http://www.in.gov/dnr/lakemich

Program: **Clean Vessel Act (CVA)**

Agency:	U.S. Fish and Wildlife Service
Purpose:	Construction, renovation, operation, and maintenance of pump-out stations and waste reception facilities for recreational boaters and also for educational programs that inform boaters of the importance of proper disposal of their sewage
Eligible Applicants:	Public marinas
Grant Cycle:	Annual application cycle
Grant Contact:	fsaylor@idem.IN.gov
Required Match:	10%

Additional Information:
http://wsfrprograms.fws.gov/Subpages/GrantPrograms/CVA/CVA.htm

APPENDIX A

DUNES HWY.

PROPOSED BOAT LAUNCH IMPROVEMENTS

PROPOSED EDGE PROTECTION RAILING

PROPOSED PAVILION WITH ACCESSIBLE TABLE AND GRILLS

PROPOSED HARBOR MASTER BUILDING AND AREA IMPROVEMENTS

MIDWEST HWY.

PROPOSED SHADE STRUCTURE OVER PICNIC TABLE

POSSIBLE SLIP RE-CONFIGURATION

PROPOSED PARKING IMPROVEMENTS FOR ADA AND ACCESSIBLE ROUTE

PROPOSED PARKING IMPROVEMENTS FOR ADA AND ACCESSIBLE ROUTE

PROPOSED PAVILION WITH ACCESSIBLE TABLE AND GRILLS

PROPOSED SHADE STRUCTURE OVER PICNIC TABLE

PROPOSED PAVILION WITH ACCESSIBLE TABLE AND GRILLS

BURNS WATERWAY

PROPOSED PARKING IMPROVEMENTS FOR ADA AND ACCESSIBLE ROUTE

PROPOSED DUMPSTER SCREENING

PROPOSED FUTURE WATERFRONT TRAIL CONNECTION

PROPOSED SHARROW ROUTE TO CONTINUE TO MARINA VIA PUBLIC PARKING AREA DRIVE

PROPOSED FUTURE SIDEWALK

BOAT TRAILER PARKING CONFIGURATION - SHOWN FOR DISCUSSION PURPOSES ONLY. CONFIGURATION WILL REQUIRE FURTHER STUDY

PROPOSED FUTURE ACCESSIBLE FISHING PLATFORM

PROPOSED FUTURE RESTROOM AND ACCESSIBLE PARKING

PROPOSED FUTURE NON-MOTORIZED TRAIL

PROPOSED FUTURE ACCESSIBLE CANOE/KAYAK LAUNCH

PROPOSED CANOE/KAYAK STORAGE RACK

PROPOSED ENTRANCE IMPROVEMENTS

SEE ENLARGED PLAN

PROPOSED NON-MOTORIZED TRAIL CONNECTION TO INDIANA LAKESHORE

PROPOSED CORRIDOR SIGNAGE

LEGEND

PROPOSED MASTER PLAN COMPONENT

FUTURE POTENTIAL WATERFRONT DISTRICT COMPONENT

SAMMIE L. MALETTA MARINA MASTER PLAN

DECEMBER 14, 2017

PROPOSED PAVILION EXAMPLE PHOTO

PROPOSED ACCESSIBLE FOUNTAIN WITH DOG BOWL

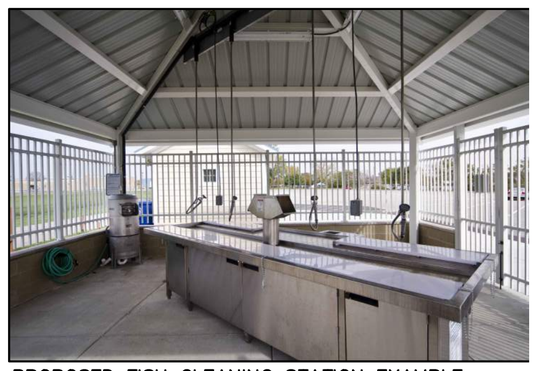
PROPOSED DOG WASTE STATION

PROPOSED ACCESSIBLE GRILL

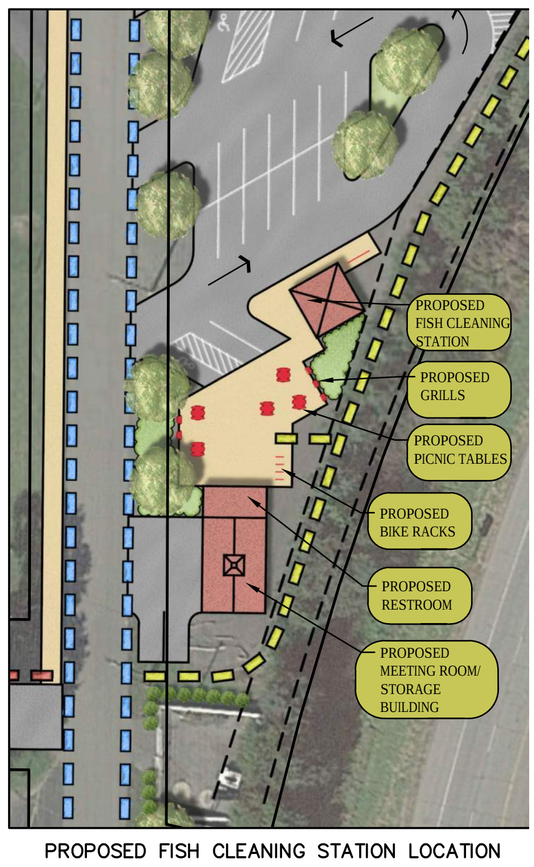
PROPOSED ACCESSIBLE PICNIC TABLE

PROPOSED RESTROOM EXAMPLE

PROPOSED FISH CLEANING STATION EXAMPLE



PROPOSED FISH CLEANING STATION EXAMPLE



PROPOSED FISH CLEANING STATION LOCATION

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Battle Creek
Benton Harbor
Manistee
South Haven

Goshen
Hobart
Lafayette
South Ben
Valparaiso

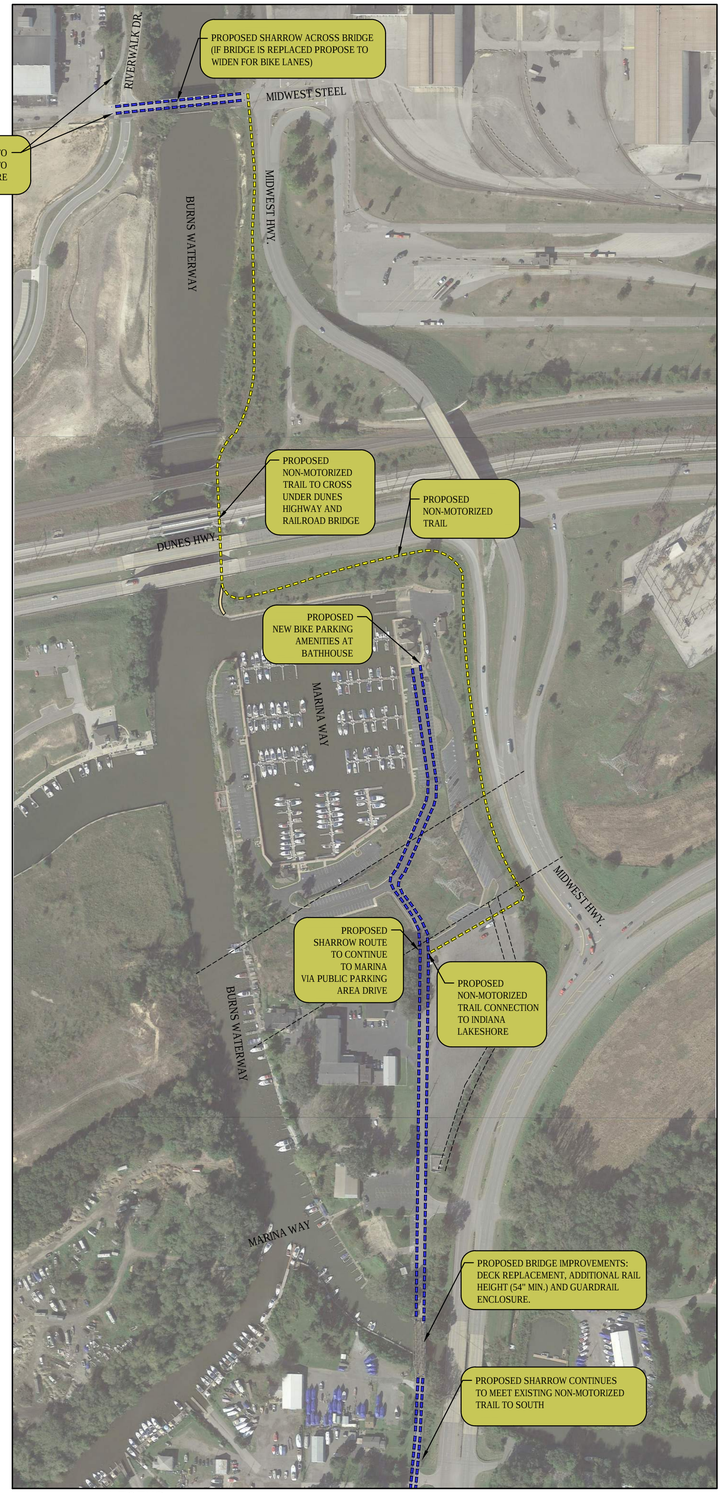
Engineering · Architecture · Land Survey

APPENDIX B

PHOTO UNDER DUNES HIGHWAY BRIDGE FOR
PROPOSED NON–MOTORIZED TRAIL EXTENSION

SLOPED BANK ALONG BURNS WATERWAY
AND ADJACENT TO MIDWEST HIGHWAY FOR
PROPOSED NON–MOTORIZED TRAIL EXTENSION

EXISTING BRIDGE AT MIDWEST STEEL
PROPOSE SHARROW, IF BRIDGE IS
REPLACED IN FUTURE WIDEN FOR BIKE LANES



LEGEND

SHARROW BIKE LANE SHARED USED WITH VEHICLES

NON–MOTORIZED TRAIL, 8' MIN.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

EXISTING BATHHOUSE AT PUBLIC PARKING AREA DRIVE
PROPOSED NEW BIKE PARKING/AMENITIES

PROPOSED SHARROW ROUTE TO CONTINUE
TO MARINA VIA PUBLIC PARKING AREA DRIVE

EXISTING BRIDGE
PROPOSED RAILING IMPROVEMENTS

EXISTING BRIDGE
PROPOSED DECK REPLACEMENT

PROPOSED TRAIL SCHEMATIC PLAN
PORTAGE MUNICIPAL MARINA

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DATE: December 14, 2017 ACI JOB #: 17-0153 SHT: 1 of 1

Engineering Architecture Land Surveying

APPENDIX C

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Project Name: Portage - Sammie L. Maletta Marina Master Plan
Project Number: 17-0153
Prepared By: RMN/MCM/KB/JMS
Date: December 22, 2017
Description: Conceptual Engineer's Estimate

