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Preliminary Engineering Study Report

Rapide Croche Boat Transfer Station
Kaukauna, Wisconsin

STS Project No. 200803045

Prepared by:
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February 13, 2009

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Fox River Navigational System Authority
Aquatic Invasive Species Committee
c/o Mr. Bill Bush
1008 Augustine Street
Kaukauna, Wisconsin 54130

Re: Revised Preliminary Engineering Study Report for the Proposed Rapide Croche Boat Transfer Station, Kaukauna, Wisconsin – STS Project No. 200803045

Dear Subcommittee Members:

STS is pleased to submit this Revised Preliminary Engineering Study Report for the proposed Rapide Croche Boat Transfer Station. As requested by the AIS Committee, a second boat transfer station alternative was considered in the study and incorporated into the report. Specific objectives of the study project included:

1. Characterizing preliminary design aspects and anticipated implementation methods of key transfer station features;

2. Completing preliminary site plans/drawings that depict site layout and main project components;

3. Assessing environmental regulatory permitting requirements;

4. Soliciting information from potential equipment suppliers and construction contractors;

5. Assessing probable project construction and operating costs;

STS anticipates that the subject report will be a useful resource and will support Fox River Navigational System Authority and Aquatic Invasive Species Committee decision processes regarding plans for the boat transfer station.

STS appreciates the opportunity to be involved with this exciting project. If you have any questions regarding the report, please contact Mr. Mike Malmstead at (920) 406-3208 or Mr. Paul Killian at (920) 406-3165.

Respectfully,

Michael J.Malmstead, P.E.
Senior Project Engineer

Paul J. Killian, P.E.
Principal Engineer

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1.0 Executive Summary

The Fox River Navigational System Authority (FRNSA) has been authorized by the State of Wisconsin to repair, reopen, operate, and maintain 16 of the 17 locks on the lower Fox River. In accordance with Wisconsin Statute 237, the Rapide Croche lock must remain closed because an aquatic invasive species (AIS) barrier is in place at the site that prevents sea lamprey and other AIS from moving upstream. Because this lock must remain closed, the FRNSA Aquatic Invasive Species (AIS) Committee is planning for a boat transfer station at the site. This station will include a method for transferring boats around the Rapide Croche AIS barrier and cleansing of AIS before boats are placed upstream. A boat transfer station at the Rapide Croche lock will allow boaters access to the Fox River between Green Bay and Lake Winnebago.

To facilitate initial planning, the AIS Committee developed a Proposed AIS Control and Monitoring Plan in cooperation with the University of Wisconsin Sea Grant Institute. This plan involved consideration of target AIS species, boat transfer options, cleansing alternatives, and other key factors pertaining to a potential boat transfer station at the Rapide Croche site.

In 2006, FRNSA retained STS to conduct a Boat Transfer Station Study for the Rapide Croche Lock Site. The study scope included identifying and evaluating conceptual boat transfer alternatives based on desired performance objectives, boat size criteria, and the Proposed AIS Control and Monitoring Plan provided by the AIS Committee. A number of potentially viable boat lift/transfer alternatives were considered. Considering relative advantages and disadvantages of the various alternatives, FRNSA and the AIS Committee preferred a conceptual alternative that involves use of a mobile boat hoist and fork truck for transfers of boats and a cleansing operation that requires placement of boats in hot water. The primary alternative also involved permanent closure of the Rapide Croche lock and construction of the boat transfer station within the lock footprint area. .

Since issuance of the concept study report, FRNSA and the AIS Committee conducted public meetings to share information and solicit feedback regarding conceptual plans for the Rapide Croche site. Based on concept plans, public meeting input, and guidance provided by the Wisconsin Department of Natural Resources, FRNSA and the AIS Committee decided to advance plans for the boat transfer station. STS was subsequently retained in 2008 to conduct preliminary engineering/design activities and assess probable costs for implementing the Rapide Croche Boat Transfer Station.

The preliminary engineering study scope included the following objectives:

- Establish a preliminary design basis for the transfer station and characterize preliminary design aspects
- Consider and characterize key boat transfer station project planning elements including:
    a. Methods/processes for transferring boats in an upstream and downstream direction

b. Preliminary boat transfer station characteristics and components

c. Management of waste materials

d. Operational factors

e. Boat transfer cycle time

f. Environmental permitting

- Assess probable costs and funding support opportunities

STS developed preliminary design plans for the boat transfer station that are intended to facilitate implementation of the Proposed AIS Control and Monitoring Plan and accommodation of specified boat sizes. Preliminary plans for the station included a number of components:

- Permanent closure and backfilling of the lock structure to facilitate construction of the boat transfer station within the lock footprint.
- Concrete seawalls and pile-supported pier structures with deck lengths of approximately 50 feet.
- Boat lift and transfer equipment that includes a marine fork truck for lifting relatively small boats up to approximately 30 feet long and a mobile hoist that is capable of lifting boats up to maximum specified sizes.
- A boat pre-wash area and system that includes the capability to wash/spray boat hulls with non-heated water and a discharge water treatment system. Pre-wash discharge water will be collected and managed to prevent the water from flowing to the upstream side of the station.
- A 55'x19'x6' cast in place concrete hot water cleansing chamber with piping connections.
- A water recirculation system that includes heating equipment for control of cleansing water temperature and a treatment system for control of water quality.
- An operations building for enclosure of key equipment and storage space,
- Passenger and visitor facilities that include docks, walkways, restroom facilities, educational kiosk, and pavilion.
- Site security fencing and gates.

Several other important planning elements considered during initial study activities included:

- Anticipated management practices for waste materials from the hot water and pre-wash water treatment systems (i.e. collected sludge, sediment and oily material).
- Operational factors regarding training/qualifications of station personnel and risks for boat damage.
- Boat transfer cycle times which are anticipated to be in the range of 15 to 20 minutes for small boat transfers with a fork truck and 30 to 60 minutes for large boat transfers with a mobile hoist.
- Environmental permits that will likely be required to facilitate project construction (Chapter 30 Water Regulatory Permit) and wastewater discharge (general WPDES permit).

STS provided a draft Preliminary Engineering Study Report to the AIS Committee for review in October, 2008. During the Committee's review process, a second alternative for the boat transfer station was identified. At the

request of the Committee, STS included the second alternative in the preliminary engineering study scope, developed preliminary plans for the alternative, and incorporated related information into this revised report.

Many characteristics of the second alternative are consistent with the primary/preliminary alternative including methods and equipment used for transferring and cleansing boats. The key difference between the two alternatives is that first alternative (Alternative A) involves permanent closure of the lock and installation of the station within the lock footprint while the second alternative (Alternative B) involves restoration of the Rapid Croche lock and placement of the boat transfer station in the navigation channel downstream of the lock. With Alternative B, the boat transfer station elevation would be approximately 6.5 feet lower than with Alternative A, Operational advantages could be achieved with Alternative B due to reduced vertical lift requirements for boats and reduced vertical distances that boat passengers would tread. Depending on individual perspectives regarding historical preservation and other factors, restoration and long term maintenance of the lock could be considered an advantage or disadvantage of Alternative B.

Probable capital costs for implementing construction of the project were estimated to be approximately $3.8 million for Alternative A and $5.5 million for Alternative B. Support funding for implementation may be available from the WDNR Lake and Aquatic Invasives Grants Program and/or the Wisconsin Recreational Boating Facilities Program. Preliminary annual operating and maintenance costs were estimated to be about $77,000 with no anticipated significant differences between Alternatives A and B. An important and potentially variable operating cost factor for each of the alternatives is related to the amount of electricity/energy required for water heating.

With completion of the preliminary engineering study, the following recommendations and considerations are provided to aid FRNSA and the AIS Committee in subsequent planning efforts for the proposed Rapide Croche Boat Transfer Station:

- Information from this report should be reviewed by FRNSA and AIS Committee representatives to gain consensus that preliminary design characteristics and established boat size criteria are consistent with FRNSA objectives. Boat registration data available from the State of Wisconsin may be useful for assessing boat size statistics and desired criteria for the Rapide Croche station. FRNSA should also consider boat size criteria in the context of navigation channel depths that are expected to be maintained in the Fox River over time.
- Information from this report should be shared with potential project stakeholders (i.e. WDNR, Friends of the Fox, Corps of Engineers, and/or other interested groups (as determined by FRNSA) to communicate project status and solicit feedback.
- FRNSA and AIS Committee representatives should consider relative advantages and disadvantages of the two boat transfer station alternatives, including anticipated operating methods, and build consensus with project stakeholders, including the Wisconsin Department of Natural Resources, for a preferred configuration.
- FRNSA should consider risks for accidental boat damage that could occur with implementation of the facility (during and/or as a result of boat transfer and cleansing processes). To limit potential liabilities, FRNSA may wish to consider damage waivers, insurance policies or other liability limitation measures. Consultation with legal counsel in this regard should be considered.

- Probable implementation and O&M costs should be considered within the context of FRNSA's long term budgeting objectives to support further assessment of project viability. Project funding options, including potential grant opportunities, should be explored.
- If FRNSA decides to proceed with planning for the project, detailed engineering should be completed and final design plans and specifications should be developed for the preferred alternative. Construction bids should subsequently be solicited to re-assess expected project costs.

2.0 Introduction

2.1 Background

The FRNSA has been authorized by the State of Wisconsin to repair, reopen, operate, and maintain 16 of the 17 locks on the lower Fox River. A general description of the Fox River Locks system is included in Appendix A. In accordance with Wisconsin Statute 237, the Rapide Croche lock must remain closed because an AIS barrier is in place at the site that prevents sea lamprey and other AIS from moving upstream. Because this lock must remain closed, the FRNSA Aquatic Invasive Species (AIS) Committee has been planning for a boat transfer station at the site. This station will include a method for transferring boats around the Rapide Croche AIS barrier and cleansing of AIS before boats are placed upstream. A boat transfer station at the Rapide Croche lock will allow boaters access to the Fox River between Green Bay and Lake Winnebago.

To facilitate initial planning, the AIS Committee developed a Proposed AIS Control and Monitoring Plan in cooperation with the University of Wisconsin Sea Grant Institute. This plan involved consideration of target AIS species, boat transfer options, cleansing alternatives, and other key factors pertaining to a potential boat transfer station at the Rapide Croche site.

In 2006, FRNSA retained STS to conduct a Boat Transfer Station Study for the Rapide Croche Lock Site. The study scope included identifying and evaluating conceptual boat transfer alternatives based on desired performance objectives, established boat size criteria, and the Proposed AIS Control and Monitoring Plan provided by the AIS Committee. A number of potentially viable boat lift/transfer alternatives were considered. Considering relative advantages and disadvantages of the various alternatives, FRNSA and the AIS Committee preferred a conceptual alternative that involves use of a mobile boat hoist and fork truck for transfers of boats and a cleansing operation that requires placement of boats in hot water. The preferred alternative also involved permanent closure of the Rapide Croche lock and construction of the boat transfer station within the lock footprint area. This alternative was identified as Alternative No. 10 and described further in the Rapide Croche Boat Transfer Station Study Report dated February, 2007.

Since issuance of the conceptual study report, FRNSA and the AIS Committee conducted public meetings to share information and solicit feedback regarding concept plans for the Rapide Croche site. Based on public meeting input, and guidance provided by the Wisconsin Department of Natural Resources, FRNSA and the AIS Committee decided to advance plans for the boat transfer station. STS was subsequently retained in 2008 to conduct a preliminary engineering study that includes engineering/design activities and assessment of probable costs for a boat transfer station at the Rapide Croche site. During the study proceedings, a second boat transfer station alternative was identified. At the request of the Committee, STS included the second alternative in the preliminary engineering study scope, developed preliminary plans for the alternative, and incorporated related information into this report.

2.2 Purpose

The purpose of this report is to summarize information that will support FRNSA and AIS Committee planning efforts and decisions regarding the proposed Rapide Croche Boat Transfer Station. Specifically, this report summarizes the following items:

- Preliminary design basis of boat transfer station alternatives;
- Key boat transfer station project planning elements including:
    a. Location of the boat transfer station (within lock footprint or downstream)
    b. Methods/processes for transferring boats in an upstream and downstream direction
    c. Preliminary boat transfer station characteristics and components
    d. Management of waste materials
    e. Operational factors
    f. Boat transfer cycle time
    g. Environmental permitting
- Probable costs and funding considerations.

3.0 Preliminary Design Basis

3.1 Boat Size Criteria

Prior to initiating the conceptual boat transfer station study in 2006, FRNSA and the AIS Committee established size criteria for boats/watercraft that the transfer station should be capable of processing. Maximum size characteristics include:

- Boat lengths up to 53 feet,
- Beam up to 17 feet,
- Weight up to 25 tons,
- Boat draft no greater than 4 feet (including propellers), and
- Masts and superstructures of vessels no greater than 23 feet in height.

STS utilized these boat size specifications as preliminary design criteria for the subject study. During execution of the study scope, a FRNSA representative raised questions regarding adequacy of the boat size criteria and if the station should be capable of processing larger boats. While the preliminary engineering study scope did not include developing an independent opinion of the boat size criteria, boat registration information available from the State of Wisconsin may be useful for assessing boat size data and confirming vessel characteristics utilized as the basis for preliminary design. STS was directed to continue using the previously-established design criteria for the purpose of developing preliminary site layout plans and for assessing probable project costs. To address potential facility expansion for larger boats, related information is included in several sections of this report.

3.2 AIS Control Methods

Protecting the Lake Winnebago sturgeon population and native fisheries from potential adverse impacts of AIS is the primary objective in considering plans for a boat transfer station at the Rapide Croche site. Accordingly, The FRNSA AIS Committee cooperated with the University of Wisconsin Sea Grant Institute to develop a Proposed AIS Control and Monitoring Plan for the boat transfer station. A copy of the current plan is included in Appendix B.

The Proposed AIS Control and Monitoring Plan includes several key criteria that were assumed as the basis for the preliminary engineering study:

- The boat lift system must completely separate the boat from the water and allow inspection and treatment of the hull such that organisms attached to the hull or lifting equipment may be noticed.
- Water draining from the boat while it is being cleaned must not be allowed to flow to the upstream side of the transfer station.
- Boaters utilizing the transfer station will have to prepare their boats for transfer. This may involve cleaning of hulls, bilge, and other equipment prior to approaching the station. Live wells and bait buckets must be emptied. Boats with hulls heavily encrusted with algae or organisms will be turned away.
- Once boats are adequately prepared, the boat will be lifted from the water and moved to the cleaning process.

- The hull will be thoroughly sprayed with low pressure water (30 to 40 psi) to remove AIS that may be adhering to surfaces of the boat.
- The boat will be floated in a 110^0F water bath for at least one minute to kill target AIS.
- Propulsion systems, intakes, and exhaust ports must be cleaned/flushed with 110^0F water (depending on type of boat, raw water systems may be operated in the bath to ensure flushing).
- Depending on visual conditions, onboard equipment including ropes, anchors, chains, skis, and fishing equipment must be washed and immersed in 110^0F water (Note: no live bait will be permitted to move upstream through the station).
- Boat lifting devices (i.e. hoist straps and truck forks) will be treated with 110^0F water for one minute along with the boat before making contact with upstream water.

4.0 Boat Transfer Station Planning Elements

4.1 Summary of Boat Transfer Process

In accordance with the Proposed AIS Control and Monitoring Plan for the Rapide Croche Boat Transfer Station (copy included in Appendix B), boats traveling through the station will be completely separated from the river using lifting equipment. Relatively small boats will be lifted and transferred with a marine fork truck and larger boats will be lifted and transferred with a mobile boat hoist. Boats traveling in an upstream direction will be inspected and cleansed to control AIS while boats traveling downstream will be lifted across the AIS barrier but will bypass the inspection/cleansing process.

Figures 1 and 2 depict preliminary facility layout plans and cross-sectional perspectives for Boat Transfer Station Alternatives A and B, respectively. As generally depicted on the Figures, many characteristics of the two alternatives are similar including anticipated methods and equipment used for transferring and cleansing boats. A key distinction between the two alternatives is that first Alternative A involves permanent closure of the lock and installation of the station within the lock footprint while Alternative B involves restoration of the Rapid Croche lock and placement of the boat transfer station in the navigation channel downstream of the lock. Accordingly, the Alternative B scenario involves use of the boat transfer station in series with boat movement through the lock.

The preliminary Alternative B layout involves development of a modified water pool between the lock and the boat transfer station. The depth/elevation of the modified pool would be controlled by a hydraulic conduit that extends through the station profile. This conduit would allow water to pass in an upstream-to-downstream direction. To prevent direct contact between upstream and downstream water, STS assumed the conduit's downstream invert elevation would be two feet above the 100-year downstream flood elevation (approximate invert elevation +604.0). Based on preliminary design characteristics depicted on Figure 2, it may be practical to establish the modified pool in a manner that precludes the need for routine lock operation before or after a boat is processed through the transfer station (i.e. maintain a modified pool elevation equal to the river elevation upstream of Rapide Croche). Although lock functionality would be restored, avoiding routing lockages may be advantageous to limit the overall time it would take for a boat to move from one side of Rapide Croche to the other.

Based on preliminary layout/design characteristics, the Alternative B boat transfer station deck elevation would be approximately 6.5 feet lower than Alternative A. Considering the reduced vertical lift requirement for boats transferred through the station, operational advantages could be achieved with Alternative B. Mobile hoist and marine fork truck manufacturer representatives were contacted during the study to discuss vertical lift requirements of the conceptual plans. Based on feedback provided by manufacturer representatives, both alternatives are feasible but a custom-designed marine fork truck would be required for Alternative A.