Repair/Maintenance

	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes
A.1	Dock Replacement								
	A Dock (Dock only)	2480	Sft	$ 70.00	$ 173,600.00			1-5	A-D are oldest docks
	A Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	A-D are oldest docks
	A Dock Utilities (per slip[4])	24	Ea	$ 5,000.00	$ 120,000.00			1-5	A-D are oldest docks
	B Dock (Dock only)	2480	Sft	$ 70.00	$ 173,600.00			1-5	A-D are oldest docks
	B Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	A-D are oldest docks
	B Dock Utilities (per slip[4])	24	Ea	$ 5,000.00	$ 120,000.00			1-5	A-D are oldest docks
	C Dock (Dock only)	2480	Sft	$ 70.00	$ 173,600.00			1-5	A-D are oldest docks
	C Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	A-D are oldest docks
	C Dock Utilities (per slip[4])	24	Ea	$ 5,000.00	$ 120,000.00			1-5	A-D are oldest docks
	D Dock (Dock only)	2480	Sft	$ 70.00	$ 173,600.00			1-5	A-D are oldest docks
	D Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	A-D are oldest docks
	D Dock Utilities (per slip[4])	24	Ea	$ 5,000.00	$ 120,000.00			1-5	A-D are oldest docks
	I Dock (Dock only)	2360	Sft	$ 70.00	$ 165,200.00			1-5	
	I Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	
	I Dock Utilities (per slip[4])	20	Ea	$ 5,000.00	$ 100,000.00			1-5	
	J Dock (Dock only)	2960	Sft	$ 70.00	$ 207,200.00			1-5	
	J Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	
	J Dock Utilities (per slip[4])	20	Ea	$ 5,000.00	$ 100,000.00			1-5	
	K Dock (Dock only)	3200	Sft	$ 70.00	$ 224,000.00			1-5	
	K Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00			1-5	
	K Dock Utilities (per slip[4])	18	Ea	$ 5,000.00	$ 90,000.00			1-5	
	T Dock (Dock only)	3880	Sft	$ 70.00	$ 271,600.00		X	1-5	Annual transient income approx $20k ($14-15k in 2017)
	T Dock Gangway (35' x 5')	1	Ea	$ 15,000.00	$ 15,000.00		X	1-5	
	T Dock Utilities (per slip[4])	8	Ea	$ 5,000.00	$ 40,000.00		X	1-5	
					$ 2,492,400.00				
A.2	Seawall issue								
	Seawall issue (approximately 60 LF)	1	Allow	$ 30,000.00	$ 30,000.00			1-2	Investigate Voids
					$ 30,000.00				
A.3	ADA Improvements								
	Fishing Pier Improvements	1	LS	$ 5,000.00	$ 5,000.00		X	1-5	
	Railings/Edge Protection	1	LS	$ 10,000.00	$ 10,000.00		X	1-5	
	Sidewalk replacement - 4 locations @ ADA Parking	2000	Sft	$ 5.00	$ 10,000.00			1-5	
	Parking Striping - relocate/add clearance as req'd	1	Allow	$ 5,000.00	$ 5,000.00			1-5	
	Restroom/Shower Building Entrance Railings	1	LS	$ 10,000.00	$ 10,000.00			1-5	
	Accessible Path Signage	1	Allow	$ 5,000.00	$ 5,000.00			1-5	
					$ 45,000.00				
A.4	Light Replacement[2]								
	Pedestrian-Scale Poles at Marina	33	Ea	$ 4,000.00	$ 132,000.00		X	1-5	Potential NIPSCO grant?
	Tall Poles in Parking Lots	16	Ea	$ 5,000.00	$ 80,000.00		X	1-5	Shorter poles; Potential NIPSCO grant?
					$ 212,000.00				

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	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes
A.5	Amenities Upgrade								
	Railing along sidewalk near T-Dock	470	LF	$ 150.00	$ 70,500.00	X		1-5	Edge protection
	Railing Paint (1625 LF)	1	LS	$ 15,000.00	$ 15,000.00	X		1-5	Likely in-house work; recommended color ship gray
	Wayfinding/Signage	1	Allow	$ 20,000.00	$ 20,000.00			1-5	
	Landscaping	1	Allow	$ 25,000.00	$ 25,000.00	X		1-5	
					$ 60,000.00				
A.6	Boater Services Building (North Building)								
	Exterior							Varies	
	Clean Exterior Masonry	1	LS	$ 6,000.00	$ 6,000.00	X			
	Clean and Re-Coat EIFS Coating at Tower and Dormers	1	LS	$ 4,800.00	$ 4,800.00				
	Clean Perimeter Vinyl Soffits	1	LS	$ 1,800.00	$ 1,800.00				
	Paint Columns, Beams, Wood Fascia, Trim at All Locations & Railings	1	LS	$ 4,800.00	$ 4,800.00				
	Paint Doors and Frames	1	LS	$ 1,200.00	$ 1,200.00				
	Replace Roof (4,000 sf) with steel roof	1	LS	$ 115,000.00	$ 115,000.00			1-2	Consider steel roof (additional cost; consider cost-benefit)
	At Stone Caps, Grind Out Joints, Install Sealant	1	LS	$ 1,800.00	$ 1,800.00				
	Clean and Seal Allow Limestone Caps at Walls	1	LS	$ 1,200.00	$ 1,200.00	X			
	Install Backer Rod and Sealant at Sidewalk/Building Intersection	1	LS	$ 3,000.00	$ 3,000.00				
	Repair Lower Masonry Wall at Steps - Damaged Block	1	LS	$ 2,400.00	$ 2,400.00				
	Minor Tuck Pointing at West Exterior Wall	1	LS	$ 600.00	$ 600.00				
	Replace Light at Soffits with LED (19)	1	LS	$ 8,400.00	$ 8,400.00		X		
	Interior							Varies	
	Office 106								
	Replace VCT Flooring with Seamless Floor in 1-2 years (450 sft)	1	LS	$ 4,200.00	$ 4,200.00				
	Replace Suspending Ceiling Pads, Wash Grid (450 sf)	1	LS	$ 2,400.00	$ 2,400.00				
	Replace Closer at Door 100A	1	LS	$ 600.00	$ 600.00				
	Replace Weather Seals at Doors 100A, 106	1	LS	$ 240.00	$ 240.00				
	Replace Doors 100A, 106 with Insulated Glass Doors	1	LS	$ 3,000.00	$ 3,000.00				
	Replace Office Blinds (3 windows)	1	LS	$ 480.00	$ 480.00				
	Upgrade Lighting to LED Type	1	LS	$ 3,960.00	$ 3,960.00		X		
	Water Service							Varies	
	Insulate and Cover East Exterior Wall	1	LS	$ 960.00	$ 960.00				
	Women's 105, Men's 108							Varies	
	Upgrade Lighting to LED Type	1	LS	$ 3,000.00	$ 3,000.00		X		
	Replace Flush Valves and Faucets in 5-10 years	1	LS	$ 5,400.00	$ 5,400.00				
	Replace Countertops	1	LS	$ 3,600.00	$ 3,600.00				
	Replace Suspended Ceiling Pads, Wash Grid (656 sf)	1	LS	$ 3,600.00	$ 3,600.00				
	Replace Ceiling Heaters (2)	1	LS	$ 3,600.00	$ 3,600.00				
	Replace Wall Heaters (2)	1	LS	$ 3,600.00	$ 3,600.00				
	Laundry 102							Varies	
	Replace Vinyl Tile Floor with Seamless (86 ft)	1	LS	$ 960.00	$ 960.00				
	Upgrade Lighting to LED Type	1	LS	$ 840.00	$ 840.00		X		
	Replace Wall Heater	1	LS	$ 1,800.00	$ 1,800.00				Left in place; must physically turn on/off
	Toilets 111, 112							Varies	
	Re-Coat Floor (130 sf)	1	LS	$ 840.00	$ 840.00				
	Upgrade Lighting to LED Type	1	LS	$ 3,000.00	$ 3,000.00		X		
	Replace Auto Operator Eye at One Water Closet	1	LS	$ 840.00	$ 840.00				
	Stair 101							Varies	
	Replace Flooring at Steps, Landing	1	LS	$ 1,800.00	$ 1,800.00				
	Add Hand Rails at Walls	1	LS	$ 1,800.00	$ 1,800.00				
	Harbor Master 200							Varies	
	Install New Flooring and Base (125 sf)	1	LS	$ 1,080.00	$ 1,080.00				

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	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes
	Install Thermostat for Furnace	1	LS	$ 1,200.00	$ 1,200.00				
	Upgrade	1	LS	$ 1,800.00	$ 1,800.00				
	Utility Storage							Varies	
	Replace Furnaces and AC units within 5 years	1	LS	$ 7,500.00	$ 7,500.00				Only one needed
	Attic 203							Varies	
	Create Attic, Install Ceiling, Insulate, Remove Skylights, Vent New Attic (850 sf)	1	LS	$ 7,200.00	$ 7,200.00				
	Insulate Walls and Cover Masonry Walls (850 sf)	1	LS	$ 4,800.00	$ 4,800.00				
	Utility Room 109							Varies	
	Insulate East Exterior Wall (34 sf)	1	LS	$ 480.00	$ 480.00				
	Sealing sidewalk gaps	1	LS	$ 5,000.00	$ 5,000.00			Varies	
					$ 230,580.00				
A.7	Restroom Building (South Building)								
	Exterior							Varies	
	Replace Roof (1,450sf) with steel roof	1	LS	$ 35,000.00	$ 35,000.00			1-3	Consider steel roof; combine with other roof replacements
	Clean and Re-Coat EIFS at Entry Soffit/Overhang (260 sf)	1	LS	$ 1,560.00	$ 1,560.00				
	Reset One Piece of Stone Sill	1	LS	$ 360.00	$ 360.00				
	At Stone Caps at Wall Steps Grind out Stone Joints, Install Sealant	1	LS	$ 1,200.00	$ 1,200.00				
	At Columns and DF Wall, Grind out Stone Joints, Install Sealant	1	LS	$ 1,200.00	$ 1,200.00				
	Paint Railings and Steel Posts	1	LS	$ 3,000.00	$ 3,000.00	X			
	Paint Wood Fascia and Trim at Soffit/Wall	1	LS	$ 1,200.00	$ 1,200.00	X			
	Paint Exposed Steel Lintels at Windows	1	LS	$ 600.00	$ 600.00	X			
	Clean and Seal Allow Stone Caps	1	LS	$ 840.00	$ 840.00				
	Re-Lamp Soffit Lights with LED Lamps	1	LS	$ 5,000.00	$ 5,000.00		X		
	Interior							Varies	
	Replace Water Heater in 5-7 years	1	LS	$ 3,000.00	$ 3,000.00				
	Replace Furnace and AC Unit	1	LS	$ -	$ -				Completed 2017
	Seal off Vents/Grilles Between Toilets and Utility Room	1	LS	$ 1,800.00	$ 1,800.00				
	Remove Intake Vents at N & S Soffits, Seal Conn. to Interior Shower Rooms	1	LS	$ 1,200.00	$ 1,200.00				
	Upgrade Lighting with New Ballasts, LED Lamps	1	LS	$ 2,760.00	$ 2,760.00		X		
	Repair Tile Floor (4 locations)	1	LS	$ 600.00	$ 600.00				
	Replace Flush Valves in 5-10 years	1	LS	$ 3,600.00	$ 3,600.00				
	Replace Countertops in 10-15 years	1	LS	$ 1,800.00	$ 1,800.00				
	Replace Faucets in 10-15 years (6)	1	LS	$ 1,920.00	$ 1,920.00				
	Sealing sidewalk gaps	1	LS	$ 5,000.00	$ 5,000.00			Varies	
					$ 71,640.00				

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	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes
A.8	Maintenance Building								
	Replace missing siding	1	LS	$ 120.00	$ 120.00				
	Replace damaged Fascia boards	1	LS	$ 240.00	$ 240.00				
	Paint roof fascia and rake boards, door trim	1	LS	$ 840.00	$ 840.00				
	Replace Roof with steel roof in 5-10 years (1,000 sf)	1	LS	$ 25,000.00	$ 25,000.00			5-10	Consider steel roof; combine with other roof replacements?
	Replace interior lights with LED utility lights	1	LS	$ 2,400.00	$ 2,400.00		X		
	Cover upper interior walls with plywood or liner panel	1	LS	$ 1,000.00	$ 1,000.00				
					$ 29,600.00				
A.9	Launch Repairs								
	Scour/Ramp Repairs	1	Allow	$ 40,000.00	$ 40,000.00		X		
	New launch docks	2	Ea	$ 25,000.00	$ 50,000.00	X			
					$ 90,000.00				
A.10	Security								
	Lighting @ Gangway Gates (LED)	11	Ea	$ 2,500.00	$ 27,500.00		X	1-5	
	Cameras	1	Allow	$ 12,000.00	$ 12,000.00			1-5	
	New Gate Locks	0	Ea	$ 1,000.00	$ -			-	Vary codes from gate to gate
					$ 39,500.00				
A.11	Pavement								
	Sidewalk Replacements (assume 20% replacement)	7377	Sft	$ 5.00	$ 36,885.00			1-5	& levelling where possible
	Mill and Fill Existing Parking Lots	16640	Syd	$ 11.00	$ 183,040.00			Varies	Self perform striping
					$ 219,925.00				
A.12	ESD/Groundfault								
	ESD/Ground Fault Protection (if docks not replaced)	1	Allow	$ 400,000.00	$ 400,000.00			1-5	
					$ 400,000.00				
A.13	Basin								
	Dredging (Assume 1.5' avg dredge depth)^3	16500	Cyd	$ 20.00	$ 330,000.00			10-20	
	Circulation - add ice eaters (summer & winter)	25	Ea	$ 600.00	$ 15,000.00	X		1-5	Add ice eaters for ice suppression & summer circulation (circ pipe)
					$ 345,000.00				
Subtotal:					**$ 4,265,645.00**				

Improvements/Additions

	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe	Notes
B.1	New Building								
	Board Room/multi-use room, restrooms, storage & beacon feature	900	Sft	$ 300.00	$ 270,000.00		X	1-5	
					$ 270,000.00				
B.2	Fish Cleaning Station								
	Fish Cleaning Station	1	LS	$ 225,000.00	$ 225,000.00		X	1-5	
					$ 225,000.00				
B.3	Parking Lot - Trailers								
	Agg Base 8"/millings removal	12000	Syd	$ 15.00	$ 180,000.00		X	1-5	
	HMA Pavement 2"	12000	Syd	$ 14.00	$ 168,000.00		X	1-5	
	Striping	1	LS	$ 15,000.00	$ 15,000.00		X	1-5	
	Trees	24	Ea	$ 400.00	$ 9,600.00		X	1-5	
	Curb	1000	LF	$ 16.00	$ 16,000.00		X	1-5	
	Landscaping	1	LS	$ 15,000.00	$ 15,000.00		X	1-5	
	Stormwater	1	LS	$ 40,000.00	$ 40,000.00			5-10	
	Lighting	1	LS	$ 25,000.00	$ 25,000.00			5-10	
					$ 468,600.00				

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	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes
B.4	Parking Lot - Cars								
	Earth Excavation/Grading	1	LS	$ 10,000.00	$ 10,000.00			5-10	
	Agg Base 8"	1667	Syd	$ 12.00	$ 20,000.00			5-10	
	HMA Pavement 2"	1667	Syd	$ 14.00	$ 23,333.33			5-10	
	Striping	1	LS	$ 10,000.00	$ 10,000.00			5-10	
	Leaching Basins	6	Ea	$ 4,000.00	$ 24,000.00			5-10	
	Slope Restoration	1	LS	$ 2,500.00	$ 2,500.00			5-10	
	Stormwater	1	LS	$ 15,000.00	$ 15,000.00			5-10	
	Lighting	1	LS	$ 15,000.00	$ 15,000.00			5-10	
					$ 119,833.33				
B.5	Pavilions								
	Pavilion	3	Ea	$ 50,000.00	$ 150,000.00			1-5	
	Grills	6	Ea	$ 1,500.00	$ 9,000.00			1-5	
	Trash Receptacles	3	Ea	$ 1,500.00	$ 4,500.00			1-5	
					$ 163,500.00				
B.6	Amenities								
	Dog Waste Station	3	Ea	$ 1,500.00	$ 4,500.00			1-5	
	Picnic Shade Structure	2	Ea	$ 25,000.00	$ 50,000.00			1-5	
	Accessible water fountains with dog bowl	2	Ea	$ 4,000.00	$ 8,000.00			1-5	
	Incl. water service								
	Dumpster screening	2	Ea	$ 7,500.00	$ 15,000.00			1-5	
					$ 77,500.00				
Subtotal:					**$ 1,324,433.33**				

Trail

	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe	Notes
B.1	Trail - Crisman Bridge Segment								
	Crisman Bridge Rehab & Connections	1	Allow	$ 130,000.00	$ 130,000.00		X	5-10	Rehab bridge & 2 approaches
					$ 130,000.00				
B.2	Trail to north side of bridges (1,700 LF)								
	Earthwork	1	LS	$ 40,000.00	$ 40,000.00		X	5-10	
	Asphalt trail surface	13240	Sft	$ 6.00	$ 79,440.00		X	5-10	
	Landscape Wall	550	LF	$ 75.00	$ 41,250.00		X	5-10	
	Bollard Lights at key points	10	Ea	$ 2,500.00	$ 25,000.00		X	5-10	
	Edge Protection	3310	LF	$ 100.00	$ 331,000.00		X	5-10	
	Bridge Underpass (pile supported)	1	LS	$ 1,000,000.00	$ 1,000,000.00		X	5-10	
	Signage	1	Allow	$ 12,000.00	$ 12,000.00		X	5-10	
	Bench	4	Ea	$ 3,000.00	$ 12,000.00		X	5-10	
					$ 1,540,690.00				
B.3	Trail - north side of bridges to Midwest Steel Bridge (900 LF)								
	Earthwork	1	LS	$ 25,000.00	$ 25,000.00		X	5-10	
	Asphalt trail surface	7200	Sft	$ 6.00	$ 43,200.00		X	5-10	
	Landscape Wall	400	LF	$ 75.00	$ 30,000.00		X	5-10	
	Bollard Lights at key points	5	Ea	$ 2,500.00	$ 12,500.00		X	5-10	
	Edge Protection	800	LF	$ 100.00	$ 80,000.00		X	5-10	
	Signage	1	Allow	$ 2,500.00	$ 2,500.00		X	5-10	
	Bench	2	Ea	$ 3,000.00	$ 6,000.00		X	5-10	
					$ 199,200.00				
Subtotal:					**$ 1,869,890.00**				

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	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe (yrs)	Notes

Future Opportunities

	Item	Quantity	Unit	Unit Cost	Item Cost	Self Perform Possible	Grant Potential	Timeframe	Notes
C.1	Land acquisition	1	Allow	$ 500,000.00	$ 500,000.00		X	**5-20**	
C.2	Accessible Kayak Launch w/parking	1	LS	$ 250,000.00	$ 250,000.00		X	**10-20**	
C.3	Accessible Fishing Pier	1	LS	$ 160,000.00	$ 160,000.00		X	**10-20**	
C.4	Restroom Building & Water/Sewer	200	Sft	$ 350.00	$ 70,000.00		X	**10-20**	
C.5	Roadway & Parking Improvements	1	Allow	$ 200,000.00	$ 200,000.00		X	**10-20**	**850 LF & 46 spaces (3200SY)**
Subtotal:					**$ 1,180,000.00**				

Summary		
Construction Subtotal:		$ 8,639,968.33
Engineering and Construction Contingency:	30%	$ 2,591,990.50
Construction Total:		**$ 11,231,958.83**

[1] All dimensions and areas are approximate and intended to provide a preliminary basis for cost estimating. Verification of dimensions/costs to be completed during design of individual projects.
[2] Assumes use of existing concrete base/anchor bolts
[3] Assumes nonregulated material
[4] Assumes re-use of utility pedestals

APPENDIX D

Final Report for:

PORTAGE, IN PUBLIC MARINA

BATHYMETRIC INVESTIGATION

Prepared for:

ABONMARCHE

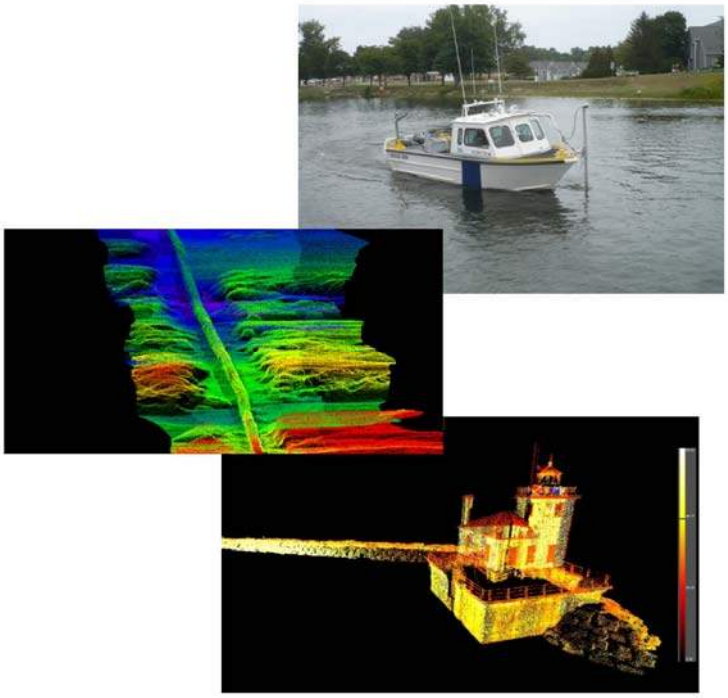
95 W. Main St.

Benton Harbor, MI 49022

Prepared By:

SEAWORKS GROUP, LLC

13821 Flynn Road, Sawyer, MI 49125 269-277-3005



seaworks

HYDROGRAPHIC • GEOPHYSICAL • ENVIRONMENTAL

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TABLE OF CONTENTS

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1.0 Project Details

1.1 Project Description

Seaworks was tasked by Abonmarche Consultants with performing a bathymetric investigation at the Public Marina in Portage, IN. The area to be surveyed consisted of the marina itself as well as a section of the river outside the marina entrance. The survey area measured approximately 700' in length by 500' width with water depths varying from approximately 4 to 12'. Data was collected by Seaworks personnel on April 25th, 2017.