As shown on both Figures 1 and 2, the preliminary transfer station design incorporates several common components for each alternative including:

- Mobile boat hoist launching piers on the upstream and downstream sides of the facility. The seawall or interior end of each launch pier would also be designed to facilitate boat lifting with marine fork trucks.
- Dockage, stairs, and pathways for routing of boat passengers.
- A boat inspection and pre-wash area.
- Hot water cleansing chamber.
- Operations building and auxiliary equipment.

A common and general procedure for lifting, transferring and processing boats traveling in an upstream direction includes the following steps:

1. Boat is positioned between launch piers on downstream side by the boat owner/driver. Small boats suitable for lifting with a fork truck would be positioned with the stern toward the pier seawall (i.e. boat driven backward into position). Larger boats that will be lifted with the mobile boat hoist can position themselves bow first (i.e. driven straight into position).
2. After boat passenger egress and proper positioning of mobile hoist straps or truck forks, the station operator lifts the boat vertically from the river and transfers the boat to the inspection and pre-wash area. With a fork truck transfer scenario, the fork truck operator will back away from the seawall and turn such that the bow of the boat is re-positioned in the upstream direction toward the cleansing chamber. The mobile hoist will travel straight across the station. No turning of the unit is anticipated based on maximum specified boat heights, expected height of pier and hoist cross-beam above the water level and assumed positioning of the hoist cross-beam toward the downstream side of the pier.
3. The boat inspection and pre-wash process is completed in the pre-wash area. During the inspection, station operators check for visually apparent AIS and other boat conditions. If AIS or other conditions do not appear acceptable, further transfer of the boat upstream would not be allowed (refer to Section 4.2.4 for additional information regarding the pre-wash process).
4. The station operator lowers the boat into the 110^0F water hot water cleansing chamber ensuring that hoist straps or truck forks are lowered to sufficiently contact the hull and lifting devices. A minimum contact time of 1 minute is completed.
5. As necessary, propulsion systems, intakes, and exhaust ports are cleaned/flushed with 110^0F water. Depending on the type of boat, this may require the boat owner or station operator to access the boat and start/idle the engine briefly while the boat is in the chamber. Based on visual inspection by the station operator(s), onboard equipment including ropes, anchors, chains, skis, and fishing equipment may be washed and immersed in 110^0F water (no live bait transfers allowed).
6. The station operator lifts the boat from the cleansing chamber with the mobile hoist or fork truck and moves the boat to the upstream side of the station.
7. Boat is lowered to the river with the bow in the upstream direction. Boat passengers re-board the boat and exit the transfer station.

Boats traveling in the downstream direction would be lifted and transferred with the fork truck or mobile boat hoist using methods similar to that for upstream travel but the cleansing process would be bypassed. STS assumed that the boat transfer station will only operate during the boating season. Two station operators will likely be necessary to facilitate efficient and orderly boat transfers. Certain tasks, such as positioning of mobile hoist straps or truck forks,

will require both operators to work cooperatively. During other operational aspects (i.e. cleaning of small equipment, providing assistance to passengers or approaching boats, etc.), the operators may work independently.

4.2 Preliminary Transfer Station Characteristics

4.2.1 Lock Structure Modifications

With implementation of the boat transfer station as identified for Alternative A, the Rapide Croche lock structure will be permanently closed. It was assumed that structural fill material will be placed in the lock in accordance with material and compaction/density specifications that will be established during final design. The existing stop log and water control systems in place at the lock can likely be used to facilitate construction activities within the lock. It was also assumed that the existing lock gate equipment will be removed for salvage or heritage preservation (i.e. potential museum pieces). Backfilling of the lock structure will likely progress in conjunction with construction of the seawall structures and other project components. After backfilling, a concrete surface will be provided over the transfer station operating area.

With implementation of the boat transfer station as identified for Alternative B, the Rapide Croche lock structure will require restoration to allow resumption of seasonal operation. The existing gates and water control systems in place at the lock can likely be refurbished. The structure would require concrete repairs and other updates. A detailed assessment of the condition of the lock is beyond the scope of the current study. However, a construction representative from CR Meyer did provide a summary of work items for refurbishing of the lock, along with a budgetary cost. The major work items were summarized as follows:

- Dewatering could be accomplished without the need for a clay dike.
- The gates would stay in place and be painted. No other work on the gates themselves is anticipated.
- The handrail on the lock wall appeared to be good and would not need to be replaced.
- Injection grouting of cracks.
- Mechanical work would be similar in scope to the previous locks.
- Concrete work would include cutting a 2 foot deep by 2 foot wide section of the north wall out for the entire length and replacing it. Also work would be done a various other significant spalls mostly on the north wall.
- New lighting would be installed.

As summarized in Section 4.1 and depicted on Figure 2, the preliminary Alternative B layout involves development of a modified water pool between the lock and the boat transfer station. Based on preliminary design characteristics, it may be feasible and advantageous to implement Alternative B in a manner that precludes the need for routine lockages before or after a boat is processed through the transfer station.

4.2.2 Seawall, Station Deck, and Pier Structures

As generally depicted on Figures 1 and 2, seawall and launch pier structures will be constructed at the upstream and downstream sides of the transfer station for either alternative. Functional design objectives for the seawall include retaining soil/fill within the transfer station and facilitating operation of loaded boat lift and transfer equipment (i.e.

loaded fork trucks and mobile hoists). For Alternative A, the seawall length would be approximately equal to the inside width of the lock structure and the station deck elevation would be approximately equal to the top of the existing lock structure, elevation +614.5 (+/-). Relative to Alternative A, the seawall length for Alternative B would be much longer because the transfer station structure would be constructed to fill the entire width of the navigation channel. STS assumed that the Alternative B station deck elevation would need to be at least several feet above the downstream 100-year base flood elevation of +602.0 and incrementally higher than the anticipated upstream pool elevation. A deck elevation of +608.0 was selected for the preliminary design/layout as depicted in the profile perspective on Figure 2. The Alternative B station deck would need to be supported using compacted fill material that is placed on an adequate sub-base material. Considering that the river/channel bottom includes soft sediments that would likely be an unsuitable foundation, the sediment material may need to be removed and replaced with structural fill. As an alternative to supporting the station deck with compacted fill material, a pile-supported foundation could potentially be used. Final/detailed geotechnical design activities are beyond the scope of this preliminary study. Accordingly, preferred seawall and station deck foundation methods are somewhat uncertain.

A specific functional objective for the launch pier structures in either alternative is to facilitate boat lifting with mobile boat hoist equipment. Launching pier guidelines/information from Marine Travelift, Inc. (Marine Travelift) are provided for reference in Appendix C.

Based on experience with seawall/dockwall and mobile hoist pier design from other projects, STS assumed the following preliminary design characteristics:

- Reinforced concrete seawalls that are structurally attached to the existing lock structure sidewalls and floor area using steel reinforcing rods/dowels (Alternative A). Final design of the wall will also likely include a tie-back system into the lock structure fill material. For Alternative B, the seawalls could be constructed of reinforced concrete or steel sheet piling. With either method, the walls would be extended laterally into the mainland and island side river banks. The walls would also be extended vertically to a depth that facilitates an adequate foundation or anchoring. Final/detailed design activities would be required to determine foundation/anchoring plans.
- Piling supported launch pier structures with pre-formed concrete or steel decks. With relatively shallow bedrock and soft overlying sediments anticipated at the site, the pile foundation design will likely include socketed steel pipe or column piles or another method for anchoring to bedrock. Battered piles may also be included in the final design to address lateral stability. The pier decks will be approximately 5 to 6 feet wide to accommodate station operators and include curb rails and safety/guard rails.

The pier foundation system and length of the pier deck will be designed to accommodate the largest anticipated boat size and mobile hoist equipment. Based on specified boat size criteria (refer to Section 3.1), the pier foundation system will need to be capable of supporting loads consistent with a 25-ton boat and suitable mobile hoist (refer to report section below for additional information on hoists). Considering the specified boat sizes and mobile hoist launch pier guidelines, a preliminary pier deck length of 50 feet was assumed.

If FRNSA ultimately prefers a station capable of transferring boats larger than that currently specified, the seawall and pier design would need to address heavier and larger loads. This would likely require a more robust seawall and pier foundation design in addition to a longer pier deck.

4.2.3 Boat Lift and Transfer Equipment

In general, small boats can be lifted and transported more efficiently with a fork truck compared to a mobile hoist. Accordingly, preliminary plans for the Rapide Croche transfer station involve using a fork truck for small boats. STS discussed preliminary site plans with marine fork truck manufacturers to assess feasibility of the Rapide Croche transfer process and solicit equipment recommendations. Based on discussions with marine fork truck manufacturers, boats less than about 30 feet long would typically be suitable for handling with a fork truck.

Operational advantages could be achieved with Alternative B due to reduced vertical lift requirements for boats. Mobile hoist and marine fork truck manufacturer representatives were contacted during the study to discuss vertical lift requirements of the conceptual plans. Based on feedback provided by manufacturer representatives, both alternatives are feasible but a custom-designed marine fork truck would be required for Alternative A. Two independent marine fork truck manufacturers confirmed feasibility of the custom design feature. Information characterizing a potentially suitable fork truck from Marine Travelift is provided in Appendix D. Based on discussions with Marine Travelift personnel, the lifting capacity of a custom designed model M2500 fork truck would be approximately 23,000 pounds (de-rated slightly from the standard model with a custom-design mast).

Larger boats not suitable for fork trucks would be lifted and transferred with a mobile boat hoist. Based on specified boat size criteria (refer to Section 3.1), a Marine Travelift model 25 BFMII should be adequate. The rated lifting capacity for this unit is 55,000 pounds (27.5 tons) and its maximum boat length is approximately 55 feet. If FRNSA prefers to incorporate capabilities for larger boats, a Model 35 BFMII would likely be recommended as this hoist has a rated lifting capacity of 77,000 pounds (38.5 tons) and can lift a boat up to about 65 feet long. Standard specifications for the Model 25 BFMII and 35 BFMII hoist units are included in Appendix E.

Both the fork truck and mobile boat hoist use diesel fuel. Based on discussions with the hoist manufacturer and hoist users, frequent refueling of the hoist is not expected (likely to be less than once per week). Considering that the transfer station will probably experience a higher proportion of boat traffic that is suitable for the fork truck, more frequent re-fueling of the fork truck is anticipated. Direct re-fueling of the truck, hoist, and portable storage containers could be accomplished with routine or as-needed deliveries from a diesel fuel supplier (i.e. small tanker truck). Alternatively, a small on-site diesel fuel storage tank could be included in final plans for the site or subsequently installed depending on need.

4.2.4 Boat Pre-Wash System

Consistent with the AIS Control and Monitoring Plan, boats moving upstream through the facility will be transferred to a pre-wash area via fork truck or mobile hoist for inspection and washed/sprayed with non-heated, low pressure water (30 to 40 psi) to remove AIS that may be adhering to surfaces of the boat. Preliminary design features of the pre-wash system include:

- Water supply hose(s) with spray wand attachments. Because high pressure and heated water is not required, it was assumed that an on-site water supply well and pump system can provide the necessary water via an underground piping system.
- Sloped concrete surface with an imbedded and grated drain for collection of boat pre-wash water.
- A pre-manufactured water treatment unit that is designed to remove potential pollutants from collected pre-wash water prior to discharge to the downstream river. It was assumed that treatment for grit/sediment and floatable pollutants (i.e. oils) will be desired. Information summarizing a potential treatment system, the Vortechs unit from CONTECH, is included in Appendix F.

4.2.5 Hot Water Cleansing Chamber

After inspection and pre-washing, boats moving upstream through the facility will be transferred to a hot water chamber and floated in 110^0F water for a minimum of one minute. Canoes and kayaks will be completely submerged. When the boat is lowered into the chamber, the truck forks or hoist straps must be lowered sufficiently to facilitate contact of hot water with the boat hull and the lifting devices. Preliminary design characteristics of the hot water chamber include a cast-in-place reinforced concrete structure with top of side walls approximately equal to or slightly curbed above the transfer station surface elevation.

Based on specified maximum boat weight, length, beam and draft criteria (refer to Section 3.1); preliminary inside dimensions of the chamber were established at 55 feet long by 19 feet wide by 6 feet deep. The structure depth and normal water level will be designed to allow sufficient freeboard such that the chamber will not overflow when displacement from the largest/heaviest boats (Note: a 25 ton boat would displace about 6,000 gallons of water and result in an approximate static water level increase of 0.7 feet in the chamber).

If FRNSA ultimately prefers a station capable of processing boats larger than that currently specified, dimensions and placement of the chamber would need to be expanded. Depending on expansion objectives, the required chamber dimensions could conflict with necessary pre-wash and fork truck maneuvering areas that are currently planned within the lock footprint.

The preliminary hot water chamber design also includes a retractable cover system. The primary purpose of the cover is limit evaporative heat losses when the hot water chamber is not in use. In an uncovered scenario, significant heat losses could occur depending on several ambient weather conditions including wind speed, temperature, and humidity. Accordingly, routine use of the cover system will be prudent to control heating-related

operational costs. Heat losses are influenced by the exposed water surface area. Accordingly, an expanded chamber scenario (for larger boats than currently specified) would result in additional heat losses.

4.2.6 Water Heating and Treatment Systems

The hot water cleansing chamber will require a water recirculation system to both maintain the desired water temperature in the cleansing chamber and to remove sediments and other contaminants generated from the process. To accomplish this, preliminary plans include a treatment process consisting of a submersible pump delivering the water to a packaged treatment system followed by an inline electric heating system. STS anticipates a recirculation system will be required to remove accumulated suspended solids and floating oil that could potentially be discharged into the cleansing chamber from boats during the cleansing operation.

A schematic of the proposed recirculation and water treatment system is included as Figure No. 3 The principal treatment component consists of a dissolved air flotation (DAF) waster treatment unit. A description of the proposed DAF packaged system is included in Appendix G. The raw water is pumped from the cleansing chamber; chemicals are introduced to enhance particle flocculation and the water is mixed with an aerated recycle flow. A manually adjustable surface skimmer pipe will be included in the cleansing basin to allow the operator to periodically remove accumulated floating material from the surface as needed. The combined flow enters the DAF tank and flocculated particles attach to the aerated water and rise to the surface. Clarified water is separated from the floated material and is discharged by gravity out of the unit. A portion of the clarified effluent is recycled through the air dissolving tube (ADT) unit. Accumulated floating solids are skimmed off the surface and deposited into a sludge collection trough where they are discharged by gravity to a below-ground holding tank. Grit and sediment which do not float are collected in the bottom of the unit and periodically purged to the holding tank which will be periodically emptied.

The clarified effluent is discharged for return back into the cleansing basin. A portion of the effluent is pumped through an in-line electric heat exchanger to add heat to the system and maintain the desired cleansing basin temperature. A temperature monitoring and control system would be incorporated to maintain the minimum required temperature in the chamber. To allow for incidental heat loss that may be associated with placement of a boat in the chamber, it may be necessary to maintain a temperature control set point incrementally higher than the minimum 110^0F requirement. A description of preliminary heat exchanger system is included in appendix G. A solar water heating system could also be considered as an alternative to limit heating-related operating costs.

It is anticipated that a coagulant and polymer will be needed to enhance the DAF performance. Due to the seasonal operation of the process, chemicals will be provided in 55 gallon drums and pumped by small chemical metering pumps directly from the drums. In addition, a solution of sodium hypochlorite will be provided for control of biological growth in the hot water (not for control/targeting of AIS on boats). The sodium hypochlorite will be introduced by a separate chemical metering pump on a batch basis to maintain a residual chlorine concentration in the basin.

4.2.7 Operations Building

As generally depicted on both Figures 1and 2, an operations building was included in preliminary plans for the transfer station site. The primary purpose of the building is to enclose the water heating and treatment system equipment and related controls. The building will also likely include an office area for the station operators and storage space for miscellaneous equipment (i.e. straps, ropes, hoses, etc.). Inside or adjacent to the building, a relatively small hot water tank will be provided to facilitate immersion of small equipment in hot water for AIS treatment (i.e. fishing tackle, ropes, etc.).

4.2.8 Utilities

Electricity will be required to operate the facility pumps, water heating system, treatment system, control systems, and facility lighting. Providing three phase power to the site will allow for procurement and use of standard electric heating and motor equipment. The scope of this preliminary study did not include a detailed review of power supply options but it was noted that power is currently routed to the site from the Kaukauna Utilities Rapide Croche hydropower dam site.

Municipal water service is not available near the Rapide Croche site. Accordingly, an on-site well and pump system is anticipated for supplying water that will be needed for site operations and domestic type use. It was assumed that the on-site well can serve as the source for boat pre-washing, filling the hot water cleansing chamber system, and for routine makeup water. A well and pump configuration similar to a typical residential system should be adequate.

Municipal sewer service is also not available. Accordingly, waste holding vaults may be necessary for containment of wastewater from restroom facilities. Alternatively, a septic system and drain field may be feasible. A contracted waste hauler will be necessary to periodically collect sludge material that accumulates from the hot water and pre-wash water treatment systems. Considering the likely need for waste hauler service, a holding tank configuration for the restroom facilities was assumed (Note: wastewater holding tanks and contracted waste hauling are common practices for many remote boat launch and park sites).

4.2.9 Passenger and Visitor Facilities

Boat passengers will exit their boats on docks installed at the upstream and downstream launching pier locations. Stairs and walking paths will route passengers around the operational area of the transfer station. Figure 1 depicts preliminary dockage and walking path plans for Alternate A. Figure 2 depicts preliminary dockage and walking path plans for Alternate B. Restroom and rest area facilities (i.e. pavilion and picnic tables) for passenger and visitor use were assumed to be desirable provisions. An information kiosk was also included for education purposes.