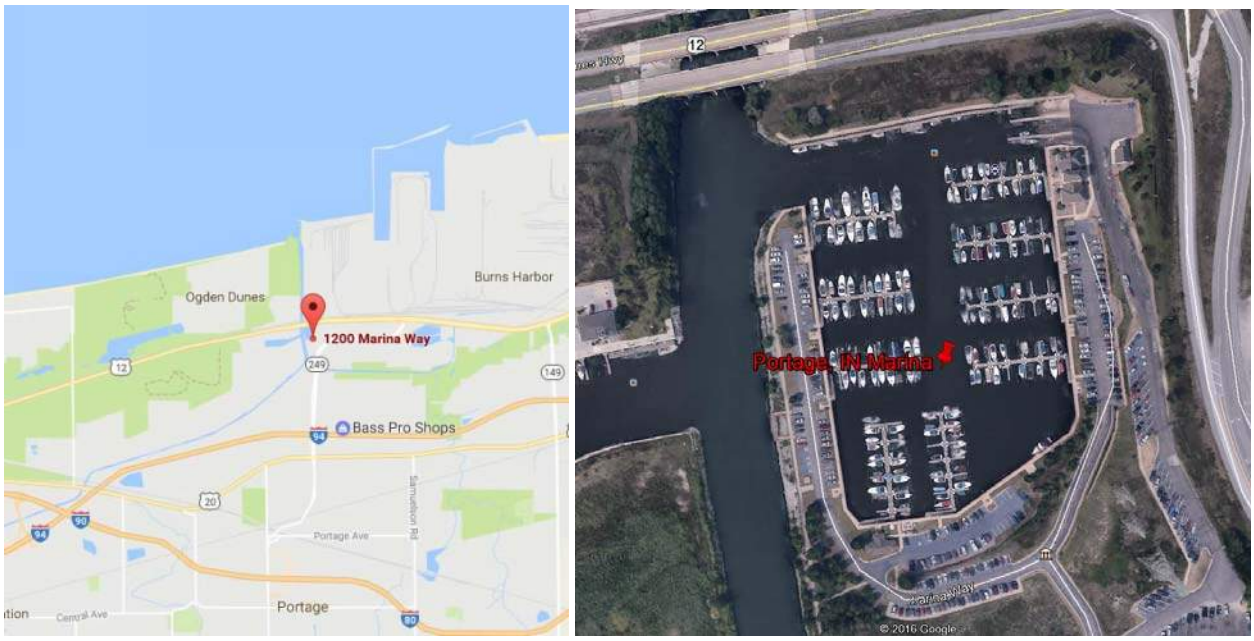

Figure 1.1 – Project Overview

1.2 Project Datums

Horizontal

Datum: North American Datum of 1983 (NAD83)
Grid: Indiana Coordinate System, West Zone
Units: US Survey Feet

Vertical

Datum: International Great Lakes Datum of 1985 (IGLD85)
Reference Plane: Lake Michigan Low Water (Chart Datum) 577.5 IGLD85
Geoid: Continental US (CONUS) 2012b

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The conversion from NAVD88 elevations to IGLD85 heights was computed using the NOAA NAVD88-IGLD85 Height Conversion Tool Kit. This offset was applied in Hypack Geodesy for real-time corrections during data collection and processing.

Lake Michigan Chart Datum (577.5' IGLD85) = 578.04' NAVD88 at Portage, IN.

1.3 Survey Control

One NGS control monument was located by Seaworks in the project vicinity. The point information is summarized in the table below and additional information is contained in the appropriate NGS datasheets.

ID	Easting	Northing	Elevation	Notes
A349	N/A	N/A	611.49'	Vertical Control-NAVD88

Initial setup was performed using RTK corrections from the Indiana Department of Transportation Continuously Operating Reference Network (INCORS). A base point called CORNER01 was established on the corner of a concrete base for an electrical box between the parking area and marina building. An additional point was established in the parking lot called CORNER02. The Trimble SPS GPS base station was set up on CORNER01 and then a pre-job check using a Trimble R8 GPS rover was performed on the A349 benchmark as well as CORNER02. An additional post-job check was performed on CORNER02. All QC points checked in to within 0.10' both horizontally and vertically.

Figure 1.3 – A349 Benchmark

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2.0 Equipment

2.1 Survey Vessel

Survey Vessel Mary Rose

The 25' Mary Rose is a heavily-built aluminum, DGPS-equipped, automated hydrographic survey vessel with an environment-controlled cabin capable of transporting up to 6 passengers. The Mary rose also features push knees, extra-large fuel tanks, twin 150hp 4-stroke outboards, and a 3000W generator.

Specifications:
Length: 25'
Horsepower: 300
Cruising/max speed: 25/35kts
Generator: 3,000W
Fuel Capacity: 150 gallons
Passenger capacity: 6
Trailer: Galvanized, twin axle

Figure 2.1 – Mary Rose

2.2 Sonar Equipment

R2Sonic 2022

The R2Sonic 2022 multibeam sonar system scans underwater features using a high-resolution swath of 256 beams with beam widths of 1° across-track and 1° along-track (1° x 1° system). The system can be operated in either equidistant or equal-angle operating modes, with a swath coverage angle of up to 160°. The sonar operates at user-selectable frequencies between 200kHz and 400kHz.

Figure 2.2 – R2Sonic 2022

A continuous sound velocity profile is normally measured by velocity probe casts and then corrected for within the processing software. Additionally, real-time sound velocity is monitored at the sonar head using a head-mounted SV probe.

Sonar Equipment & Accessories

- Multibeam Echosounder: R2Sonic 2022
- SV Profiler: Teledyne Odom Digibar Pro
- Sonar Head SV: AML MicroX Sensor

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2.3 Positioning & Orientation System

Applanix POS MV 120

Horizontal and vertical positioning were accomplished using an Applanix POS MV 120 Position & Orientation system. The POS MV 120 package uses RTK (Real Time Kinematic) GPS technology which is capable of receiving both L1 & L2 frequencies as well as the GLONASS satellites. Equipment is capable of achieving positioning accuracies of up to +/-0.10', both horizontally and vertically. The RTK positioning equipment is be capable of rapid update rates >5Hz, allowing it to be used for real-time heave compensation.

Figure 2.3 – POS MV 120

A two-antenna "moving baseline RTK" system is used by the POS to provide high-accuracy heading in addition to vessel position. Heading sensing equipment is capable of maintaining at least +/-0.10° heading accuracy under most conditions.

The final component of the system is a precision motion sensor which is used for vessel pitch and roll corrections. The sensor was calibrated/zeroed with the vessel at rest, and then mounting offsets were determined by a patch test performed prior to mobilization. Motion sensing equipment is capable of angular measurement accuracy of at least +/-0.05°.

3.0 Personnel

Chris Ebner, P.E. was the Project Manager and Lead Hydrographer for the operation. Chris is a Hydrographer certified by the Hydrographic Society of America and the National Society of Professional Surveyors (THSOA/NSPS) with 10 years of experience in multibeam surveying.

Doug Tosa & Wade Whitfield were the Project Surveyors for field data collection. Both Doug & Wade have relevant education backgrounds, work experience, and extensive hands-on experience using the multibeam system described above.

4.0 Procedures

4.1 Calibrations & Checks

RTK (Real Time Kinematic) GPS technology was used for both horizontal and vertical positioning. The RTK base station was on the CORNER01 point described above, and QA/QC checks were performed on benchmark A349.

Prior to the survey, a sound velocity profile was measured using the Digibar Pro. The Digibar cast recorded velocities throughout the water column at 1' increments, which were applied to sonar data

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during collection and processing. Additionally, sound velocity at the sonar head was measured and applied in real-time using the head-mounted AML MicroX probe.

Pre and post-survey water level checks were performed by comparing RTK elevation outputs from the POS MV to the NOAA Calumet Harbor gauge as well as water level shots from the R8 GPS Rover.

A pre and post-survey bar check were performed, by measuring returns off an aluminum plate held at a known depth below the sonar head. This was done to confirm the sonar head draft value as well as provide a documented physical check against Seaworks' electronic soundings.

4.2 Field Procedures

The Mary Rose was launched on 4/24 in New Buffalo, MI harbor where a patch test was performed at the New Buffalo city water intake pipeline. The vessel was sailed to the project location the morning of 4/25 to perform the marina survey.

Data was primarily collected along survey lines spaced at 20' intervals. This spacing was selected in order to provide 200% bottom coverage by the multibeam swath. Generally, the outer beams from one pass extended to the center beams of the adjacent pass, providing complete overlap between the passes. This was done to maximize data density and to provide redundant datasets for QC purposes.

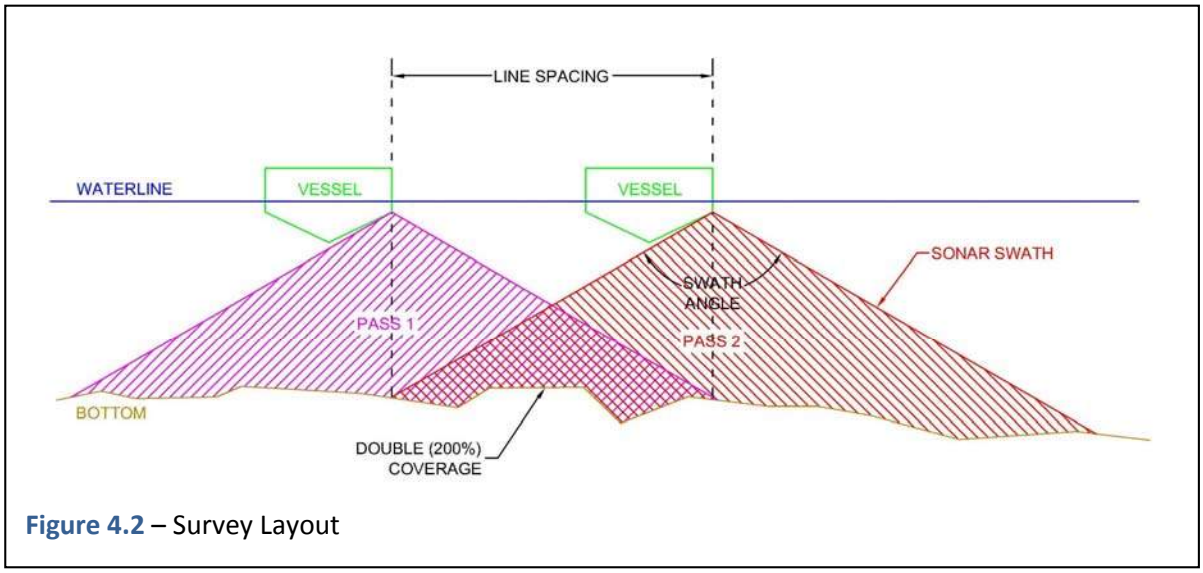

Figure 4.2 – Survey Layout

Once the bulk data had been collected for the majority of the marina, the sonar swath was adjusted for maximum coverage to the starboard side of the vessel, up to 80° from nadir (center beams). The vessel was maneuvered as close to each dock as possible, maximizing coverage underneath. It should be noted that data under the dock fingers was collected at an atypically high coverage angle and double coverage under the docks could not be achieved. Therefore, data beneath the dock fingers should be considered lower-quality than in the main channels.

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Finally, lines were run along 4 sections of sheet pile wall with the sonar in "VFeature" or Vertical Feature mode. This mode optimizes the sonar to record accurate data along vertical features and minimizes interference at the base of the wall.