Site provisions that may be necessary to comply with the Americans with Disabilities Act (ADA) are uncertain at this time but it is likely that ramps may be necessary on both the upstream and downstream sides of the facility to address accessibility. This may be particularly challenging on the downstream side of the facility where there is

more vertical distance to the river water level. For Alternative A, selective clearing of the wooded area on the downstream side would likely be necessary to facilitate construction of ramp paths. A wheel chair lift or elevator system could be an alternative to ramps. With Alternative B, there would be less vertical distance that passengers would need to traverse. Accordingly, this alternative offers advantages regarding methods and provisions that may be required to facilitate ADA compliance.

Other visitor related provisions could also be considered but were not assumed necessary for preliminary plans of the station. Concepts that may facilitate visitor attraction value could include:

- Museum
- Store and/or gift shop
- Classroom/education facilities
- Mooring dockage on upstream and downstream sides of the facility
- Picnic and playground area
- Camp sites

4.2.10 Site Security

Preliminary plans for the site include security fencing to limit unauthorized access to operational areas of the transfer station. As generally depicted on Figures 1 and 2, a fence is anticipated for separation of the operational and passenger/visitor areas. Drive-through and walk-through gates will be incorporated into the fence to allow for authorized equipment and pedestrian access. The gate positions will be controlled by station operators during operating hours and will be locked when the station is closed.

4.3 Waste Management

Preliminary plans for managing various waste materials include:

- Sludge removed from the hot water treatment system will accumulate in a sludge storage tank. A wastewater/sludge hauler will be periodically contracted (as-needed basis) to vacuum the sludge tank and transport the sludge to a licensed wastewater treatment plant. The frequency of contractor sludge collection will depend on usage of the boat transfer facility and cleanliness of boat hulls but is expected to be infrequent because pre-washing of boats should limit significant impacts to or fouling of the hot water chamber system.
- The anticipated pre-wash water treatment system (refer to Appendix F) will need to be periodically cleaned of grit, sediment, and any floatable materials removed from discharged pre-wash water. A contracted vacuum truck (potentially the same truck used for sludge collection) will be called as necessary based on visual inspections for accumulated material in the treatment system. Collected water and sediment material will be hauled to a licensed wastewater treatment plant. Oil that could potentially accumulate in the floatable section of the treatment system will be collected and managed separately if necessary.
- General trash from the site will be stored in a dumpster/bin for routine pickup by a contracted waste hauler.
- A small on-site composting bin may be practical for managing plant/algae waste materials removed from boats, yard waste, and/or bait that is not allowed to travel upstream with boats.

4.4 Operational Factors

Two station operators will likely be necessary to facilitate efficient and orderly boat transfers. Certain tasks, such as positioning of mobile hoist straps or truck forks, will require both operators to work cooperatively. During other operational aspects (i.e. cleaning of small equipment, providing assistance to passengers or approaching boats, etc.), the operators may work independently. These operators will need to be trained/qualified for operation of fork trucks and mobile boat hoists. A marine fork truck and boat hoist training video is provided with this report for review and assessment by FRNSA representatives. Considering potential risks for damage to boats, station operators should be familiar with typical boat design characteristics and should develop experience lifting and transferring boats before initial assignment to the station. To limit liability regarding potential boat damage, FRNSA may wish to consider damage waivers, insurance policies or other liability limitation measures. FRNSA may also wish to consult further with boat manufacturers regarding concerns associated with hot water exposure. Consultation with a legal professional is also recommended (Note: larger boats may represent more significant liabilities relative to small boats due to increased value).

Written procedures, checklists and/or log sheets should also be developed and used to facilitate quality control with respect to facility operation and specifically for AIS treatment of boats. Routine hot water chamber temperature checks, boat immersion time logs, and photo documentation may be useful records.

4.5 Boat Transfer Cycle Time

The approximate time to process a boat through the transfer station may vary considerably based on a number of factors including but not necessarily limited to:

- Ability of boat driver to efficiently position the boat within the launch pier
- Passenger and equipment disembark time
- Size and type of boat (fork truck versus mobile hoist lifting and transfer method)
- Skills of station operator(s)
- Weather conditions
- Cleanliness of boat hull
- Requirements for flushing of boat ports and drives (i.e. startup of boat while immersed)
- Cleaning/immersion of auxiliary equipment

Small boats that can be lifted with the fork truck can be transferred much more efficiently than larger boats that require use of the mobile hoist. Based on anticipated execution of AIS control plans and fork truck performance, a typical range of expected time for a fork truck boat transfer is about 15 to 20 minutes. Boats traveling downstream would bypass the cleaning process and could be transferred through the station more quickly.

Large boat transfers with a mobile hoist are expected to be slower relative to small boat fork truck transfers for a number of reasons:

- Large boats will likely require more time for positioning in the launch pier.
- Positioning of hoist straps will take longer than positioning of truck forks.
- Lifting, moving, and lowering a boat with a hoist is slower than with a fork truck.
- Pre-washing a large boat hull will require more time than a small boat.
- Lowering and re-lifting a large boat into and from the hot water chamber will be slower with a hoist.

Considering many factors that can influence hoist-related transfers it appears reasonable to anticipate a typical transfer cycle time range of 30 to 60 minutes for large boats moving upstream through the facility. Because boats traveling downstream can bypass the cleaning process, hoist-related transfer time in the downstream direction would likely be reduced significantly. (Note: If FRNSA decides to incorporate transfer capabilities for boats larger than that currently specified, the anticipated cycle time for the largest boats would likely increase).

Considering the reduced vertical lift characteristic of Alternative B relative to Alternative A, STS anticipates that boat transfer cycle time for the Alternative B layout would be incrementally less than the cycle time for Alternative A. With the Alternative B scenario, routine procedures for use of the Rapide Croche lock need to be considered for the overall time it will take a boat to be transferred to and from the upstream/downstream sides. With the preliminary layout of Alternative B, it appears feasible that the lock doors could remain open during operating hours of the transfer station (i.e. constant pool elevation on both sides of the lock). If the lock doors were to remain open, additional processing time related to lock operation could be avoided. Note: STS assumes that normal procedure would be to maintain the lock doors in the closed position during non-operating hours.

4.6 Environmental Permitting

Considering that the project will involve construction of non-typical piers with piling, grading, sediment removal, and construction in and near the Fox River, a Chapter 30 Water Regulatory Permit will likely be necessary from the WDNR. A typical Chapter 30 permit application process involves preparation of design plans/drawings, completion of an application package, and collaboration with WDNR personnel. General information summarizing the permit process is included in Appendix H. Because the project scope will likely involve issuance of an Individual Permit, a public comment period and informational hearing may be completed by WDNR prior to final review and issuance of the permit.

To facilitate discharge of pre-wash water, a Wisconsin Pollutant Discharge Elimination System (WPDES) permit from WDNR will likely be required. WDNR has developed a general permit program to address many common wastewater discharge scenarios. One of the general permits covers wastewater discharge resulting from outside washing of vehicles, equipment and other objects. Based on preliminary review of the permit information and related

requirements, this general WPDES permit will likely be applicable for the Rapide Croche boat pre-wash discharge water. Implementing the anticipated pre-wash water treatment system (refer to Appendix F) should facilitate compliance with several of the permit conditions and recommended management practices. The general permit application process is relatively simple and involves submittal of project-specific information/application to WDNR prior to gaining permit coverage. Information describing WPDES permits and the general permit for outside washing is provided in Appendix H.

5.0 Probable Costs

5.1 Implementation Costs

Based on experience with projects involving similar aspects and budgetary information from equipment providers and reputable construction companies (including marine contractors), STS assessed probable costs for implementing the boat transfer station alternatives. These costs are itemized and summarized on Table 1 for Alternative A and Table 2 for Alternative B. Supporting information for several of the cost items is included in Appendix I.

Considering that probable costs are based on preliminary design characteristics, a percentage-based contingency line item was included to cover project scope items and related costs that may develop as the project advances and/or the scope is refined. Alternative A has a total probable implementation cost of approximately $3.8 million and Alternative B has a probable implementation cost of $5.5 million. The approximate accuracy of probable costs is believed to +/- 25%.

If FRNSA ultimately prefers a station capable of processing larger boats than currently specified, probable costs for the facility could increase substantially due to altered design requirement for the seawalls, launching piers, hoist equipment, cleansing chamber, and heating system. Additional costs could amount to several hundred thousand dollars or more. Depending on expansion objectives, the required chamber dimensions could conflict with necessary pre-wash and fork truck maneuvering areas that are currently planned within the transfer station footprint. For example, if a seawall needs to be moved outside of the lock structure (Alternative A), significant design and cost implications would occur.

Financial assistance may be available from the WDNR Lake and Aquatic Invasives Grants Program and/or the Wisconsin Recreational Boating Facilities Program supervised by the Wisconsin Waterways Commission. Both grant programs are based on cost sharing with the recipient. Lake Protection Grants up to $200,000 have been awarded for AIS-related projects. Recreational boating facilities grants can potentially cover up to 50% of total eligible costs. Because the Rapide Croche project is unique, eligibility under the recreational boating grant program should be investigated further with program administrators. Information summarizing the WDNR grant programs is included in Appendix J. Grant money may also be available from the US Fish and Wildlife Service Boating Infrastructure Grant program (eligible projects typically involve tie-up facilities for recreational boats 26 feet or more in length).

5.2 Operating and Maintenance Costs

A number of operating and maintenance (O&M) costs will be incurred to support operation of the Rapide Croche boat transfer station. Related cost items apparent at this stage of the project include:

- Station operator labor
- Electricity for water heating, pumping and auxiliary equipment (i.e. lighting, air compressor for water treatment system, etc.)

- Hot water treatment system chemicals
- Fuel for fork truck and mobile hoist equipment
- Waste management/disposal
- Equipment maintenance (i.e. replacement of hoist straps, planned and unplanned service for fork truck and hoist equipment, etc.)
- Consumable supplies

Table 3 includes a summary of preliminary O&M costs. Preliminary annual operating and maintenance costs were estimated to be about $77,000 with no anticipated significant differences in operating costs between Alternatives A and B. It is important to note that the amount of electricity/energy required for water heating is difficult to assess and will be strongly influenced by factors such as frequency of boat transfers, weather conditions, and practices related to covering the hot water chamber when not in use (i.e. control of heat losses).

6.0 Conclusions and Recommendations

To support FRNSA and AIS Committee planning efforts, STS completed a preliminary engineering study for the proposed Rapide Croche Boat Transfer Station. The study scope included the following objectives:

- Establish a preliminary design basis for the station and characterize preliminary design aspects
- Consider and characterize key boat transfer station project planning elements including:
    a. Methods/processes for transferring boats in an upstream and downstream direction
    b. Preliminary boat transfer station characteristics and components
    c. Management of waste materials
    d. Operational factors
    e. Boat transfer cycle time
    f. Environmental permitting
- Assess probable costs and funding support opportunities

FRNSA and the AIS Committee previously established size criteria for boats/watercraft that the transfer station should be capable of processing. Maximum size characteristics include:

- Boat lengths up to 53 feet,
- Beam up to 17 feet,
- Weight up to 25 tons,
- Boat draft no greater than 4 feet (including propellers), and
- Masts and superstructures of vessels no greater than 23 feet in height.

As summarized in the Proposed AIS Control and Monitoring Plan for the Rapide Croche Boat Transfer Station (Appendix B), boats traveling upstream through the facility will be lifted from the station's downstream side and transferred through an inspection, pre-wash, and AIS cleansing process prior to lowering the boat to the upstream side. STS developed preliminary design plans for the station that are intended to facilitate implementation of the Proposed AIS Control and Monitoring Plan and accommodation of specified boat sizes. Preliminary plans for the station include a number of components:

- Permanent closure and backfilling of the lock structure for Alternative A.
- Restoration of the Rapid Croche lock and placement of the boat transfer station in the navigation channel downstream of the lock for Alternative B.
- Concrete seawalls and pile-supported launch pier structures with deck lengths of approximately 50 feet.

- Boat lift and transfer equipment that includes a marine fork truck for lifting relatively small boats up to approximately 30 feet long, and a mobile hoist that is capable of lifting boats up to maximum specified sizes.
- A boat pre-wash area and system that includes the capability to wash/spray boat hulls with non-heated water and a discharge water treatment system. Pre-wash discharge water would be collected and managed to prevent the water from flowing to the upstream side of the station.
- A 55'x19'x6' cast in place concrete hot water cleansing chamber.
- A water recirculation system that includes heating equipment for control of cleansing water temperature and a circulating treatment system for control of water quality.
- An operations building for enclosure of key equipment and storage space.
- Passenger and visitor facilities that include docks, walkways, restroom facilities, educational kiosk, and pavilion.
- Site security fencing and gates.

Several other important planning elements that were considered during the preliminary engineering study include:

- Anticipated management practices for waste materials from the hot water and pre-wash water treatment systems (i.e. collected sludge, sediment and oily material).
- Operational factors regarding training/qualifications of station personnel and risks for boat damage.
- Boat transfer cycle times which are anticipated to be in the range of 15 to 20 minutes for small boat transfers with a fork truck and 30 to 60 minutes for large boat transfers with a mobile hoist.
- Environmental permits that will likely be required to facilitate project construction (Chapter 30 Water Regulatory Permit) and wastewater discharge (general WPDES permit).

Two main site configurations, Alternatives A and B, were considered. Many characteristics of the two alternatives are similar including methods and equipment used for transferring and cleansing boats. The key difference between the two alternatives is that Alternative A involves permanent closure of the lock and installation of the station within the lock footprint while Alternative B involves restoration of the Rapid Croche lock and placement of the boat transfer station in the navigation channel downstream of the lock. With Alternative B, the boat transfer station deck elevation would be approximately 6.5 feet lower than with Alternative A, Operational advantages could be achieved with Alternative B due to reduced vertical lift requirements for boats and reduced vertical distances that boat passengers would tread. Depending on individual perspectives regarding historical preservation and other factors, restoration and long term maintenance of the lock could be considered an advantage or disadvantage of Alternative B.

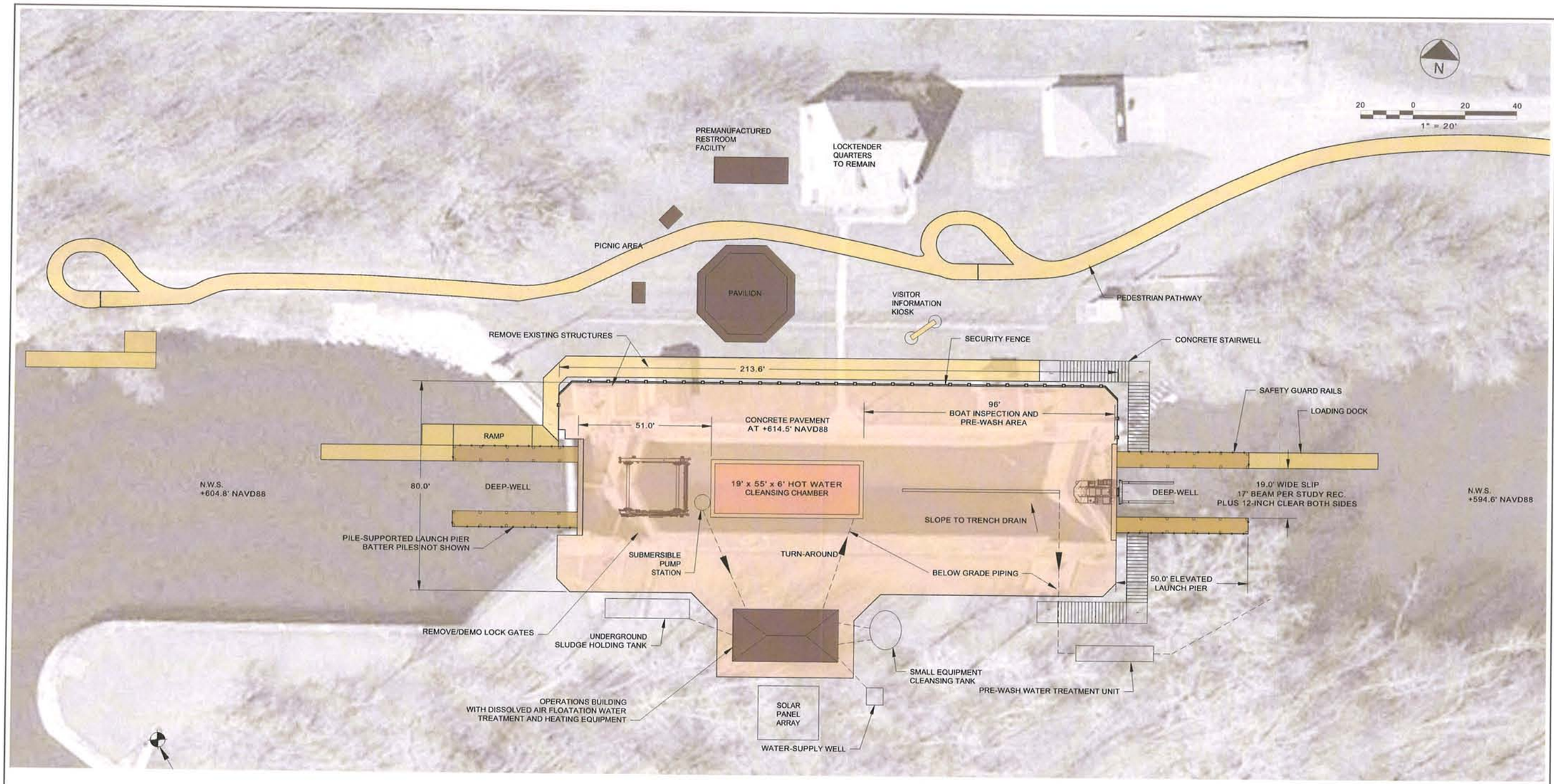
Probable costs for implementing construction of the project were estimated to be approximately $3.8 million for Alternative A and $5.5 million for Alternative B. If FRNSA prefers to develop a transfer station capable of accommodating boats larger than currently specified, significant additional costs would be incurred. Support funding for implementation may be available from the WDNR Lake and Aquatic Invasives Grants Program and/or the Wisconsin Recreational Boating Facilities Program. Preliminary annual operating and maintenance costs were

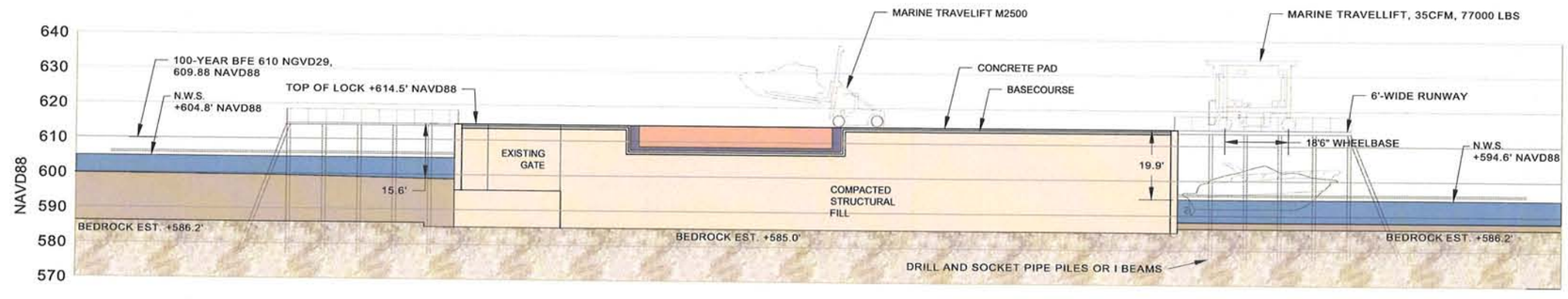
estimated to be about $77,000. A significant and potentially variable operating cost factor is related to the amount of electricity/energy required for water heating.