Sonar operating parameters:

- Sonar Frequency: 400Khz
- Swath Angle
  - General surveying: 70° port/starboard
  - Along walls & docks: up to 80° starboard
- Sonar Mode
  - General surveying: Equi-Distant Beams
  - Along walls & docks: Equal-Angle Beams, VFeature
- Average Sound Velocity: 4,827fps

4.3 Site Conditions

The site was protected from waves and current, except for the river channel outside the marina which had a current of approximately 0.5 Kt.

Survey Conditions:

- Sea: 0'
- Sky: Clear
- Wind: 5-10Kts. SE
- Temperature: 60°F

4.4 Processing & Deliverables

Following data collection, survey data was processed using the Hypack/Hysweep 2017 software package. Raw data was pre-filtered, then manually cleaned of unsuitable positioning data and sonar noise. Positioning and motion sensing corrections were applied, then data was exported in a 1'x1' XYZ grid format using Median sounding selection.

A surface model was generated using Hypack 2017's Triangular Irregular Network (TIN) utility. The surface model was used to generate a color contour shown in Map P1.

5.0 Findings

The marina bottom is mostly flat with water depths varying from approximately 5-8' LWD. The river outside the marina is deeper, varying approximately 7-9' with apparent sand waves along the bottom.

There is a possible scour hole on the marina bottom near the east end of the south wall of the marina entrance. It is not immediately clear what may have caused this or if it has any significance.

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There is a steep drop-off beneath the ends of the concrete boat launches where material has been scoured away by prop wash from boats powering onto trailers. The material has been pushed away from the bottom of the ramp, forming holes at the base of the ramps and shoals further out.

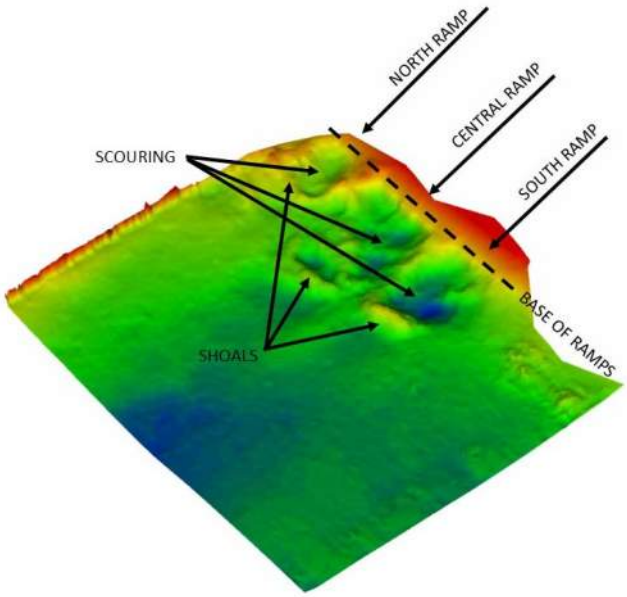
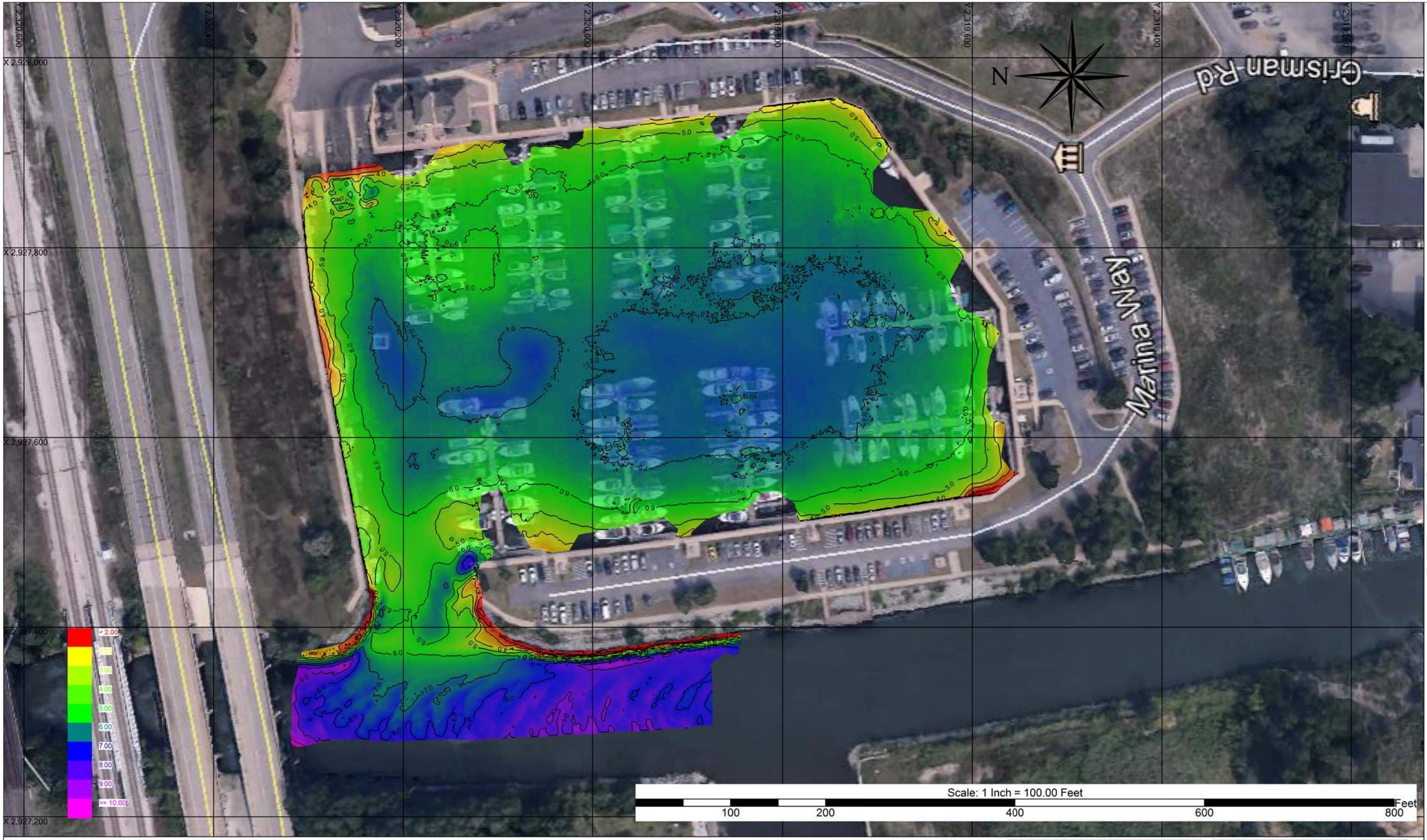


Figure 5.1 – Launch Ramp Detail



DRAWING NOTES:

1. INFORMATION DEPICTED ON THIS DRAWING REPRESENTS RESULTS OF SOUNDINGS ON DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

2. DATA REDUCED TO 1.0' SORT FILE USING MEDIAN SOUNDING SELECTION.

3. BACKGROUND IMAGE GENERATED FROM GOOGLE EARTH AND SHOULD BE CONSIDERED APPROXIMATE.

4. CONTOURS REPRESENT DEPTH BELOW LAKE MICHIGAN CHART DATUM, 577.5' IGLD85.

INFO / EQUIPMENT	
SURVEY DATE:	4/25/17
PERSONNEL:	CE, DT, WW
VESSEL:	MARY ROSE
ECHOSOUNDER:	R2 SONIC 2022
SONAR FREQUENCY:	400Khz
SOUND VELOCITY:	4827 FPS
POSITIONING:	APPLANIX POS MV
	RTK POSITIONING

PROJECT DETAILS	
HORIZONTAL DATUM:	NAD83
GRID:	INDIANA WEST
VERTICAL DATUM:	IGLD85
REFERENCE PLANE:	LAKE MICHIGAN LWD 577.5'
UNITS:	US SURVEY FT.
BASE POINT:	CORNER01
W/L REFERENCE PT:	NOAA CALUMET HARBOR

REVISIONS

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CLIENT: ABONMARCHE

DATE: 5/6/17
DRAWN BY: WAW
APPROVED BY: CFE
SCALE: 1:100
JOB#: 10022
FILE: 170425_Marina Bathmap

JOB TITLE: PUBLIC MARINA PORTAGE, IN

DRAWING TITLE: BATHYMETRIC INVESTAGATION CONTOUR MAP

SHEET #: P1

APPENDIX E

SITE ASSESSMENT KEYNOTES

1. ADA PARKING SPACES - ORIGINAL 2 ADA PARKING SPACES WITH 2 SIGNS CONVERTED TO 3 ADA PARKING SPACES WHICH ELIMINATED ACCESSIBLE AISLE. REMOVE MIDDLE SPACE AND STRIPE AS ACCESSIBLE AISLE.

2. ADA PARKING SPACES AT FISHING PLATFORM - 3 SPACES PARKING LOT SLOPE EXCEEDS MAXIMUM ALLOWABLE SLOPE FOR ADA SPACE AND ACCESSIBLE ROUTE (MUST BE LESS THAN 2% COMBINED IN ALL DIRECTIONS) RELOCATE SPACES TO LEVEL AREA.

3. ACCESSIBLE ROUTE TO FISHING PIER IS OBSCURED BY OVER GROWTH AND LOCATION IS NOT READILY APPARENT. REMOVE OVERGROWTH MATERIAL AND SIGN LOCATION AS ACCESSIBLE ROUTE.

4. BIKE RACK IS LOCATED ON ELEVATED CONCRETE SLAB IN LAWN AREA. PROVIDE ACCESSIBLE ROUTE TO BIKE RACK OR RELOCATE BIKE RACK TO NEW AREA AND PROVIDE CONCRETE SLAB AT GRADE AND ACCESSIBLE ROUTE.

5. FISHING PLATFORM RAILINGS DO NOT MEET CURRENT ACCESSIBILITY REQUIREMENTS FOR PERCENTAGE OF ACCESSIBLE RAIL. RAILINGS FOR RAMP AND STAIRS PROTRUDE INTO THE ACCESSIBLE ROUTE. IF FUTURE IMPROVEMENTS ARE MADE TO THE PLATFORM RECOMMEND REPLACEMENT OF RAILINGS TO MEET CURRENT REQUIREMENTS. CONSIDER ALTERNATE ACCESSIBLE ROUTE TO ELIMINATE RAILING PROTRUSION.

6. BOATER RESTROOM/SHOWER - RAILINGS FOR LOWER RAMP DO NOT MEET CURRENT STANDARDS - TO EXTEND 12" BEYOND LEVEL LANDING. RAILING ON RAMP PARALLEL TO FACE OF BUILDING NOT NEEDED AS SLOPE IS BELOW 5%. RAMP PERPENDICULAR TO MARINA IS AT 5.3% SLOPE REQUIRING A HANDRAIL. IF EXTENDED HANDRAILS WOULD PROTRUDE INTO MARINA WALKWAY AND LEVEL LANDING AT TOP OF RAMP. EXTENSION OF HANDRAIL WOULD CREATE A HAZARD DUE TO PLAN CONFIGURATION OF WALKWAYS..