The following recommendations and considerations are provided to aid FRNSA and the AIS Committee in subsequent planning efforts for the proposed Rapide Croche Boat Transfer Station:

- Information from this report should be reviewed by FRNSA and AIS Committee representatives to gain consensus that preliminary design characteristics and established boat size criteria are consistent with FRNSA objectives. Boat registration data available from the State of Wisconsin may be useful for assessing boat size statistics and desired criteria for the Rapide Croche station. FRNSA should also consider boat size criteria in the context of navigation channel depths that are expected to be maintained in the Fox River over time.
- Information from this report should be shared with potential project stakeholders (i.e. WDNR, Friends of the Fox, Corps of Engineers, and/or other interested groups (as determined by FRNSA) to communicate project status and solicit feedback.
- FRNSA and AIS Committee representatives should consider relative advantages and disadvantages of the two boat transfer station alternatives, including anticipated operating methods, and build consensus with project stakeholders, including the Wisconsin Department of Natural Resources, for a preferred configuration.
- FRNSA should consider risks for accidental boat damage that could occur with implementation of the facility (during and/or as a result of boat transfer and cleansing processes). To limit potential liabilities, FRNSA may wish to consider damage waivers, insurance policies or other liability limitation measures. Consultation with legal counsel in this regard should be considered.
- Probable implementation and O&M costs should be considered within the context of FRNSA's long term budgeting objectives to support further assessment of project viability. Project funding options, including potential grant opportunities, should be explored.
- If FRNSA decides to proceed with planning for the project, detailed engineering should be completed and final design plans and specifications should be developed for the preferred alternative. Construction bids should subsequently be solicited to re-assess expected project costs.

Figures





PRELIMINARY DESIGN BASIS
max boat: 17' wide x 53' long x 4' deep
cleansing chamber" 19'wide x 55'long x 6'deep @ 110° F
forktruck: up to 23,000 lbs at 8' load center
travellift: up to 55,000 lbs

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FOX RIVER NAVIGATIONAL SYSTEM AUTHORITY
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KAUKAUNA, WI 54130

PRELIMINARY SITE LAYOUT
RAPIDE CROCHE
BOAT TRANSFER STATION
ALTERNATIVE A

Issued

Rev	Date	Description

Designed:	M2M	10/1/2008
Drawn:	PJD	10/10/2008
Checked:	M2M	10/13/2008
Approved:	PJK	/ /2008

PROJECT NUMBER
200803045

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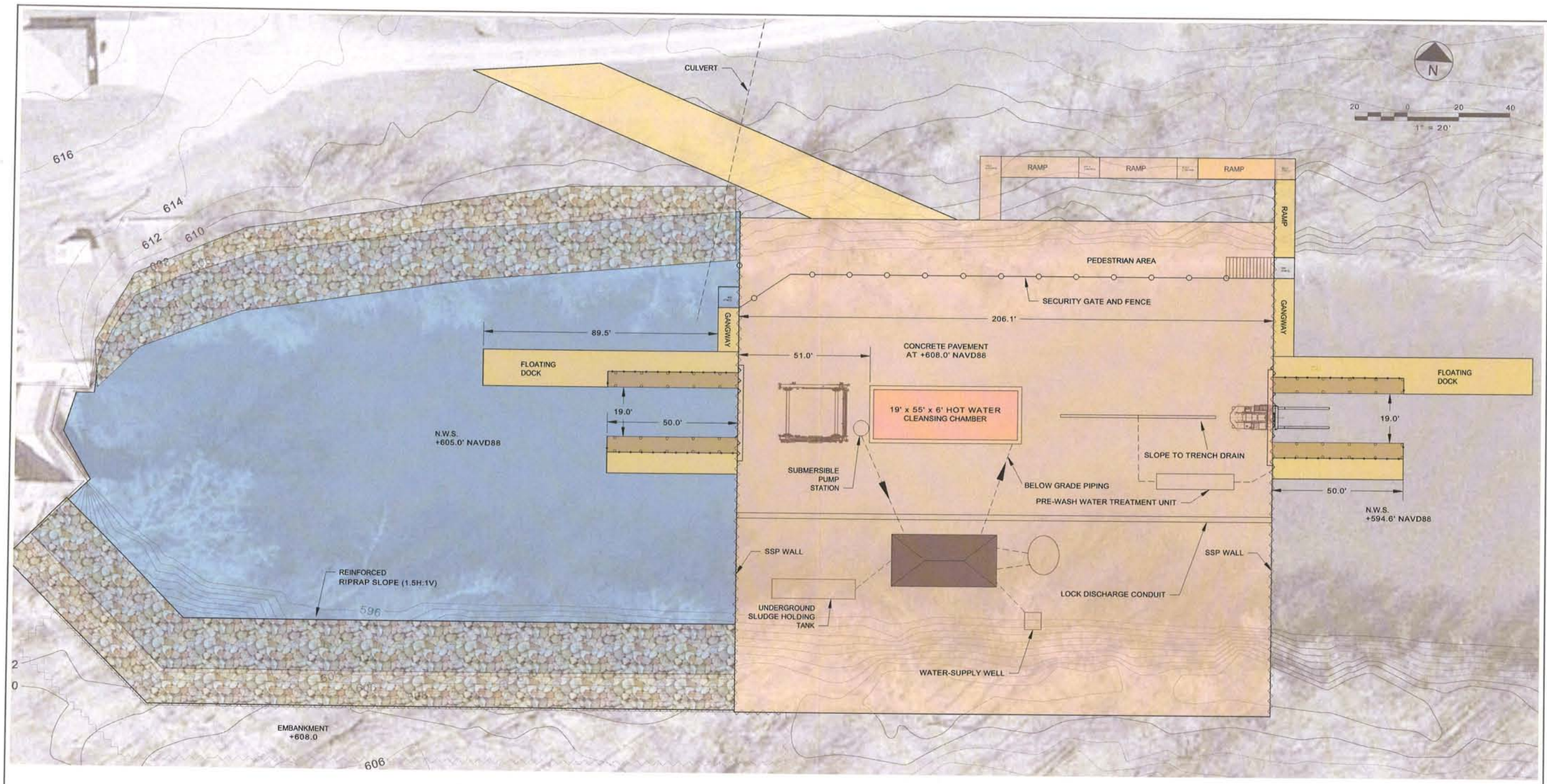
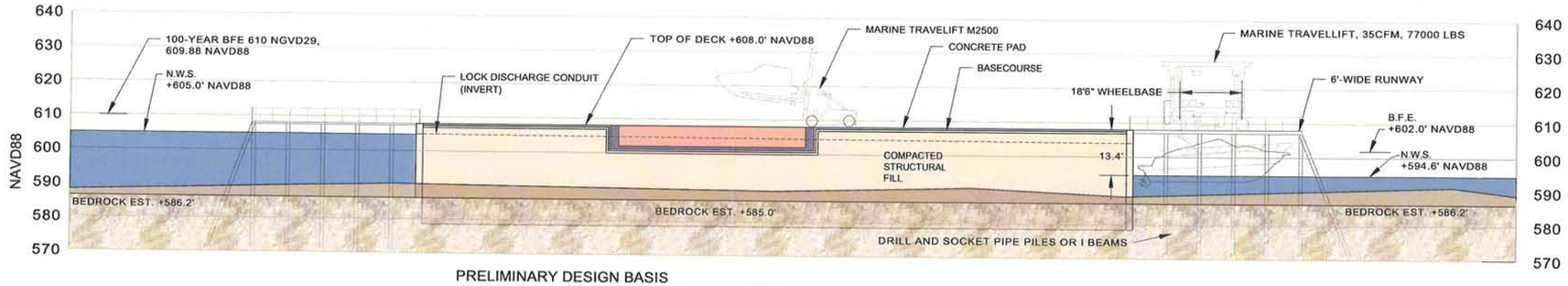
1





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PRELIMINARY SITE LAYOUT
RAPIDE CROCHE
BOAT TRANSFER STATION
ALTERNATIVE B

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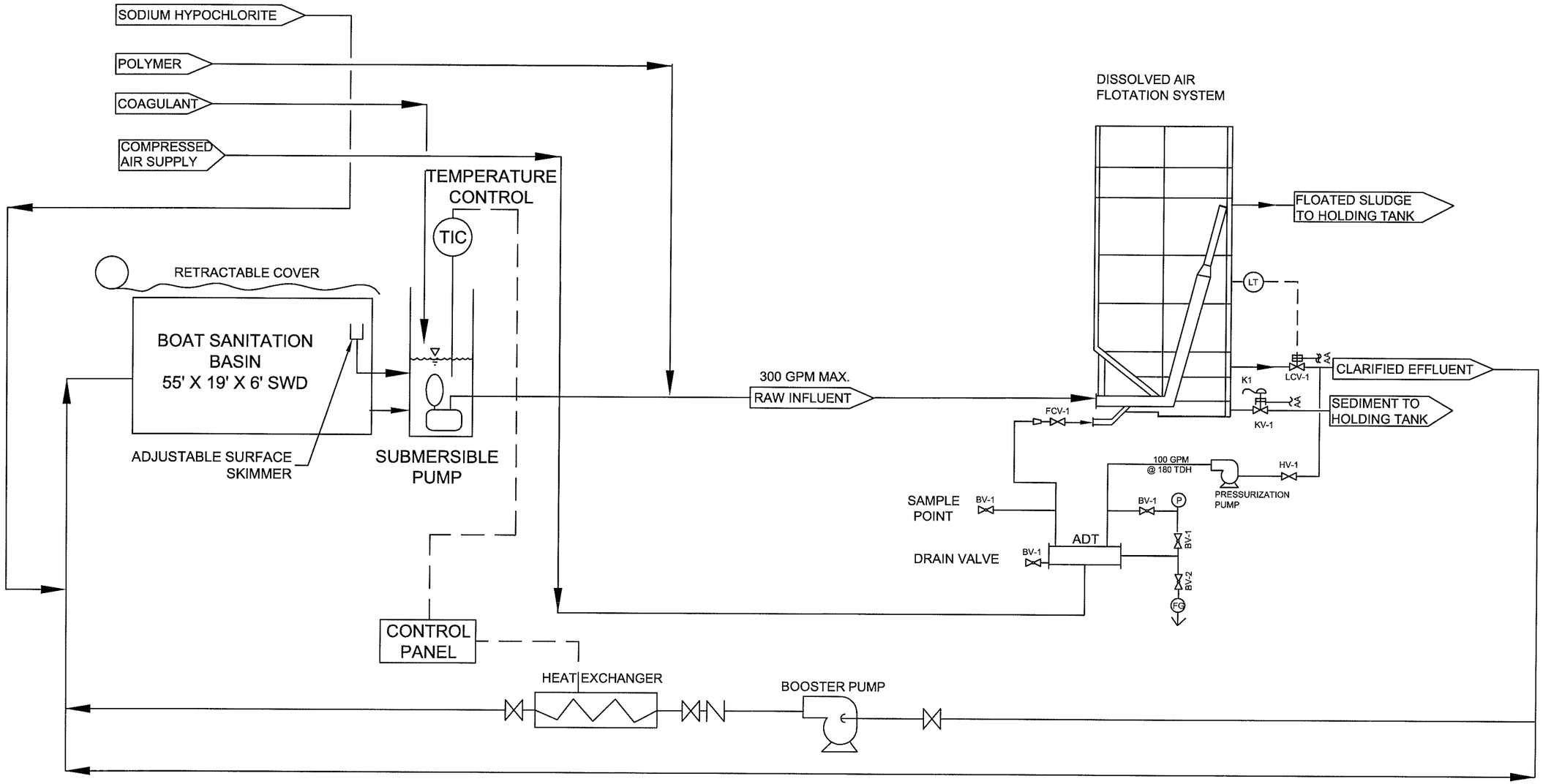
2

SHEET 2 OF 2



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PROCESS FLOW SCHEMATIC
WATER TREATMENT SYSTEM
RAPID CROCHE BOAT TRANSFER STATION

Drawn :	DTB	2/13/2008
Checked:	TWS	2/13/2008
Approved:	M2M	2/13/2008
PROJECT NUMBER	200803045	
FIGURE NUMBER	3	

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Tables

Table 1 - Preliminary Opinion of Probable Costs - Alternative A
Rapide Croche Boat Transfer Station Implementation

Item Description	Assumptions/Comments	Probable Cost
Final Design & Environmental Permitting		
Geotechnical investigation	Subsurface geotechnical investigation to facilitate design of pier foundation system	$20,000
Final Engineering/Design	Final design plans, specifications and bid manual. Costs estimated at 5% of total project cost	$154,000
Permitting	Approximate cost for obtaining Chapter 30 Water Regulatory Permit, construction site stormwater permit & general WPDES permit	$10,000
Site Preparation and Lock Modifications		
Construction Equip Mobilization	Typical contractor mobilization fee based on other projects	$20,000
Erosion Control Provisions	Use of silt fencing anticipated	$5,000
Clearing and stripping	Areas on the island and mainland side of the lock structure will need to be cleared and stripped of topsoil to facilitate installation of concrete pad and operations building	$10,000
Demolition of existing lock components	For removal/demolition of small buildings on mainland side of lock and removal/salvage of lock gates; Based on preliminary discussion with CR Meyer	$60,000
Dewatering/water control within lock area	Allowance for modifications to stop log restraining system and pump system	$18,000
Backfilling of lock with structural fill	Assumed approx. 7,200 cyds of structural fill material hauled, placed and compacted @ $6.50/cyd	$47,000
Base course material	Assume approx. 19,000 sqft by 8" base course layer (approx. 470 cyds @ $7.00/cyd)	$3,300
Concrete Site Paving	Assumed approx. 19,000 sqft x 6" thick reinforced concrete pad over operating area (approx. 350 cyds @ $395/cyd)	$138,000
Sea Wall & Launch Piers		
Seawalls(2)	Based on 2' thick reinforced concrete walls doweled into side walls and floor of lock (approx. 160 cyds @ $700/cyd)	$112,000
Seawall tie-back/anchoring system	72 feet of anchor wall /tie back system estimated at $800/ft	$58,000
Launch Piers(2)	Preliminary plans include socketed pile supported piers with 50' long deck and guard rails - based on preliminary discussions with marine contractors	$550,000
Boat Lift & Transport Systems		
Mobile boat hoist	Based on budgetary quotation from Marine Travelift for model 25BFMII unit plus an allowance for setup/erection costs	$270,000
Marine fork truck	Based on budgetary quotation from Marine Travelift for model M2500 unit	$340,000
Boat Pre-Wash System		
Grated collection Drain/UG Drain Piping	Assumed 60' long cast concrete drain with casting/grating @ $100/ft; assume 75 LF of 6-inch PVC @ $30/LF	$8,250
Pre-manufactured water treatment unit	Based on information provided by CONTECH for installed price of Vortechs unit	$35,000
Piping and Hoses	Based on approximately 110 feet of below grade piping @ $40/ft and allowance for hoses/connections	$5,000
Hot Water System		
Concrete Chamber	Based on chamber inside dimensions of 55' x 19' x 6' and 1' thick walls and floor (approx 72 cyds @ $800/cyd)	$58,000
Water treatment system	Based on budgetary quotation from Krofta and an allowance for air compressor and installation costs	$240,000
Electric water heating system	Based on budgetary quotation from supplier	$70,000
Retractable chamber cover	Based on preliminary discussions and budget information from pool cover supplier/installer	$30,000
Operations building	Assumed approximately 800 sqft bldg @ $140/sqft	$112,000
Submersible transfer pump and manhole	Based on budgetary quotation from pump supplier and allowances for manhole and installation	$27,500
Undergound process piping and fittings	Assumed 150 LF of 6-inch ductile iron pipe @ $50/LF including trenching/backfill/fitting allowance	$7,500
Sludge holding tank/UG Piping	Assumed 1,000 gallon tank and installation	$5,000
Chemical Feeds Systems	Assumed 3 small chemical feed systems @ $7,000 ea	$21,000
Electrical and controls	Allowance for electrical service connections and miscellaneous system controls	$25,000
Other/Miscellaneous		
Dockage for boat access and egress	Estimated 3,800 sqft of dockage @ $90/sqft	$342,000
Restroom facility	Based on information from Huffcutt concrete products for pre-manufactured facility	$50,000
Pedestrian stairway and accessibility ramps	Based partially on concrete stairway costs from other projects; An allowance was also included for ramps that may be necessary for ADA related accessibility.	$250,000
Pedestrian sidewalk/path	Based on approximately 275 sqyd of concrete walkway area @ $25/sqyd	$6,900
Water supply well and piping	Assumed typical cost for residential well and pump system and 500' of below grade piping @ $30/ft	$25,000
Electricity service	Allowance for power supply, transformer & power distribution panel (scope is uncertain)	$75,000
Informational kiosk	Allowance for small wooden kiosk	$3,000
Pavilion	Based on costs from other projects	$40,000
Ornamental security fencing and gates	Based on budgetary quotation from security fence supplier/installer for 8' high fence with drive-through & man gates	$19,000
Construction Management & QA/QC Testing		$90,000
Undeveloped Design Details and Contingency (15%)		$463,000
Total Implementation Cost		**$3,823,000**

Note: All costs in 2008 dollars

Table 2 - Preliminary Opinion of Probable Costs - Alternative B
Rapide Croche Boat Transfer Station Implementation

Item Description	Assumptions/Comments	Probable Cost
Final Design & Environmental Permitting		
Geotechnical investigation	Subsurface geotechnical investigation to facilitate design of foundation systems for piers, seawalls and facility deck	$35,000
Final Engineering/Design	Final design plans, specifications and bid manual. Costs estimated at 5% of total project cost	$198,000
Permitting	Approximate cost for obtaining Chapter 30 Water Regulatory Permit, construction site stormwater permit & general WPDES permit	$10,000
Lock Modifications		
Refurbishing of existing lock components	Based on preliminary scope and budget information from CR Meyer	$550,000
Site Modifications		
Construction Equip Mobilization	Typical contractor mobilization fee based on other projects	$40,000
Erosion Control Provisions	Use of silt fencing anticipated	$5,000
Temporary downstreamcoffer dam	Approximate allowance for placement and removal of temporary cofferdam downstream of boat transfer station (assuming construction of facility to be conducted in dry environment)	$100,000
Clearing and stripping	Areas on the mainland side of the lock structure will need to be cleared and stripped of topsoil to facilitate installation of the operations building. Also areas on west and east of proposed transfer station.	$20,000
Sediment/soil removal and disposal	Dredging and removal of soil and sediment beneath proposed transfer station. Assume removed material requires offsite disposal. Estimated quantity of approximatley 7,500 cy based on average depth of 5 feet over facility footprint. Assume $50/cy disposal cost.	$375,000
Prepare and Regrade Slopes	Regrade side slopes to proposed location of transfer station.	$10,000
RipRap	Stabalize bank with riprap. Assume 18,000 sf, 2.5 feet depth $20/ton.	$68,000
Backfilling of structure with structural fill	Assumed approx. 25,000 cyds of structural fill material hauled, placed and compacted @ $6.50/cyd	$160,000
Base course material	Assume approx. 40,000 sqft by 8" base course layer (approx. 1,000 cyds @ $7.00/cyd)	$7,000
Concrete Site Paving	Assumed approx. 40,000 sqft x 6" thick reinforced concrete pad over operating area (approx. 750 cyds @ $395/cyd)	$300,000
Sea Wall & Launch Piers		
Seawalls(2)	Assume 2 feet thick concrete walls 200 LF each, 22 feet high to bedrock (approx. 650 cy @ $700/cy)	$460,000
Launch Piers(2)	Preliminary plans include socketed pile supported piers with 50' long deck and guard rails - based on preliminary discussions with marine contractors	$500,000
Boat Lift & Transport Systems		
Mobile boat hoist	Based on budgetary quotation from Marine Travelift for model 25BFMII unit plus an allowance for setup/erection costs	$270,000
Marine fork truck	Based on budgetary quotation from Marine Travelift for model M2500 unit	$340,000
Boat Pre-Wash System		
Grated collection Drain/UG Drain Piping	Assumed 60' long cast concrete drain with casting/grating @ $100/ft; assume 75 LF of 6-inch PVC @ $30/LF	$8,250
Pre-manufactured water treatment unit	Based on information provided by CONTECH for installed price of Vortechs unit	$35,000
Piping and Hoses	Based on approximately 110 feet of below grade piping @ $40/ft and allowance for hoses/connections	$5,000
Hot Water System		
Concrete Chamber	Based on chamber inside dimensions of 55' x 19' x 6' and 1' thick walls and floor (approx 72 cyds @ $800/cyd)	$58,000
Water treatment system	Based on budgetary quotation from Krofta and an allowance for air compressor and installation costs	$240,000
Electric water heating system	Based on budgetary quotation from supplier	$70,000
Retractable chamber cover	Based on preliminary discussions and budget information from pool cover supplier/installer	$30,000
Operations building	Assumed approximately 800 sqft bldg @ $140/sqft	$112,000
Submersible transfer pump and manhole	Based on budgetary quotation from pump supplier and allowances for manhole and installation	$27,500
Undergound process piping and fittings	Assumed 150 LF of 6-inch ductile iron pipe @ $50/LF including trenching/backfill/fitting allowance	$7,500
Sludge holding tank/UG Piping	Assumed 1,000 gallon tank and installation	$5,000
Chemical Feeds Systems	Assumed 3 small chemical feed systems @ $7,000 ea	$21,000
Electrical and controls	Allowance for electrical service connections and miscellaneous system controls	$25,000
Other/Miscellaneous		
Dockage for boat access and egress	Estimated 3,800 sqft of dockage @ $90/sqft	$342,000
Restroom facility	Based on information from Huffcutt concrete products for pre-manufactured facility	$50,000
Pedestrian stairway and accessibility ramps	Based partially on concrete stairway costs from other projects; An allowance was included for ramps that may be necessary for ADA related accessibility.	$100,000
Pedestrian sidewalk/path	Based on approximately 275 sqyd of concrete walkway area @ $25/sqyd	$6,900
Water supply well and piping	Assumed typical cost for residential well and pump system and 500' of below grade piping @ $30/ft	$25,000
Electricity service	Allowance for power supply, transformer & power distribution panel (scope is uncertain)	$75,000
Informational kiosk	Allowance for small wooden kiosk	$3,000
Pavilion	Based on costs from other projects	$40,000
Ornamental security fencing and gates	Based on budgetary quotation from security fence supplier/installer for 8' high fence with drive-through & man gates	$19,000
Construction Management & QA/QC Testing		$130,000
Undeveloped Design Details and Contingency (15%)		$594,000
Total Implementation Cost		**$5,477,000**

Note: All costs in 2008 dollars

Table 3 - Preliminary Opinion of Probable Costs
Rapide Croche Boat Transfer Station Operation & Maintenance

Item Description	Assumptions/Comments	Probable Cost
Labor		
Station operators	Assumed 2 operators work 12 hour days 5 days per week for 14 weeks @ $20/hr (no benefits)	$33,600
Operation		
Water Heating	Assume that the cleansing chamber operates uncovered 8 hours per day and that electric heating system provides 1.2 MMBTU/hr during uncovered condition. Chamber is covered 16 hours per day and electric heating system provides 0.4 MMBTU/hr; Electricity cost = $0.06/kwh; Station operates for 100 days	$24,500
Chemical usage	Allowance for purchase/use of water treatment chemicals (bleach/hypochlorite solution, polymer and coagulant/flocculant for DAF system)	$4,000
Auxiliary Electricity	Estimated electrical costs for pumping of water, operation of air compressor for water treatment system, lighting, and auxiliary power usage during station operation (approx. 100 days/yr)	$1,500
Diesel fuel	Allowance for diesel fuel costs for mobile hoist and fork truck (based on 60 gallons per week @ $3.75/gallon for 16 weeks)	$3,600
Consumables	Annual allowance for replacement of lift straps, hoses, and misc. supplies	$2,500
Waste management	Annual allowance for contracted waste hauler(s) to vacuum sludge tank and pre-wash water treatment equipment and pickup of general trash	$2,500
Maintenance		
Maintenance of site and transfer equipment	Allowance for maintenance of hoist and fork truck transfer equipment and other station components	$5,000
Total Annual Operating & Maintenance Cost		$77,200

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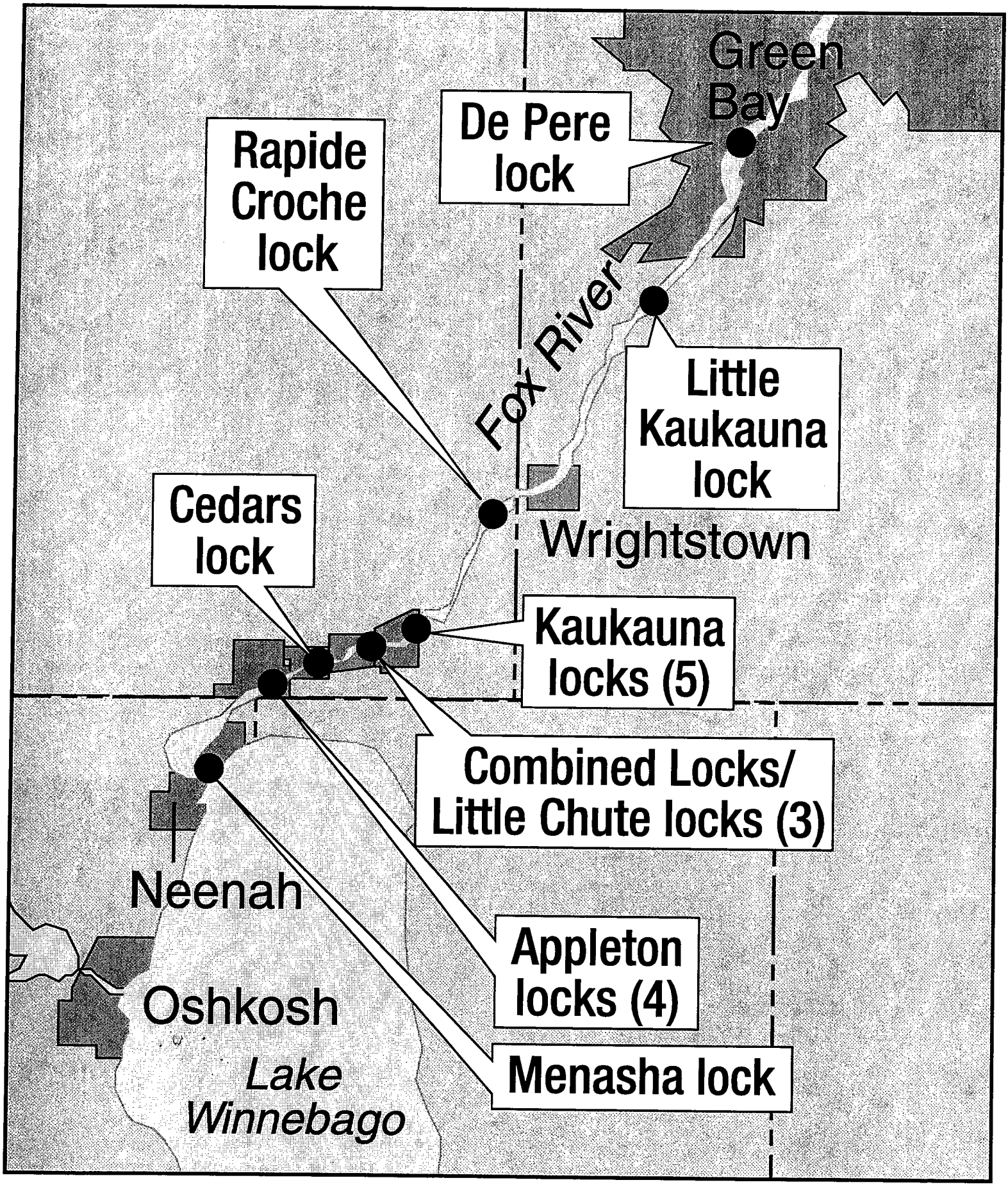
Appendix A

Fox River Locks System Information


Green Bay
De Pere lock
Rapide Croche lock
Fox River
Little Kaukauna lock
Cedars lock
Wrightstown
Kaukauna locks (5)
Combined Locks/ Little Chute locks (3)
Neenah
Appleton locks (4)
Oshkosh
Menasha lock
Lake Winnebago

Fox River Locks System

From it's beginnings in the 1840s. the Fox River locks system has been the main artery for water transportation in Northeastern Wisconsin. The 39-mile system consists of 17 locks with two guard locks. With the water level of Lake Winnebago 168.3 feet above Green Bay, these locks average a drop of approximately 10 feet each. Lock management changed hands several times before the U.S. Army Corps of Engineers took over in 1872. Commercial barge traffic ended by 1959 and in 1984 the corps put the locks system in "caretaker status." The state of Wisconsin is hoping to reopen the locks as a Heritage Parkway.

DE PERE LOCK
Location: In De Pere; 7.1 miles from mouth of river, on the east bank
Lock status: Open
Lock construction: Large concrete sections with steel gates.
Lock size: 36 feet wide by 146 feet long
Water level drop: 9.9 feet
Lock condition: Very good,* still in use

APPLETON LOCKS 1, 2, 3, 4
Location: In Appleton; between miles 31.9 and 30.7 from mouth of river. The four locks are along a man-made canal that runs along the east side of the river.
The Appleton canal is about 4,100 feet long and varies between 90-110 feet wide.
Lock status: Closed
Lock construction: Quarry stone masonry and wood gates. Lock 4 is Quarry stone masonry with a concrete cap
Lock size: Each approximately 35 feet wide by 144 feet long

Water level drop:	Lock condition:	Gate condition:
Lock 1: 9.7 feet	Lock 1: Poor*	Lock 1: Fair to good*
Lock 2: 9.6 feet	Lock 2: Poor*	Lock 2: Fair to poor*
Lock 3: 9.8 feet	Lock 3: Poor*	Lock 3: Fair to poor*
Lock 4: 7.6 feet	Lock 4: Fair*	Lock 4: Fair to poor*

KAUKAUNA LOCKS 1, 2, 3, 4, 5
Location: In Kaukauna; between miles 23.6 and 22.8 from mouth of river. The five locks are in a staircase arrangement along a man-made canal that runs along the west side of the river. The Kaukauna canal is about 1.3 miles long and varies between 110-130 feet wide.
Lock status: Closed
Lock construction: Quarry stone masonry with a concrete cap and wood gates.
Lock sizes: Each approximately 36 feet wide by 144 feet long

Water level drop:	Lock condition:	Gate condition:
Lock 1: 10.3 feet	Lock 1: Poor*	Lock 1: Fair to good*
Lock 2: 9.6 feet	Lock 2: Fair*	Lock 2: Poor*
Lock 3: 10.2 feet	Lock 3: Fair*	Lock 3: Fair to poor*
Lock 4: 10.2 feet	Lock 4: Fair*	Lock 4: Fair to poor*
Lock 5: 10.3 feet	Lock 5: Poor*	Lock 5: Fair to poor*

LITTLE KAUKAUNA LOCK (Little Rapids)
Location: Between De Pere and Wrightstown; 13 miles from mouth of river on the west bank
Lock status: Open
Lock construction: Large concrete sections with steel gates.
Lock size: 36 feet wide by 146 feet long
Water level drop: 6.1 feet
Lock condition: Very good*, still in use

CEDARS LOCK
Location: West of Little Chute; 27.3 miles from mouth of river along a man-made canal. The Little Chute canal is a 1,400 foot man-made canal that runs along the west side of the river.
Lock status: Closed
Lock construction: Quarry stone masonry with a concrete cap and wood gates
Lock size: 35 feet wide by 144 feet long
Water level drop: 9.8 feet
Lock condition: Fair* **Gate condition:** Fair*

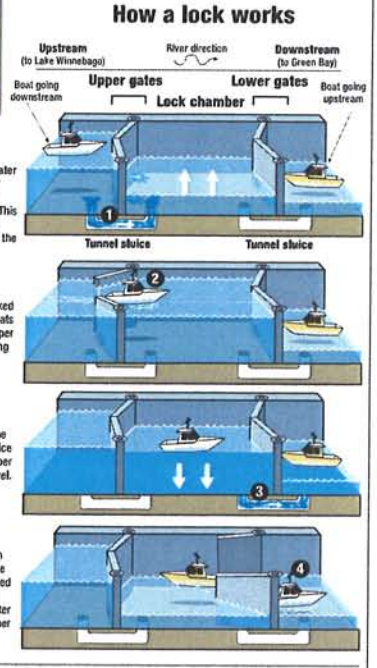
RAPIDE CROCHE LOCK
Location: Near Wrightstown; 19.2 miles from mouth of river on the west bank
Lock status: Closed
Lock construction: Large concrete sections with steel gates.
Lock size: 36 feet wide by 146 feet long
Water level drop: 9.4 feet
Lock condition: Very good*, closed in 1985 as a Sea lamprey barrier
Gate condition: Timber bumpers in poor condition

COMBINED LOCKS
Location: In Combined Locks; 25.4 miles from mouth of river. A double lock with the greatest water-level drop (22.5 feet) in the lock system. The Little Chute canal is a 1.2 mile man-made canal that runs along the west side of the river.
Lock status: Closed
Lock construction: Quarry stone masonry with a concrete cap and wood gates
Lock sizes: Upper lock* 36.3 feet wide by 144 feet long
Lower lock: 35.4 feet wide by 146 feet long
Water level drop: Upper lock, 10.6
Lower lock: 11.9
Lock condition: Good*
Gate condition: Fair to good*

LITTLE CHUTE LOCK 2
Location: In Little Chute; 26.6 miles from mouth of river.
One lock and a guard lock within a man-made canal.
The Little Chute canal is a 1.2 mile man-made canal that runs along the west side of the river. The guard lock is not a navigational lock and is used to close off the canal to repair to other locks.
Lock status: Closed
Lock construction: Quarry stone masonry and wood gates
Lock size: 36.6 feet wide by 144.2 feet long
Guard lock size: 35.4 feet wide
Water level drop: 13.6
Guard lock: None
Lock condition: Poor* **Guard lock condition:** Good*
Gate condition: Fair to good* **Guard lock gate condition:** Good*

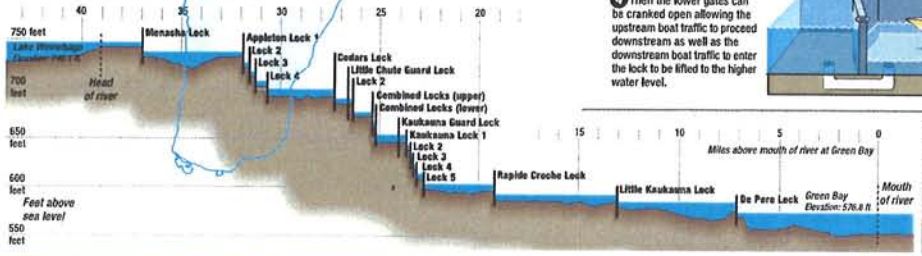
MENASHA LOCK
Location: In Menasha; 37 miles from mouth of river along a man-made canal. The lock provides access between Lake Winnebago and Little Lake Butte des Morts. The Menasha canal is a 0.8 mile man-made canal that runs along the west side of the river.
Lock status: Open
Lock construction: Reinforced concrete and steel gates
Lock size: 35 feet wide by 144 feet long
Water level drop: 9.7 feet
Lock condition: Very good*
Gate condition: Very good*

How a lock works



1. With the lock closed, water flows into the lock chamber through a tunnel or through openings in the gate doors. This is done until the water level reaches the same height as the upstream level.
2. The upper gates are cranked open using hand winches. Boats proceed into the lock. The upper gates are then closed forming a watertight chamber.
3. The lock staff move to the lower gates and open the sluice valves to drain the lock chamber to the downstream water level.
4. Then the lower gates can be cranked open allowing the upstream boat traffic to proceed downstream as well as the downstream boat traffic to enter the lock to be lifted to the higher water level.