GENERAL NOTES

A. OVERALL MARINA IS SHOWING SIGNS OF DISINVESTMENT.
B. OVERALL APPEARANCE OF SITE - WEEDS GROWING THROUGH SIDEWALK AND OVERHANGING ONTO WALK AREAS, LIMITING WIDTH OF WALKS.
C. THERE IS HEAVING AND SINKING OF WALKWAY SURFACES AND TABLE CONCRETE SLAB AREAS.
D. MASONRY WALL ISSUES.
E. OXIDATION OF RED PAINTED RAILINGS AND SURFACES.
F. EXISTING JOINTS ALONG MARINA WALK EXCEED THE MAXIMUM GAP ALLOWANCE FOR ACCESSIBILITY. FILLER JOINTS WITH JOINT SEALANT TO CREATE LEVEL SURFACE.
G. LACK OF LANDSCAPING - POOR MAINTENANCE OF GREEN SPACES.
H. REMOVED SAFETY HEIGHT RESTRICTIONS.
I. DECLINING CONDITION OF ASPHALT WILL REQUIRE MILL AND FILL (APPROXIMATELY 5 YEARS).

SCALE: 1" = 100'
0 50 100 200

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PROJECT:
MASTER PLAN
PORTAGE
MUNICIPAL MARINA
PORTAGE, INDIANA

SHEET TITLE:
SITE ASSESSMENT
WEST AND SOUTH
SIDE OF MARINA BASIN

DRAWN BY:
DESIGNED BY:
PM REVIEW:
QA/QC REVIEW:
DATE:
SCALE:
HORZ: 1"=100'-0"
VERT:
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17-0153
SHEET NO.
1 of 4

SITE ASSESSMENT KEYNOTES

7. ADA PARKING SPACE SIDEWALK ADDED TO CONNECT TO MARINA WALKWAY IS SLOPING AT 7.5% AND IS HEAVED AT THE BASE CREATING A TRIP HAZARD. WALKWAYS SLOPING AT OVER 5% BECOME A RAMP REQUIRING HAND RAILINGS. WOULD RECOMMEND EITHER REDUCING SLOPE TO LESS THAN 5% WITH A WALK WITH SWITCH BACK OR IF POSSIBLE MAXIMIZING RAMP GRADE TO 8.33% AND ALLOWING 12" LEVEL AREA AT BASE OF WALK SO HANDRAIL DOES NOT PROTRUDE INTO MARINA WALKWAY AT LANDING.

8. ADA RAMP AT EAST END OF BOATHOUSE DOES NOT HAVE A LEVEL LANDING - RECOMMEND WHEN MILL AND FILL OF ADJACENT ASPHALT PAVEMENT, RE-POUR LANDING TO HAVE LESS THAN 2% OF SLOPE IN ALL DIRECTIONS.

9. EXISTING BIKE RACK IS IN A LOCATION WHERE SECURED BIKE WOULD PROJECT INTO WALKWAY OR STICK OUT INTO ASPHALT PARKING AREA. RECOMMEND RELOCATING BIKE RACK TO LEVEL AREA WITH ADEQUATE SPACE TO ACCOMMODATE 2' WIDE X 6' LONG BIKE WITHOUT PROJECTING INTO CIRCULATION ROUTES.

10. ANGLED SIDEWALK HAS A SEVERE CROSS SLOPE OF ALMOST 4 %. CROSS SLOPES SHOULD BE 2% MAX. WOULD RECOMMEND REMOVAL OF WALK AND CONCRETE AREA ADJACENT TO PARKING LOT TO CREATE A LEVEL LANDING AND INSTALL WALKWAY TO MEET CURRENT STANDARDS.

11. EDGE OF WALKWAY SHOULD HAVE A EDGE PROTECTION EITHER A CURB OR ADD STONE TO EXTEND ABOVE THE GRADE OF THE WALK TO CREATE A LIP.

12. WALKWAY LEADING TO HARBOR MASTER AREA DOES NOT HAVE A LEVEL LANDING TO TRANSITION ONTO WALK. RECOMMEND EITHER CREATING LEVEL LANDING OR ADD SIGNAGE DIRECTING USER TO ACCESSIBLE RAMP TO SOUTH.

13. ELEVATED WALKWAY HAS APPROXIMATELY 3' DROP TO MARINA DECKING BELOW. SURFACES WITH 30 INCH OR GREATER DROP REQUIRE A GUARDRAILING.

GENERAL NOTES

A. OVERALL MARINA IS SHOWING SIGNS OF DIS-INVESTMENT.
B. OVERALL APPEARANCE OF SITE - WEEDS GROWING THROUGH SIDEWALK AND OVERHANGING ONTO WALK AREAS, LIMITING WIDTH OF WALKS.
C. THERE IS HEAVING AND SINKING OF WALKWAY SURFACES AND TABLE CONCRETE SLAB AREAS.
D. MASONRY WALL ISSUES.
E. OXIDATION OF RED PAINTED RAILINGS AND SURFACES.
F. EXISTING JOINTS ALONG MARINA WALK EXCEED THE MAXIMUM GAP ALLOWANCE FOR ACCESSIBILITY. FILLER JOINTS WITH JOINT SEALANT TO CREATE LEVEL SURFACE.
G. LACK OF LANDSCAPING - POOR MAINTENANCE OF GREEN SPACES.
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PROJECT:
MASTER PLAN
PORTAGE
MUNICIPAL MARINA
PORTAGE, INDIANA

SHEET TITLE:
SITE ASSESSMENT
EAST AND NORTH
SIDE OF MARINA BASIN

DRAWN BY:
DESIGNED BY:
PM REVIEW:
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DATE:
SCALE:
HORZ: 1"=100'-0"
VERT:
ACI JOB #
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2 of 4

1. ADA PARKING SPACES - ORIGINAL 2 ADA PARKING SPACES WITH 2 SIGNS CONVERTED TO 3 ADA PARKING SPACES WHICH ELIMINATED ACCESSIBLE AISLE. REMOVE MIDDLE SPACE AND STRIPE AS ACCESSIBLE AISLE.

2. ADA PARKING SPACES AT FISHING PLATFORM - 3 SPACES, PARKING LOT SLOPE EXCEEDS MAXIMUM ALLOWABLE SLOPE FOR ADA SPACE AND ACCESSIBLE ROUTE (MUST BE LESS THAN 2% COMBINED IN ALL DIRECTIONS) RELOCATE SPACES TO LEVEL AREA.

3. ACCESSIBLE ROUTE TO FISHING PIER IS OBSCURED BY OVER GROWTH AND LOCATION IS NOT READILY APPARENT. REMOVE OVERGROWTH MATERIAL AND SIGN LOCATION AS ACCESSIBLE ROUTE.

4. BIKE RACK IS LOCATED ON ELEVATED CONCRETE SLAB IN LAWN AREA. PROVIDE ACCESSIBLE ROUTE TO BIKE RACK OR RELOCATE BIKE RACK TO NEW AREA AND PROVIDE CONCRETE SLAB AT GRADE AND ACCESSIBLE ROUTE.

5. FISHING PLATFORM RAILINGS DO NOT MEET CURRENT ACCESSIBILITY REQUIREMENTS FOR PERCENTAGE OF ACCESSIBLE RAIL. RAILINGS FOR RAMP AND STAIRS PROTRUDE INTO THE ACCESSIBLE ROUTE. IF FUTURE IMPROVEMENTS ARE MADE TO THE PLATFORM RECOMMEND REPLACEMENT OF RAILINGS TO MEET CURRENT REQUIREMENTS. CONSIDER ALTERNATE ACCESSIBLE ROUTE TO ELIMINATE RAILING PROTRUSION.

6. BOATER RESTROOM/SHOWER - RAILINGS FOR LOWER RAMP DO NOT MEET CURRENT STANDARDS - TO EXTEND 12" BEYOND LEVEL LANDING. RAILING ON RAMP PARALLEL TO FACE OF BUILDING NOT NEEDED AS SLOPE IS BELOW 5%. RAMP PERPENDICULAR TO MARINA IS AT 5.3% SLOPE REQUIRING A HANDRAIL. IF EXTENDED HANDRAILS WOULD PROTRUDE INTO MARINA WALKWAY AND LEVEL LANDING AT TOP OF RAMP. EXTENSION OF HANDRAIL WOULD CREATE A HAZARD DUE TO PLAN CONFIGURATION OF WALKWAYS..

SCALE: 1" = 100'

0 50 100 200

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PROJECT:
MASTER PLAN
PORTAGE
MUNICIPAL MARINA
PORTAGE, INDIANA

SHEET TITLE:
SITE ASSESSMENT
EXISTING CONDITIONS
PHOTOS

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SCALE:
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3 of 4

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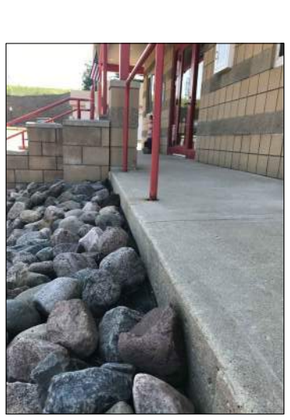

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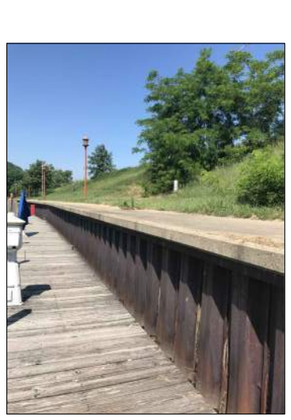

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MASTER PLAN
PORTAGE
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PORTAGE, INDIANA

SHEET TITLE:
SITE ASSESSMENT
EXISTING CONDITIONS
PHOTOS

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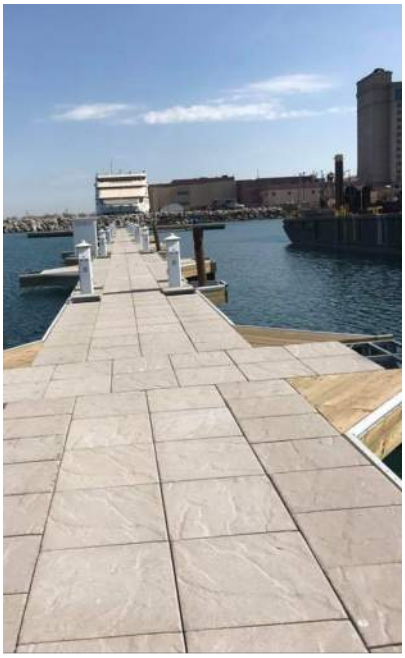
APPENDIX F

The East Chicago Marina is a 160 slip marina operated by the City of East Chicago and sits adjacent to the Ameristar Hotel and Casino. The City recently investment several million dollars in making improvements to the shoreline around and slips in the marina area. The project was funded by the Northwest Indiana Regional Development Authority and included new benches and other furniture, pavement, landscaping, handrails, lighting, new docks, a floating fountain and other amenities. During the site assessment of the marina it was evident the marina was experience significant amount of vacancy. The overall lack of utilization of the facility is further underscored by the fact the number of slips available was reduced by half during the recent remodeling. Discussion with boaters with a slip at the facility gave the overall impression that people were not happy with the changes from a functionality standpoint pointing out several design and construction issues which were negatively impacting their experience at the facility.