Fox River lock elevations

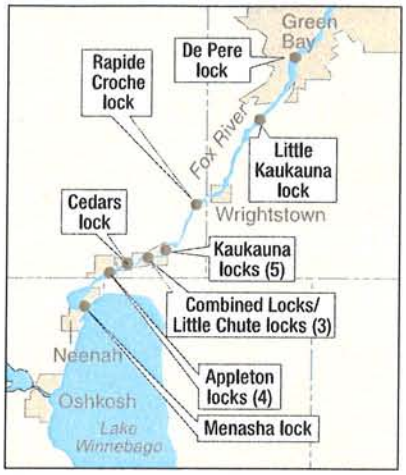


Sources: Army Corps of Engineers; Lower Fox River Locks Abandonment Study; National Oceanic and Atmospheric Administration and Wisconsin Legislative Council's Special Committee on the Fox River Locks System

* Lock and gate conditions as determined by the *Lower Fox River Locks Abandonment Study – Aug. 1984*

All aerial lock photos by Evan Siegle
Appleton lock photo by Mike De Sisti
Menasha lock photo by Dan Powers

Graphic by Joe Heller/Press-Gazette

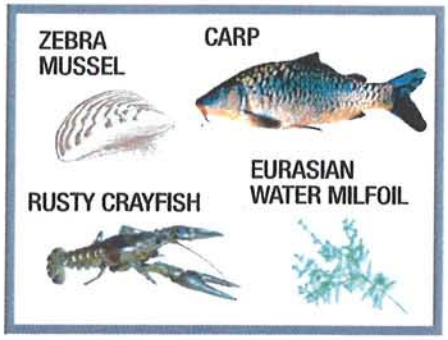


Exotic/invasive species

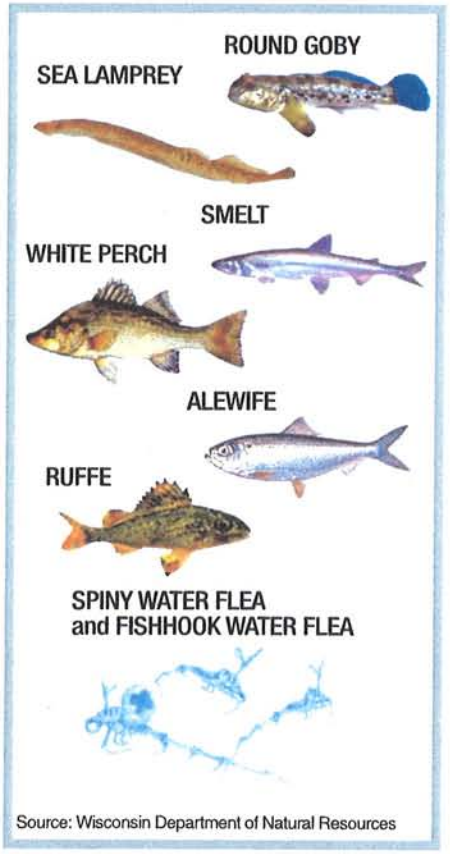
The Rapide Croche Lock was permanently closed in the late 1980s to prevent invasive species, like sea lampreys from traveling upstream into Lake Winnebago. While some species have already made it into the lake, others are threatening.

Once established in a water system, invasive species compete with native species for food, shelter and breeding habitat. Below is a list of a few of the species threatening Lake Winnebago.

ALREADY IN LAKE WINNEBAGO



NOT IN LAKE WINNEBAGO



Source: Wisconsin Department of Natural Resources

Joe Heller/Press-Gazette

CORPS OF ENGINEERS

U. S. ARMY

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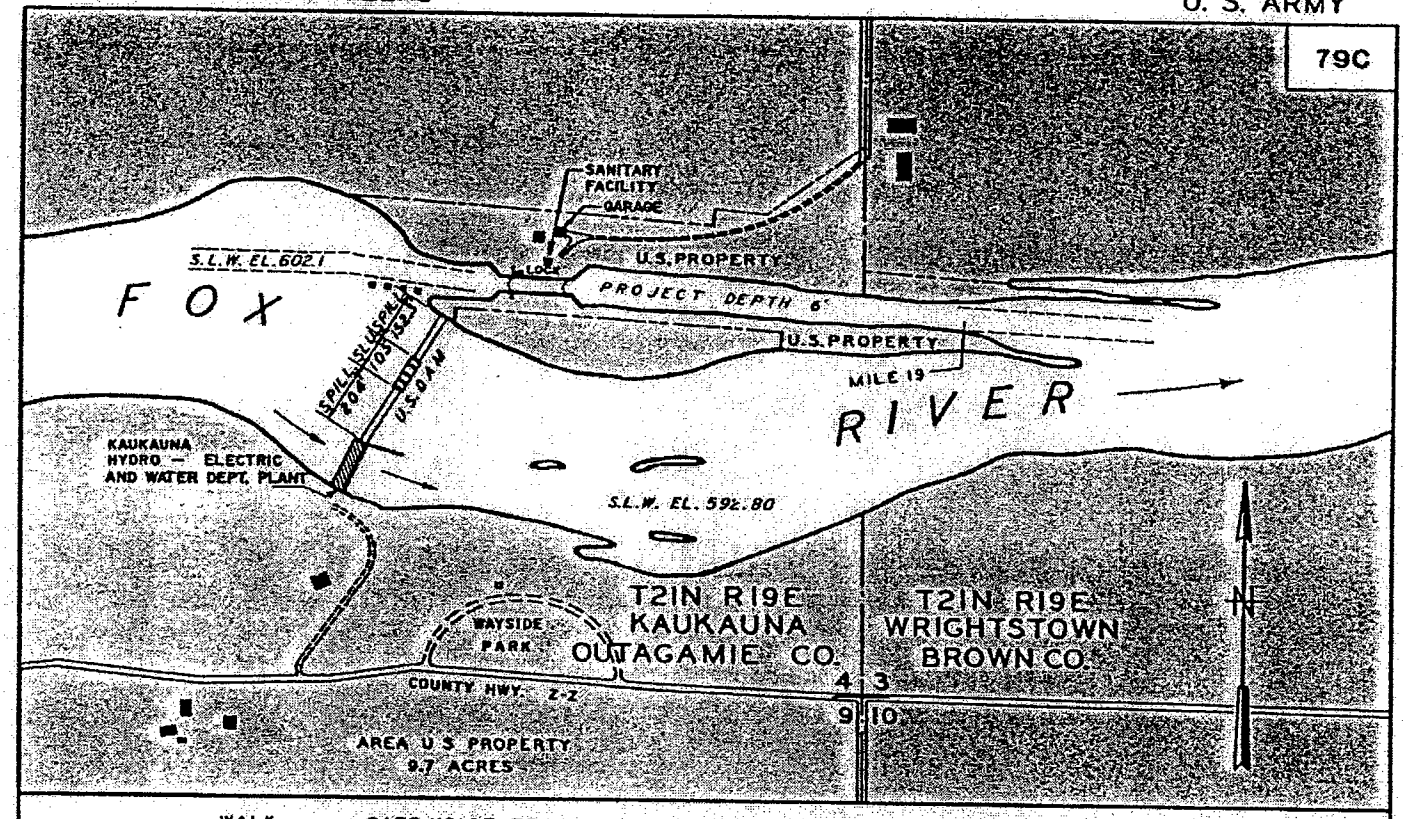
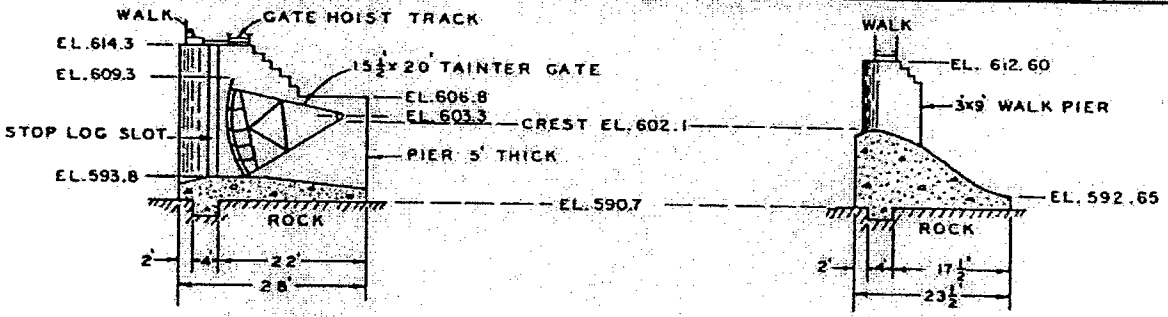
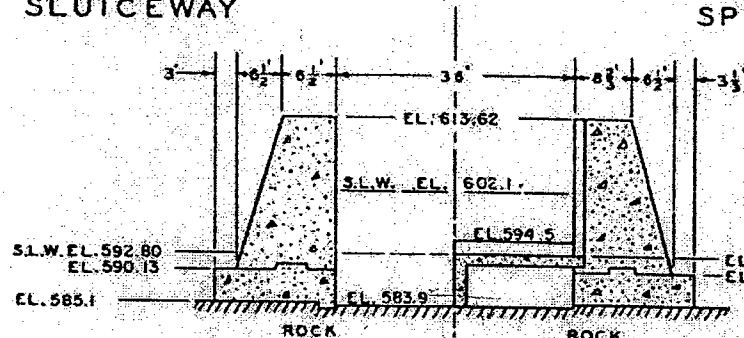




SECTION SLUICEWAY

SECTION SPILLWAY



SECTION LOCK CHAMBER

SECTION UPPER GATE RECESS

STANDARD LOW WATER AND ELEVATIONS ARE REFERRED TO MEAN WATER LEVEL AT FATHER POINT, QUEBEC, I.G.L.D. (1955) (INTERNATIONAL GREAT LAKES DATUM)

PROJECT DEPTH IS REFERRED TO STANDARD LOW WATER.

LOCK

STRUCTURE DATA

AVAILABLE LENGTH	148.0'
LIFT, MEAN STAGE	8.3'
UPPER MITER SILL	EL. 594.5
LOWER MITER SILL	EL. 585.3
BREASTWALL	EL. 594.5
CLEAR WIDTH	36.0'

DAM

STRUCTURE DATA

4 SLUICE GATES
LENGTH OF CLEAR SPILLWAY 341.3'
LENGTH OF CLEAR SLUICEWAY 80.0'
30" FLASHBOARDS
AUTHORIZED AUG. 27, 1934 (E.D. 75TH CONG. 3D SESS. MISS. CN. CO. 5/7)
AMENDMENT 17 NOV. 1961

RAPIDE CROCHE LOCK AND DAM
FOX RIVER
WISCONSIN

IN 1 SHEET

SHEET NO. 1

SCALE OF FEET

100' 0 500 1000 1200

U. S. ARMY ENGINEER DISTRICT, DETROIT

SEPTEMBER 30, 1966

☆ U.S. GOVERNMENT PRINTING OFFICE 1986-644-214

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Appendix B

AIS Control and Monitoring Plan

Proposed AIS Control and Monitoring Plan for the Rapide Croche Boat Transfer Station

Prepared by Philip B. Moy, Ph.D.
University of Wisconsin Sea Grant Institute

Executive Summary

State statute 237 authorizes the Fox River Navigational System Authority to repair and re-open 16 of the 17 locks on the lower Fox River. Reopening the Fox River locks brings the potential for economic development and revitalization of the river communities but also increases concern for the risk of upstream spread of aquatic invasive species. The lock at Rapide Croche is the site of a fixed barrier to prevent the upstream migration of sea lampreys into the Lake Winnebago chain of lakes. This lock will not be functional. Instead, a boat lift and transfer station will move boats overland from the downstream side of the lock and clean them prior to placement on the upstream side. Protecting the Lake Winnebago sturgeon population and native fisheries from the potential adverse impacts of aquatic invasive species (AIS) must be the primary consideration in the operation of the transfer station and at other system access points.

Boaters wishing to move upstream will have to comply with certain requirements prior to approaching the boat transfer station. The hull must be free of accumulated debris and fouling organisms. Live fish and bait must not be moved above the Rapide Croche lock. Each boat will be completely separated from the downstream water and will be washed with hot water prior to being moved upstream. Removal from the water will ensure that no fish are moved upstream during the transfer operation.

All upstream-bound boats will be first rinsed with sprayed upstream water to dislodge loosely adhering debris from the hull. The boat will then be floated in 110°F water for at least one minute. Water at this temperature will instantaneously kill zebra and quagga mussels as well as most other aquatic organisms. During the boat washing procedure, equipment onboard the boats will be removed, sprayed with a pressure washer then immersed in a tub of 110°F water for at least one minute. The measures recommended in this document will ensure that no live fish, invertebrates or plants are moved upstream at the transfer station. The station cleansing equipment will be designed such that additional cleansing agents can be added to the cleaning procedure as warranted by emerging Great Lakes AIS threats. An Aquatic Invasive Species Hazard Analysis and Critical Control Point (AIS-HACCP) plan and checklists will be developed for quality assurance of the boat cleansing protocol at the site.

Monitoring for aquatic invasive species will take place from May to September. The monitoring will be performed by Lawrence University students under the direction of Dr. Bart DeStasio and will include sampling in the navigation pools up and downstream from Rapide Croche Lock. Sampling methods will target fish and invertebrates. Monitoring has already begun to establish a baseline before the transfer operation commences.

Despite the significant effort proposed herein to prevent the spread of AIS at the Rapide Croche boat transfer station, AIS may still be introduced to the Lake Winnebago system because Rapide Croche is not the sole access point. Over 60 boat access points around the lakes and upper and lower Fox River offer potential entry sites for invasive species on trailered boats. The connection with the Wisconsin River at Portage may also allow AIS access to the system. Law enforcement, education, outreach and cooperation with upstream anglers and boaters are essential for the overall success of the AIS prevention effort.

Table of Contents

List of Figures

AIS Control and Monitoring Plan for the Rapide Croche Boat Transfer Station

Prepared by Philip B. Moy, Ph.D.
University of Wisconsin Sea Grant Institute

Introduction

Prior to May, 2007, fourteen of the seventeen locks on the Fox River had not been operated since 1988. State statute 237 authorizes Fox River Navigational System Authority (FRNSA) to repair and re-open 16 of the 17 locks for navigation. Rehabilitation of the navigational system may provide economic benefits for the communities along the waterway and their residents (LDR Int'l. 993). The Authority has refurbished four of the locks and over the next several years the FRNSA will be rehabilitating nine of the seventeen locks on the Fox River between Lake Winnebago and Green Bay.

The Rapide Croche Lock (Figure 1) is the site of a fixed barrier that prevents upstream migration of spawning sea lamprey (*Petromyzon marinus*) into Lake Winnebago. At 137,708 acres, Lake Winnebago is the largest inland lake in Wisconsin. Lake Winnebago is home for one of the strongest populations of lake sturgeon (*Acipenser fulvescens*) in North America (Fred Binkowski, pers. comm.) and supports a strong walleye fishery (WI DNR 2006). Protecting the Lake Winnebago ecosystem, the lake sturgeon and walleye populations from sea lamprey and from the spread of other AIS is a primary consideration in developing a boat transfer facility at the Rapide Croche lock.