East Chicago Marina (160 slips)						
Slip Size	20'	25'/28'	30'	44'	60'	65'
Cost	$1,313	$1,927	$2,058	$2,877	$3,465	$3,990

Additional Revenue/Fees		
Oversize Charge	Daily Launch Fee	Contract Fee
$90 per ft.	$15-$20	$200 (addition to slip fee)



Services	
Lift/Haul Service	Y
Boat Launch	Y
Boat Rental	N
Shower/Restroom	Y
Laundry	Y
Ship's Store	N

Utilities	
Water	Y
Pump Out	Y
Fuel	Y
Internet	N
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	1.25 miles	Adjacent

Additional Information:

- Overall condition is fair to good some of the landside area shows signs of disinvestment
- 70% occupancy
- Minimal site security which may impact desirability
- Offers a well for pullouts as well as indoor and outdoor storage which is its biggest competitive advantage

The Hammond Port Authority 918 slip marina and is the farthest west in the northern Indiana marina market area. The facility is conveniently located to Chicago being just 20 minutes by land or 12 nautical miles from the City and its large population center. The marina was designated as the first "Clean Marina" in the State of Indiana. The facility has numerus activity amenities on and near the site. Onsite amenities include a beach on the shores of Lake Michigan, fishing platforms, an event space and one of the nicest boaters buildings between Chicago and St. Joseph, Michigan. Near the marina is the Horseshoe Casino and entertainment complex which is within walking distance, numerous parks, the Lost Marsh Golf Course as well as several retails operations. Many of the offsite amenities are accessible via a 2 square mile pedestrian trail system which connected to the marina.

Slip Sizes and Rates (918 Slips)							
Slip Size	30'	35'	40'	45'	50'	55'	60'
Cost	$2,225	$2,570	$3,035	$3,615	$4,160	$4,800	$5,350

Additional Revenue/Fees		
Jet Ski Dock	Season Ramp Pass	Daily Launch Fee
$500 per season	$200	$20.00

Services	
Lift/Haul Service	N
Boat Launch	Y
Boat Rental	N
Shower/Restroom	Y
Laundry	Y
Ship's Store	Y

Utilities	
Water	Y
Pump Out	Y
Fuel	Y
Internet	Y
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	.25 miles	Adjacent

Additional Information:

- Overall facility condition is good to excellent
- 100% occupancy rate with a waiting list
- Large patio area with tables and chairs which creates nice landside gathering area
- Secure access to parking and marina enhances security for users of the facility and their property

MARINA SHORES
AT DUNE HARBOR

Located 30 miles from Chicago, Marina Shores is a 250 slip marina and is the marina in the northern Indiana market area most in direct competition with the Portage Public Marina given their proximity next to each other. As the newer of the two marinas, the overall condition of Marina Shores is the superior of the two. Landside amenities for the users of the marina include a boaters building, pool, fish cleaning station, fitness center and a soon to be open bar and restaurant. Many of these amenities are not available at the adjacent Portage Public Marina providing for a strategic advantage for boaters looking for more landside amenities. A unique attribute of the marina compared to others assessed in the market area is the opportunity for boaters to purchase homes adjacent the marina making it easier to boaters (whether primary home or secondary home) to access and use their boats.

Marina Shore (250 slips)				
G-Wall				
Slip Size	30'	35'	40'	
Cost	$2,150	$2,480	$2,680	
Docks A-F				
Slip Size	30'	35'	40'	45+'
Cost	$2,370	$2,850	$3,330	$3,980

10% discount if paid by April 1st

Services	
Lift/Haul Service	N
Boat Launch	N
Boat Rental	N
Shower/Restroom	Y
Laundry	Y
Ship's Store	Y

Utilities	
Water	Y
Pump Out	Y
Fuel	Y
Internet	Y
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	1.25 miles	Adjacent

Additional Information:

- Overall facility condition is good to excellent
- Will do transient slips if not all leased as seasonal
- In 2017 achieved 100% occupancy with the G-Wall docks having the greatest demand
- Marina does not charge for oversized boats in slips preferring to fill slips as quickly as possible for the year

Trail Creek is a 67 slip marina operated by the Michigan City Port Authority and is the furthest east in the northern Indiana marina market. The marina only has slips up to 25' catering to smaller boats and is further from Lake Michigan than several of the other marinas assessed. In addition to in-water slips, the facility offers outside rack service for boaters preferring to not have their boat in the water but readily accessible for a lesser cost than in a slip. The marina also offers onsite (inside and outside) winter storage of boats making it attractive for users of the Port Authority marinas. In general the facility has limited amenities with no fuel dock, boaters building or Wi-Fi available making the facility more attractive to day boaters.

Trail Creek Marina (67 Slips)				
Slip Size	25'			
Cost	$1,240			
Seasonal Outside Rack Service				
Size	21' & under	up to 24'	up to 27'	up to 30'
Cost	$905	$1,090	$1,395	$1,710

Additional Revenue/Fees		
Jet Ski Dock	Season Ramp Pass	Daily Ramp
$540 per season	$100	$10

Services	
Lift/Haul Service	Y
Boat Launch	Y
Boat Rental	N
Shower/Restroom	Y
Laundry	N
Ship's Store	N

Utilities	
Water	Y
Pump Out	Mobile
Fuel	N
Internet	N
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	.25 miles	Adjacent

Additional Information:

- Overall facility condition is average
- Pump out equipment at the facility is portable and not fixed
- Fish cleaning station on site makes the facility attractive to fisherman
- Slip overage of $80-per ft.
- Facility is easy walking distance to commercial and retail area

Washington Park is a 540 slip marina operated by the Michigan City Port Authority and is the furthest east in the northern Indiana marina market. Based on location, it would be considered one of the two best marinas in the market. Within easy walking distance from the marina is Lake Michigan and a large public beach, a zoo, park space, and several restaurants and entertainment venues. The facility is home to several landside amenities serving boaters including a fish cleaning station, four restrooms and shower buildings, and outdoor pavilion space that provide space for boaters to congregate and do things off their boat if desired. The marina is home to the largest slips in the market enabling it to serve loopers making their way through the Great Lakes region.

Washington Park Marina							
Slip Size	30'	35'	40'	45'	50'	60'	100'
Cost	$2,125	$2,490	$2,990	$3,570	$3,950	$4,950	$8,700

Additional Revenue/Fees		
Jet Ski Dock	Season Ramp Pass	Daily Ramp
$540 per season	$100	$10

Services	
Lift/Haul Service	N
Boat Launch	Y
Boat Rental	N
Shower/Restroom	Y
Laundry	Y
Ship's Store	Y

Utilities	
Water	Y
Pump Out	Y
Fuel	Y
Internet	Y
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	.25 miles	Adjacent

Additional Information:

- Overall facility condition is good
- All of the boat slips are not leased but 100% of the jet ski slips are rented and there is a waiting list for them
- No slips are designated as transient but if a seasonal slip is not being used the Authority will rent as a transient slip for $35 per night plus $1 per ft.
- Slip overage of $80-per ft.

The Portage Public Marina is a 214 slip facility located in the middle of the northern Indiana marina market. The facility itself is showing signs of its age compared to most other marinas in the market area and should be evaluated for an investment in both its core elements as well as landside amenities to keep pace with the facility offerings of its competitors. One area where the marina has a competitive advantage relative to most of the other marinas in the market area is the nearby dunes and Lake Michigan shoreline open to the public. The quality of the lakefront in this area is superior to what is near the other marinas in northern Indiana. If non-motorized paths can be developed connecting the marina to this area it will create a competitive advantage. Beyond the need to invest in the marina's facilities and landside amenities, the development of non-motorized paths connecting the marina to the lakefront and commercial areas would greatly increase the attractiveness of the facility to various users.

Portage Public Marina (214 slips)				
Slip Size	25'	30'	35'	40'
Cost	$1,500	$1,800	$2,100	$2,400

Additional Revenue/Fees		
Jet Ski Dock	Season Ramp Pass	Daily Launch Fee
$507.50 per season	$75—$200	$10.00

Services	
Lift/Haul Service	N
Boat Launch	Y
Boat Rental	N
Shower/Restroom	Y
Laundry	Y
Ship's Store	Y

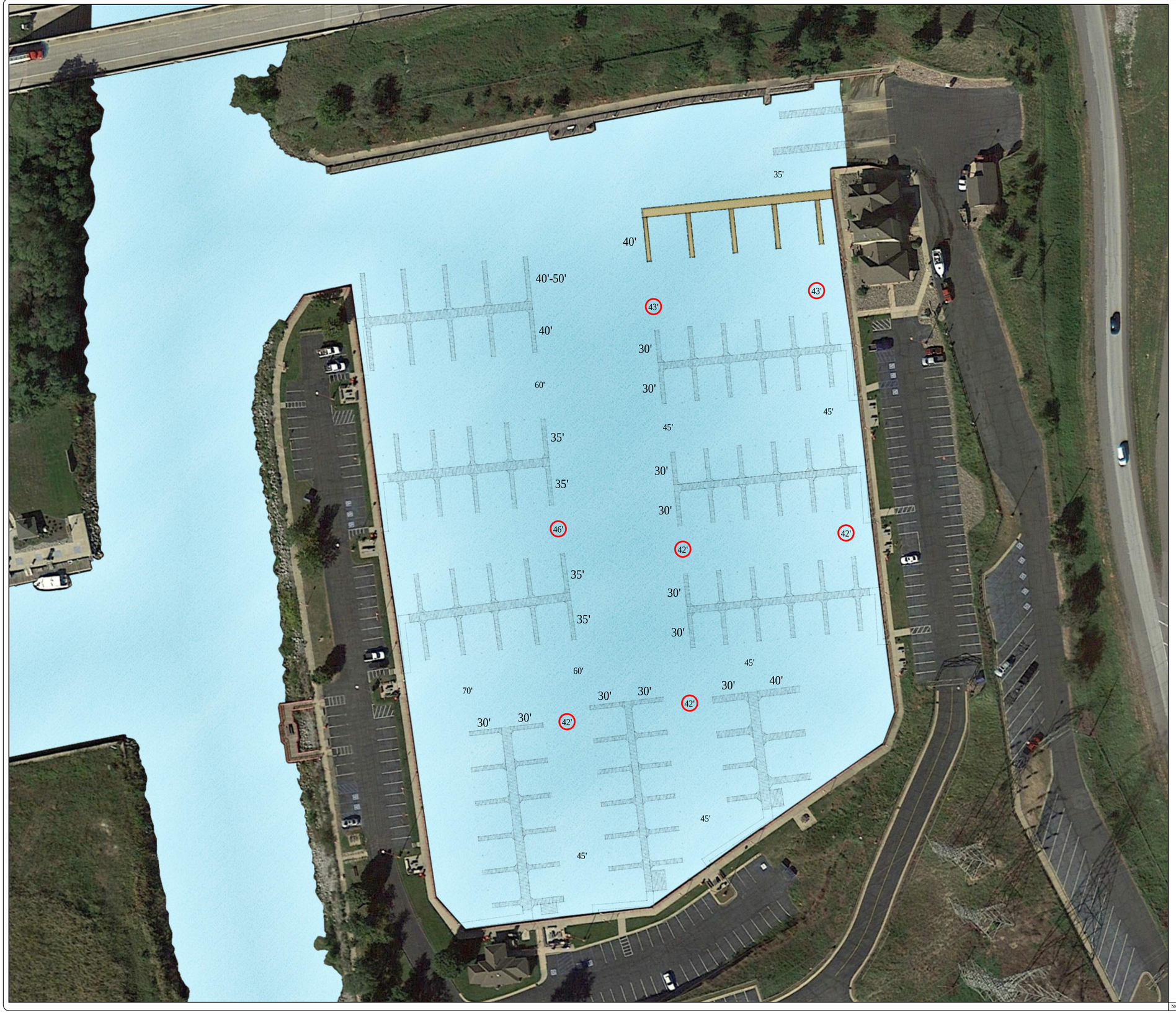
Utilities	
Water	Y
Pump Out	Y
Fuel	Y
Internet	Y
Electrical	Y