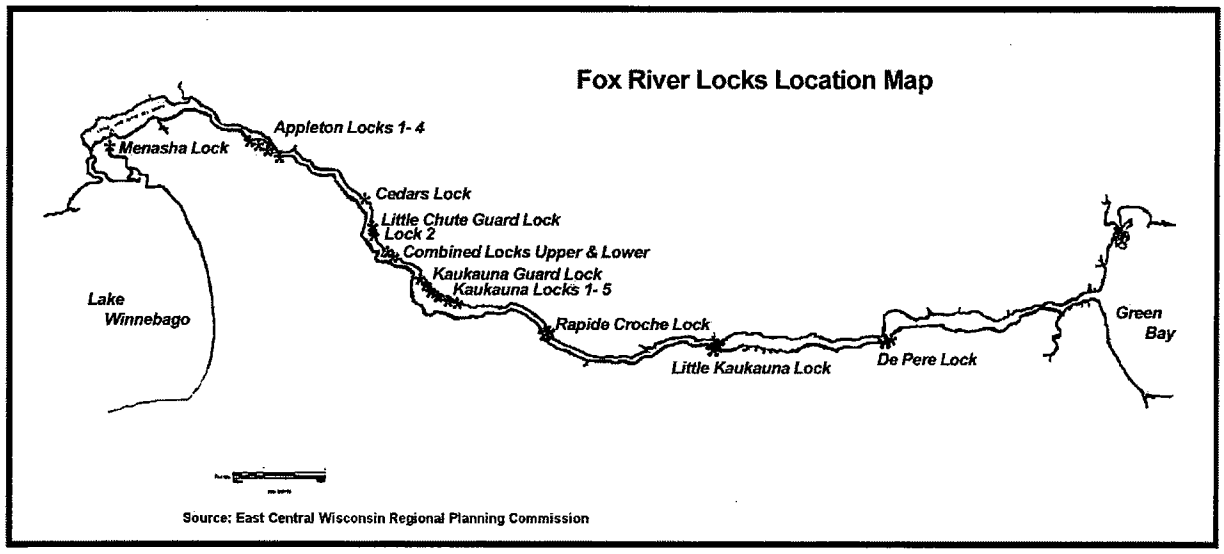

Figure 1. Map of the Fox River locks. North is towards the right of the map.

Goal: Prevent the upstream spread of aquatic invasive species (AIS) and safely transfer boats at the Fox River Rapide Croche Lock.

Objectives:
1) Maintain the effectiveness of the lamprey barrier currently in place at the Rapide Croche Lock

2) Move boats overland in an environmentally safe manner without moving AIS

3) Ensure that the boat cleansing process at the Rapide Croche transfer station meets or exceeds the Wisconsin State and Aquatic Nuisance Species Task Force recreational boating guidelines for AIS prevention.

4) Monitor for the presence of fish and invertebrate AIS above and below the Rapide Croche boat transfer station

5) Educate system users about AIS prevention

Aquatic Invasive Species

Species currently in the Great Lakes that should be prevented from spreading into the Lake Winnebago System include: lamprey, round goby, smelt, white perch, ruffe, and Great Lakes trout and salmon. Invertebrates include the quagga mussel and the non-indigenous waterfleas (fishhook and spiny waterfleas), rusty crayfish and the bloody red shrimp; plants should be removed because non-native organisms may be entrained with or attached to them. Pathogens that could be moved with fish include spring viremia of carp virus, infectious pancreatic necrosis, bacterial kidney disease and others. Other non-indigenous species or organisms of concern should be added to the list as they appear in Green Bay or the lower Fox River.

The spiny waterflea (*Bythotrephes cederstroemi*) will likely not thrive in the Lake Winnebago system or in Green Bay. This tiny, planktonic crustacean requires deep lakes that offer a summer thermal refuge. The shallow waters of lakes Winnebago, Winneconne, Poygan and Butte des Morts do not provide such refuge and so are unlikely to offer habitat suitable for this invasive zooplankton. Some shallow New York lakes in contact with spiny waterflea infested rivers have not yet exhibited invasive waterflea populations (Ed Mills pers. comm.) The fishhook waterflea (*Cercopagis pengoi*) can tolerate warm waters therefore reasonable steps to prevent the introduction of these nonnative crustaceans will be taken. The FRNSA recommends that similar precautions be implemented at the other Winnebago system access points.

This document considers the organisms most likely to be transferred with boats -- those floating in the water column and likely to adhere to or become entrained on boats or associated with fish or aquatic vegetation. Benthic organisms such as New Zealand Mudsnails or the diatom called "didymo" or "rock snot" (*Didymosphenia geminata*) are more likely to be spread via trailers or anglers as they come in contact with the bottom substrate of lakes and streams rather than by a floating boat.

Target Organisms

Fish

Prohibiting the movement of fish with boats is most easily accomplished by preventing the movement of bait and harvested fish, removing the vessel from the water for transfer and fencing the site to close it during off hours. A greater challenge lies in prohibiting the movement of microscopic resting eggs, larvae or pathogens that could remain in water adhering to equipment on board, the sides, interior spaces and crevices of the vessel. This challenge will be met through an aggressive vessel cleaning protocol that exceeds Wisconsin State and ANS Task Force recommendations.

No fish or bait live or dead will be transported above the Rapide Croche lock. Bait will be confiscated and discarded in the trash. Water in live wells, bilge and motors will be drained and flushed and the hull of the vessel and equipment will be rinsed with 110°F water prior to moving the boat and associated equipment to the upstream side of the lock. Boats moving downstream will not be inspected or cleaned prior to transfer but owners of boats moving downstream will be informed that they will have to meet the AIS prevention requirements to move the boat back upstream.

Quagga and Zebra Mussels

The application of sufficiently heated water can quickly exceed the thermal tolerance of organisms causing mortality within a very short time. The Rapide Croche transfer station will use water at 110°F to assure instantaneous kill of quagga mussels. McMahon et al (1993) determined that at raw water intake structures the maximum temperature required for instantaneous mortality of Dreissena is 43°C (109°F) when mussels were acclimated to 30°C and subjected to a "rapid" heating rate of 1°C/min. The temperature required for instantaneous mortality is reduced with lower acclimation temperatures. McMahon et al (1994) further established an equation for lethal temperatures for 15mm long zebra mussels based on acclimation temperature. Time in hours to achieve 100 percent mortality in Dreissena is described by the following equation:

Total Mortality in Hrs = 40.002 + 0.0514(acclimation temp °C) – 1.126(test temp °C)

At the boat transfer site, the acclimation temperature would be the temperature of the river water; the test temperature would be the temperature of the wash water. Maximum summer water temperature for the Fox River at Rapide Croche Dam in 2005 was 85°F (29°C). At this maximum "acclimation" temperature the treatment temperature required for instantaneous mortality (death in zero hours) of zebra mussels would be about 98.6°F (37°C). Though similar information is not available for quagga mussels, it is likely this congeneric species has similar thermal tolerance.

Spiny Waterfleas

Spiny waterfleas, both *Bythotrephes* and *Cercopagis* are present in Green Bay. These species can reproduce parthenogenetically (without males). During most of the year they do not require males to establish a new population. In the fall as water temperatures fall below 61°F, males

appear and females produce resting eggs (Makarewicz et al 2002, MacNeill et al 2004). Resting eggs can survive desiccation for twelve hours before dying and can tolerate hotter water temperatures than adult zebra mussels. At Rapide Croche we need to prevent the movement od adult spiny and fishhook waterfleas and avoid the movement of resting eggs.

The upper lethal limit for spiny waterflea (*Bythotrephes longimanus*) has been documented as 74°F (23°C) (Yurista, 1999) due to inactivation of respiratory enzymes. The thermal tolerance of adult fishhook waterfleas is not precisely known (MacIsaac, pers. comm.; Aladin, pers. Comm.) Aladin reported the optimum temperature for fishhook waterfleas (*Cercopagis pengoi*) is 52-72°F (11-22°C) and that this cladoceran may be able to tolerate water temperatures as high as 102.2°F (39°C). However, in Russia, MacIsaac did not find adults in nuclear cooling reservoirs where water temperatures reach 95°F (35°C) and suggested 86°F (30°C) may be an ecological maximum for the organism (pers. comm.).

To avoid moving adult spiny and fishhook waterfleas into the upper Fox River basin, the boat hull, fittings, motor, live wells and water-cooled engine of the boat will be first sprayed with upstream water to dislodge any water fleas on the hull. The boat will then be floated in 110°F (43°C) water with motor and pumps running to insure that waterfleas interior systems are flushed out prior to moving the boat upstream. To avoid moving resting eggs the boat transfer station will not operate past Labor Day. This will avoid moving boats upstream as water temperatures begin to fall spurring the production of resting eggs. Early September water temperatures in Green Bay are still around 70°F. In the Fox River, early September water temperatures are around 75°F.

Other Invertebrates

The bloody red shrimp, *Hemimysis*, is a strong swimmer and is not likely to become entrained with a boat during operation. Rusty crayfish will removed with other live bait.

Pathogens

Fish pathogens are most likely to move with fish or bait either dead or alive so preventing the movement of fish at Rapide Croche Lock will prevent the movement of most pathogens (Gary Whelan, MI DNR, pers comm.). Equipment, for example nets that come into contact with fish are the next most likely vector for pathogen transfer. Nets and fishing equipment will be sprayed with a pressure washer and immersed in the hot water bath prior to being returned to the upstream-bound boat.

Plants and Algae

Fish larvae or other immature vertebrates are unlikely to adhere to the hull and if entrained in the motor or bilge will not survive the hot water bath. The pelagic invertebrates of concern are addressed above; benthic invertebrates are unlikely to be moved with a boat or will be washed off with sediment during the spray operation. Algae will be washed off to the extent possible during the initial spray-down of the vessel. It is possible that some algal cells will be missed and will not be killed in the hot water immersion step; however algae will remain a potential threat for introduction by other vectors as well. Macrophytes (large, visible plants) will be manually removed or washed off during the hull spraying portion of the cleansing operation.

Future AIS Risks

Until the influx of aquatic invasive species into the Great Lakes is stemmed, future introductions of new species may pose a risk for spread into the Lake Winnebago System. As these threats arise, the transfer station operation and cleansing protocol should be reviewed and modified as necessary to assure only clean boats are moved at the Rapide Croche boat transfer station and pose no additional threat for AIS introduction.

Other Vectors

Even with these stringent measures to prevent the movement of AIS at the Rapide Croche boat transfer station, at least two other significant AIS vectors remain: trailered boats access ramps and the canal connection at Portage. Recent AIS introductions into Lake Winnebago including Eurasian watermilfoil (*Myriophyllum spicatum*), zebra mussels (*Dreissena polymorpha*) and viral hemorrhagic septicemia virus (VHS) are logically attributable to introduction by trailered boats or anglers. There is a total of over 60 access points for boats on lakes Winnebago, Poygan, Butte des Morts, Winneconne, Little lake Butte des Morts, the upper Fox River to Eureka and the lower Fox River to Rapide Croche Dam. Unless boaters and anglers take precautions to prevent the spread of AIS from lake to lake via trailered boats, this vector will remain a serious threat to the Lake Winnebago ecosystem. Further, the number of trailered boats entering the Lake Winnebago system annually will greatly exceed the number of vessels passing through the Rapide Croche boat transfer station.

As long as there is an aquatic connection between the Wisconsin River and the Fox River invasive species in the Mississippi River drainage could enter the Winnebago system. At this time, Asian carps are the greatest AIS threat that could use this entry route. The round goby will eventually move into the Mississippi River and could use this backdoor to gain access to the Winnebago system, further there is concern regarding the use of gobies as bait. Serious consideration should be given to permanently closing the man-made connection to prevent the spread of invasive species to or from the Winnebago system.

Boat Transfer Options

Lifting boats by water is a proven, safe and economical means to move freight and passengers with the vessel in a controlled chamber. However, when considering a means of lifting a boat without moving AIS, the impracticality of treating or disinfecting large volumes of water and how to handle the discharge of the treated water becomes immediately apparent. For that reason boats passing upstream and downstream at the Rapide Croche Lock will be moved via mechanical means. Boat lift options are described in detail elsewhere in this proposal but include sling-type lifts, fork lifts, trailers, self-propelled trailers, and other bunk-type lifts.

Boat Cleansing Alternatives

Chemicals

Options considered as alternatives for the boat cleansing operation included chemicals such as chlorine, iodine, Vircon-S, Peroxyguard and ozone, high pressure water spray and hot water. Application of chemicals was not fully considered due to the cost and potential hazards

associated with storage and application. Chemicals must be either collected for disposal or detoxified (if possible) prior to discharge. Purchase of the chemical represents an additional cost for operation of the boat transfer facility as well as cost for disposal of a potentially hazardous waste. Further, some of the chemicals are not effective on all target organisms and treatment of the boat with a chemical would require some additional rinse take place prior to placement of the cleaned boat on the upstream side of the lock. Chemical treatment can be added at a later date if required by changing conditions.

High Pressure Spray

High pressure water spray has the potential to remove ablative paint from some boat hulls and can potentially damage some hulls made of relatively fragile materials. Also, some additional treatment would be required to address through-hull fittings, pumps and motor cooling water.

Hot Water

Hot water has the most desirable characteristics and the fewest drawbacks. Water is amply available onsite from the upstream side of the lock, can be heated, is not toxic and at moderate temperatures is not hazardous. At high enough temperatures, hot water is an effective cleansing agent on all organisms and all life stages.

Application of hot water to the boat and equipment for the required duration by spraying the hull is possible but requires additional steps to flush the motor cooling system and other on-board pumps, the bilge and through-hull fittings. A combination of spray with immersion in a pool of heated water allows thorough flushing of the motor and pumps with the hot water. Separate treatment of equipment in hot water, a chemical bath or high pressure spray will kill, remove or inactivate potential AIS threats.

One issue with very hot water is the potential effect on paint, gaskets and some hull materials. Some of the boat manufacturers contacted indicated immersion of the vessel in a water bath of 145°F or more even for a relatively short duration (2 minutes) could adversely affect gaskets, hull finish and would violate the warranty.

Recommended Approach

Given the array of organisms, their various tolerance for chemical and hot water treatments, it is clear a combination of cleansing methods incorporated into a boat transfer system is required to assure that to the greatest extent possible, no non-indigenous species are moved with boats from the downstream to the upstream side of Rapide Croche Lock. Operating the boat transfer station only during times of the year when resistant life stages are absent and using cleansing methods effective on target organisms will allow safe transfer of boats over the sea lamprey barrier. The cleansing station should be designed such that application of a chemical disinfectant phase can be added in the future if necessary.

In terms of options to treat the boat to remove AIS in an environmentally sound manner, hot water is the preferred method for this operation. Hot water is the method recommended by the Aquatic Nuisance Species Task Force in the Recreational Boating Guidelines for AIS removal:

- Inspect and remove aquatic plants animals and mud from the boat, trailer and equipment
- Drain all water from the equipment (boat, motor, bilges, transom wells, live wells etc.)
- Dispose of unwanted bait in the trash, not in the water
- Rinse the boat and equipment with hot (>104°F) and/or high pressure water OR
- Let the boat dry in the sun for five days

Boat Transfer Station Operation

The Rapide Croche boat transfer station will have posted hours and will not operate unless a trained transfer station staff member is present. The boat transfer station will be fenced such that no one may pass beyond the boat transfer station, including canoes and kayaks, when a boat transfer station staff member is not present. To facilitate the cleaning process, the approach channel should be kept free of vegetation to the maximum extent possible.

The lifting or transfer device will completely separate the boat from the water and allow inspection and treatment of the hull such that no organisms attached to the hull or lifting apparatus will go unnoticed during the transfer process. Water draining from the boat while it is being cleaned must not be allowed to drain to the upstream side of the transfer station.

Preparing the Boat for Transfer

Boaters wishing to have their boats transferred at the station will have to clean their hulls, bilge and equipment prior to approaching the transfer station. Live wells and bait buckets should be empty. Boats with hulls heavily encrusted with algae or organisms will be turned away. Boats with bladder bags, regardless of condition, will not be permitted to move above the transfer station. Fishing presents an elevated risk for transfer of organisms due to live wells, bait buckets and bait wells and associated fishing gear. These items will require particularly close attention prior to movement upstream.

Cleansing the Boat

Once the boat meets the established criteria to move above the Rapide Croche Lock, the boat will be lifted from the water by fork lift, hoist or some other mechanism. The boat will be moved to a location for the cleaning process that ensures the released water is not discharge to the upstream side of the transfer station.

The Hull

The transfer station is intended to be a disinfection station not a boat cleaning station; there will not be time for scrubbing or scraping of the hull. As such, boats with hulls heavily fouled with zebra or quagga mussels or thick encrustations of other organic matter will not be allowed to use the boat transfer station so only recently settled dreissenid mussels and minimal accumulations of other dried-on organisms should be present on the boat hull. The hull will be thoroughly sprayed to dislodge spiny waterfleas and other adhering AIS prior to being set in 110°F water for one minute which will kill more tightly attached dreissenid mussels. Wong (1991) reported that water pressure at 3000 psi will remove zebra mussels but not their byssal threads that can cause corrosion. For this reason the U.S. Army Corps of Engineers recommends that water pressure of 4,000 psi or greater be used to remove the zebra mussels. Ackerman et al (1995) determined that the force required to remove newly settled quagga mussels from various substrates was about

two orders of magnitude less than that required to remove adult dreissenid mussels. Applying this conversion factor (0.01) to the Army Corps recommended pressure for removing adult zebra mussels (3000 to 4000 psi) results in a suggests water pressure of 30 to 40 psi, roughly equal to that of tap water will be sufficient for the Rapide Croche boat washing facility.