Proximity to Population Center (Driving)	Proximity to Downtown/ Commercial Services	Regional Boater Transit Route Proximity
0 miles	1.25 miles	Adjacent

Additional Information:

- Overall facility is in fair condition with some landside areas borderline poor
- $60 ft. slip overage charge
- Rates include two parking passes, pump out, dock box, water, electric and Wi-Fi.
- Marina's location provides for seclusion and privacy from the surrounding community. The lack of consecutiveness to surrounding community amenities and things to do is a disadvantage

APPENDIX G



INITIAL CONCEPTS
9/14/2017

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NORTH

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PROJECT:
PORTAGE MARINA

CONCEPT - 1

SHEET TITLE:

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QA/QC REVIEW:
DATE: SEPTEMBER 2017
SEAL:

SIGNATURE:
DATE:

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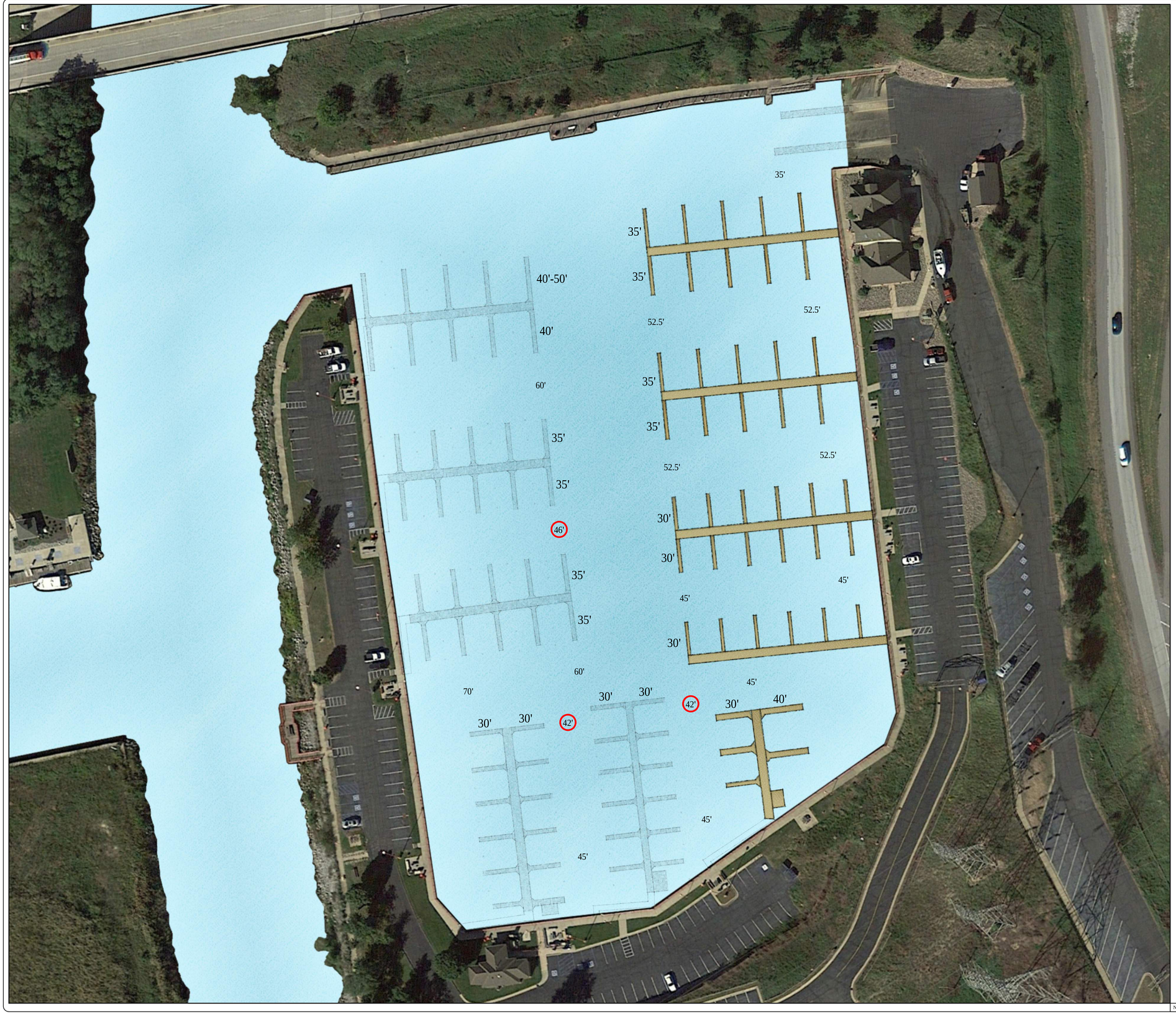
INITIAL CONCEPTS
9/14/2017



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PROJECT:
PORTAGE MARINA

CONCEPT - 2

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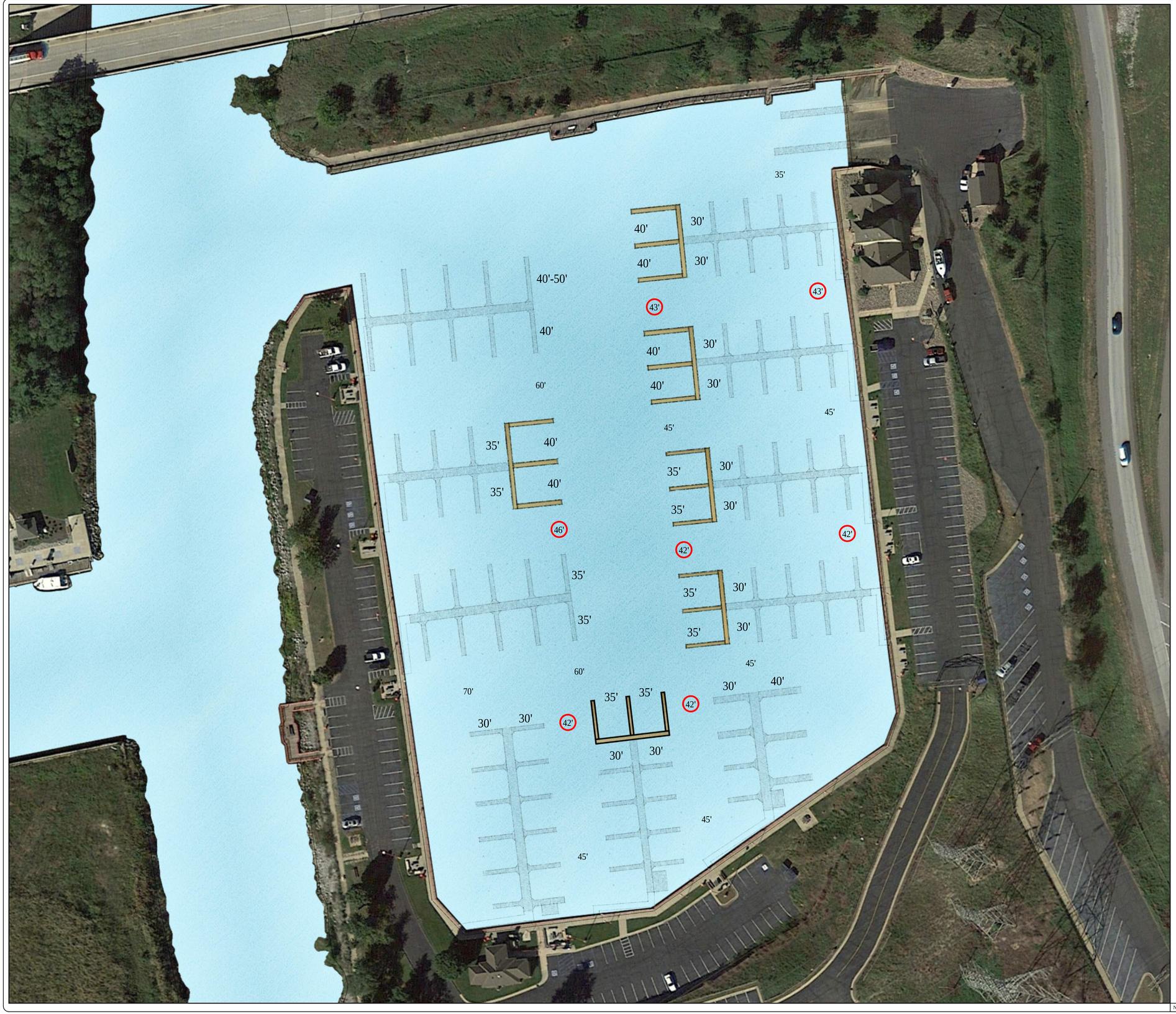

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CONCEPT - 3

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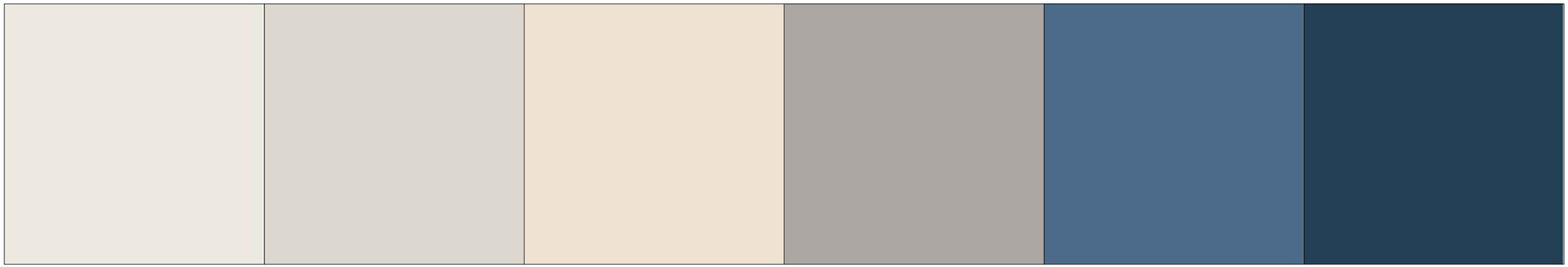
1 of 1

APPENDIX H

SAMMIE L. MALETTA MARINA

PROPOSED COLOR PALETTE



ALLIBASTER- SW 7008 | **INCREDIBLE WHITE - SW 7028** | **CHOICE CREAM- SW 6357** | **PROPER GREY - SW** | **REVEL BLUE SW - 6530** | **SALTY DOG SW - 9177**

ROYAL BLUE **ROMAN BLUE**

METAL ROOF - STANDING SEAM ROYAL, ROMAN, REGAL, SLATE GRAY OR ASH GRAY

ABONMARCHE

DATE: DEC 14, 2017 ACI JOB #: 17-0153 SHT: 1 of 1

Engineering · Architecture · Land Surveying

APPENDIX I

SAMMIE L. MALETTA PUBLIC MARINA
PORTAGE, INDIANA

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