Water at 30 to 40 psi will remove newly settled quagga mussels as well as zooplankton that may be adhering to the surfaces of the boat while avoiding removal of ablative anti-fouling paint and possible damage to boat hulls. Special attention will be paid to hull fittings, outdrives, lower units, sailboat centerboards, centerboard trunks and water intake and exhaust ports. Canoes and kayaks will be thoroughly rinsed inside and out then fully immersed in the 110°F water. The heat of the water will instantaneously kill any zebra or quagga mussels on the hull and will kill attached spiny waterfleas in the one-minute contact time.

Propulsion Systems

Lower units, outdrives and other protruding items with cracks or crevices that may house AIS will be sprayed with water then set in 110°F water to ensure removal and/or death of the organism. Jet skis or jet boats will be run for a few seconds to ensure removal of entrained vegetation and water in the drive system. The jet drive intake and exhaust ports must then be flushed with the hot water.

Intake and Exhaust Ports & Cooling System

Intake and exhaust ports of the cooling system on inboard motors must be sprayed thoroughly. Mechanical propulsion systems of all vessels will be operated while floating in the 110°F water bath to ensure removal of larval or planktonic organisms. Cooling systems of motors will be operated with the 110°F water to ensure removal or mortality of AIS. Other raw water systems will be operated while in the bath to ensure flushing of these systems.

Bilge

Water in the bilge could harbor invasive organisms. If the boat construction allows access to the bilge compartments the bilge will be visually inspected. If the bilge compartments cannot be visually inspected, the bilge plug will be removed from the boat prior to placement in the hot water bath.

Fishing Equipment, Anchors, Ropes, Chains, Skis etc

Equipment onboard including ropes, anchor, chains, water skis, rods, reels, lines, downriggers, tackle and lures must be visually checked by the transfer station staff. It must be dry and free of debris or encrusting organisms. All nets and equipment that is not dry or free of encrusting organisms clean must be sprayed with high pressure wash water then immersed in the 110°F water bath for one minute before being allowed to move upstream of the transfer site.

Live Wells & Bait Buckets

No live bait will be permitted to move upstream from below the Rapide Croche boat transfer station. Live wells and bait wells must be emptied. Once the boat is lifted from the water, the live well system will be flushed and operated with 110°F water. Bait brought in buckets may be emptied into a holding facility for distribution to downstream-headed boats. All bait buckets will be rinsed then immersed in the 110°F water bath for one minute.

Lifting Device

The lifting device will be treated with 110°F water for one minute along with the boat to ensure it too is free of AIS before being immersed in the upstream water. Alternatively, two lifting devices may be used, one for removing and replacing boats on the downstream side of the lock and a second for removing and placing boats on the upstream side of the lock. If a second boat is waiting to move downstream, the lifting device must be sprayed down and treated in the hot water bath

Quality Assurance - Hazard Analysis and Critical Control Point Plan

Once a method is finalized for lifting and washing the boats, detailed protocols will be developed for each vessel type. In addition, an Aquatic Invasive Species Hazard Analysis and Critical Control Point (AIS-HACCP) plan and a protocol checklist should be developed for the Rapide Croche boat transfer station for quality assurance. The plan will clearly delineate the cleaning protocol to be followed for each type of craft, i.e. sailboat, cruiser, runabout, kayak, or fishing boat. A checklist should be completed for each craft transferred at the station. The AIS- HACCP plan should include thermal parameters for the heated pool, inspection points for each type of craft and equipment cleansing procedures.

Moving the Boat Upstream

Once the boat and equipment are cleaned, the boat will be moved to the upstream side of the lock, checked to ensure that the bilge plug is replaced and returned to the river. Equipment removed from the hot water bath should be allowed to cool and returned to the boat operator.

Operation of the Other Locks

When the doors of a lock remain open between lockages, fish and other organisms have an opportunity to enter the lock and be moved upstream with the next vessel that locks through. As an added step to slow the upstream spread of AIS, the downstream lock doors at the locks between Rapide Croche and Green Bay will remain closed except when a vessel is entering the lock. Though this is not a 100% effective prevention method, it significantly reduces the amount of time an organism has to enter the lock to move upstream.

Monitoring for AIS

Monitoring is essential to determine the effectiveness of any prevention effort. Monitoring for AIS will be carried out by Lawrence University students under the direction of Dr. Bart DeStasio. One student will be dedicated to the project throughout the summer months. Monthly sampling at stations in the Rapide Croche pool and the upstream and downstream navigation pools from May to September began in 2006. The monitoring effort includes sampling for invertebrates and fishes. Sampling methods include substrate samples, settling plates, minnow traps and seining. Periodic reports on the monitoring results will be submitted to FRNSA and forwarded to the Department of Natural Resources. Results of the monitoring effort will be posted on the FRNSA (or Friends of the Fox) website and will be presented at state or regional meetings.

If a new invasive species is located downstream of the lock, the HACCP plan and transfer protocol will be reviewed to ensure that the methods applied at the transfer station are adequate

to prevent the upstream movement of the organism. If the methods are determined to be inadequate, the HACCP plan and cleaning protocol will be modified appropriately.

If the monitoring effort finds a new aquatic invasive species in the pool above the Rapide Croche Lock, the Wisconsin DNR will be immediately notified. Though the source of the organism may be a trailered boat, if the organism is confined to the Rapide Croche pool consideration should be given to closing the Kaukauna Lock and to closing any boat ramps on the pool to prevent potential upstream spread of the organism until its distribution and appropriate response action can be determined (see AIS response below).

AIS Response

Because there are more than 60 access points on the Lake Winnebago system, presence of a new AIS in the Lake Winnebago system is not indicative of a failure in the boat transfer cleansing protocol. The monitoring program for the transfer station samples sites in the pools immediately above and below the Rapide Croche Lock. This monitoring program should be used to determine whether the source of the new species was indeed the transfer station. Discovery of the species farther upstream suggests another vector was involved.

The initial response if a new AIS that has been confirmed in the pool immediately downstream of the transfer station is then detected immediately upstream from the Rapide Croche boat transfer station should be to close the next lock upstream, Kaukauna Lock 5 and to suspend operation of the boat transfer station pending review of the transfer protocol. Planning for a rapid response should begin well in advance of full restoration and operation of the lock system so that swift action can be taken in the event of a new AIS discovery. Rapid response options are extremely limited and depend on the type of organism. Planning for the action will at a minimum include representatives of the Fox River Navigation System Authority and the FRNSA AIS Committee, the Friends of the Fox River, the Wisconsin Department of Natural Resources, U.S. Fish and Wildlife Service, Great Lakes Fishery Commission, communities that draw drinking water from the river and recreational interests on the river including Walleyes For Tomorrow, Sturgeon For Tomorrow, and the Winnebago Lakes Council.

Education and Outreach

Boaters on the Fox River will need to know about the boat transfer and cleaning procedure before they approach the Rapide Croche boat transfer station. They will need to have a clean hull and be prepared to allow their boat to be inspected, lifted and washed. They must be aware that fishing gear and ski equipment etc. will be removed and submerged in hot water.

Materials describing how boaters can prevent the spread of AIS should be available for distribution at all the FRNSA locks. A kiosk will be erected at the boat transfer station that includes educational materials about AIS, their impacts and preventing their spread, the lock system, the Fox River, Lake Winnebago ecosystem and the lake sturgeon.

Prevention at other access points must engage upper lakes' residents, anglers, boaters and other users in the AIS prevention effort. This will involve coordination with upstream partners such as UW Extension, angling clubs, marinas, bait shops, and schools to help in the effort. Distribution of information including posters, pamphlets, watch cards and the FRNSA FAQ brochure to ramp

owners, bars, restaurants and tackle shops around the lake and on the river will help disseminate the information. Engaging sportsmen's groups and educating them about the Rapide Croche boat transfer station will be an important project component. Dr. Bart DeStasio will help engage elementary, middle and high school students in AIS prevention. Dr. DeStasio leads the JASON project, a middle school outreach program in the Green Bay area. He has offered to work with local schools to enlist their participation on the Fox River AIS monitoring and control effort.

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DRAFT

Appendix C

Launch Pier Guidelines

LAUNCHING PIER

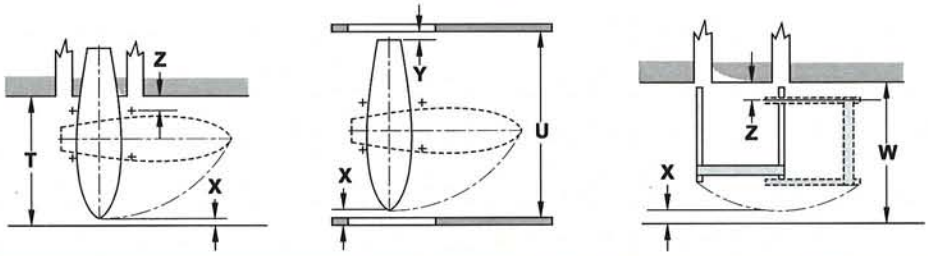
GUIDELINES

BFMII AND C-SERIES

MARINE TRAVELIFT INC.

YOUR MARINA PIER INSTALLATION CAN BE DESIGNED TO MEET YOUR NEEDS!

- Proper pier installation increases efficiency – improves profits.
- Wood piling, steel piling or pre-stressed concrete styles are most popular.
- Pier designs can be adapted to utilize more than one size hoist – use an accredited engineering design firm.
- The use of curb rails help guide the operation. Only use a steel rail to keep the hoist block clearance.
- Allow for an adequate turning radius depending on the type of boats your marina handles –promotes faster boat hauling.
- Running clearance depends on the size and model of your Marine Travelift - see specifications.



DIMENSIONAL GUIDELINES RELATIVE TO BOAT LENGTH

MODEL	TYPICAL BOAT LENGTH	DIMENSION T	DIMENSION U	DIMENSION W	DIMENSION Z
15 BFM	45'0"	36'6"	51'9"	32'9"	5'0"
25 BFMII	55'0"	42'6"	61'9"	34'4"	5'0"
35 BFMII	65'0"	48'6"	71'9"	36'1"	5'0"
50 BFMII	75'0"	57'3"	81'9"	41'11"	7'6"
75 BFMII	75'0"	58'0"	81'9"	44'7"	7'6"
100 BFMII	105'0"	78'3"	111'9"	56'1"	9'0"
150CII	105'0"	79'3"	111'9"	62'9"	9'0"
200CII	125'0"	95'6"	131'9"	69'5"	13'0"
250C	125'0"	98'0"	131'9"	73'3"	13'0"
300C	150'0"	110'6"	156'9"	78'9"	13'0"

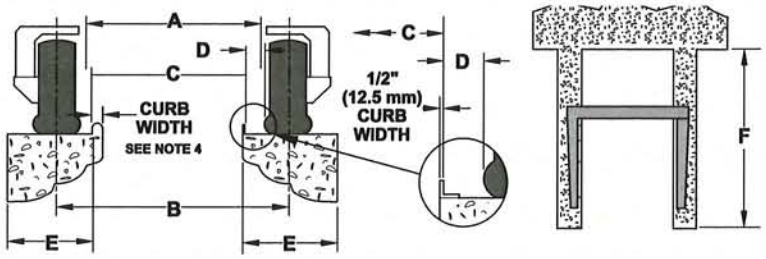
Note: The above sketches depict typical space requirements and boat length and may be adapted to suit specific circumstances. Clearance Dimensions "X" = 1'9" (0.53m), "Y" = 5'0" (1.5m). Descriptions subject to change without notice.

HOW TO MEASURE INSIDE CURB WIDTH

(SPECIFICATIONS FOUND ON REVERSE SIDE UNDER COLUMN "C")

LAUNCHING PIER SUGGESTED GUIDELINES

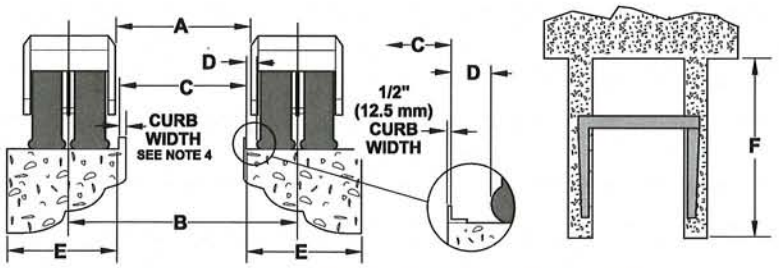
SINGLE TIRE



▶ SINGLE TIRE MODEL SPECIFICATIONS

MODEL	UNIT INSIDE CLEAR WIDTH A	UNIT TREAD WIDTH B	MAXIMUM INSIDE CURB WIDTH C	MINIMUM TIRE CLEARANCE (LOADED) D	MINIMUM PIER WIDTH E	RECOMMENDED MINIMUM PIER LENGTH F	WHEEL LOADS PER CORNER		TIRES PER CORNER	APPROX. GROUND PRESSURE
							VERTICAL LBS	LATERAL LBS		PSI
15 BFM	15'0"	16'8"	15'1"	0'3"	1'11"	40'0"	13,900	1,390	1	80
25 BFMII	17'0"	19'0"	16'9"	0'4"	2'7"	45'0"	21,700	2,170	1	110
35 BFMII	17'0"	19'0"	16'9"	0'4"	2'7"	50'0"	30,300	3,030	1	120
50 BFMII	20'0"	22'0"	19'10"	0'4"	2'8"	55'0"	45,200	4,520	1	125
75 BFMII	21'0"	23'4"	20'11"	0'4"	2'11"	60'0"	61,300	6,130	1	140
100 BFMII	26'0"	29'2"	25'10"	0'4"	4'1"	75'0"	90,000	9,000	1	116
600C-IL8	38'0"	43'10"	38'2"	1'0"	6'9"	150'0"	596,900	59,690	2	120

DUAL TIRE



▶ DUAL TIRE MODEL SPECIFICATIONS

MODEL	UNIT INSIDE CLEAR WIDTH A	UNIT TREAD WIDTH B	MAXIMUM INSIDE CURB WIDTH C	MINIMUM TIRE CLEARANCE (LOADED) D	MINIMUM PIER WIDTH E	RECOMMENDED MINIMUM PIER LENGTH F	WHEEL LOADS PER CORNER		TIRES PER CORNER	APPROX. GROUND PRESSURE
							VERTICAL LBS	LATERAL LBS		PSI
150CII	28'0"	33'0"	27'10"	0'6"	5'9"	90'0"	128,900	12,890	2	150
200CII	30'0"	36'4"	30'0"	0'6"	6'10"	100'0"	186,800	18,680	2	145
250C	30'0"	36'6"	29'8"	0'6"	7'4"	100'0"	234,400	23,440	2	130
300C	32'0"	39'0"	31'8"	0'6"	7'10"	100'0"	271,200	27,120	2	130
400C	35'0"	42'8"	34'4"	0'9"	9'0"	120'0"	370,200	37,020	2	135
500C	38'0"	45'0"	37'3"	0'10"	9'0"	130'0"	493,100	49,310	4	130
600C	38'0"	45'0"	37'1"	0'10"	9'0"	150'0"	596,900	59,690	4	145
700C	38'0"	46'6"	37'4"	1'1"	10'0"	150'0"	721,500	72,150	4	120
800C	48'0"	59'6"	45'9"	1'2"	14'2"	180'0"	813,200	81,320	2	145

1. Unit inside clear width "A" is shown for a standard machine. Dimension "A" may be varied to suit customer's desired width. Dimensions "B" and "C" will change by the same amount.
2. Dimension "D" is the minimum recommended. This dimension can be increased slightly by increasing clear width "A" (see note 6). Dimension "E" will increase by the same amount as the increase in dimension D".
3. Excessively increasing the curb width or dimension "A" without increasing dimension "C" may cause interference when attempting to lower the sling blocks past the pier.
4. The minimum pier width "E" is the width of the pier required to provide a minimum tire clearance space on both sides of the tires when traveling on a pier. This width "E" does not include space for a walkway or the curb width.
5. The customer must obtain approved plans from his own engineering firm for actual pier construction.

Marine Travelift, Inc. • 49 E. Yew St • Sturgeon Bay, WI 54235 USA • Phone: 920.743.6202 • Fax: 920.743.1522 • E-mail: sales@marinetravelift.com • www.marinetravelift.com
Marine Travelift International Ltd. • 12 Stratfield Park, Elettra Avenue • Waterlooville, Hampshire, PO7 7XN, England • Phone: 44 (0) 2392 230 811 • Fax: 44 (0) 2392 230 841

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Appendix D

Marine Fork Truck Information

M2500
MARINER FORKLIFT
25,000 lb (11,340 kg) Capacity

MARINE TRAVELIFT INC.

STANDARD SPECIFICATIONS

	US Measure	Metric
General Information		
Rated lifting capacity	25,000 lbs	11,340 kg
Shipping weight	91,000 lbs	41,280 kg
Load center from base of forks	8'0"	2.44 m
Negative drop	12'8"	3.86 m
Wheelbase	10'9"	3.28 m
Tail swing radius	15'6"	4.72 m
Aisle for 90° turn (add to boat length)	21'6"	6.55 m
Carriage and fork style	Swing-out	
Mast		
Lifting heights	40'0"	12.19 m
Lifting speed	50 ft/min	15.24 m/min
Lowering speed	45 ft/min	13.72 m/min
Anti-drop feature	Velocity fuse	
Maximum mast forward tilt	4°	
Maximum mast backward tilt	10°	
Forks		
Fork length	20'0"	6.10 m
Minimum fork spread	4'7"	1.40 m
Maximum fork spread	12'7"	3.84 m
Fork cross-section height	10.5"	.27 m
Fork cover type	Reinforced rubber semi-cylindrical	
Engine		
Engine make/model	Cummins QSB4.5T - Tier 3	
Horsepower	130 HP @ 2300 RPM / 97 KW	
Cooling	Liquid (remote module)	
Front Axle Load		
Maximum axle load (front)	102,900 lbs	46,680 kg
Brakes	Wet Type	
Hydraulic System		
Type	Open loop	
Maximum pressure	2,500 PSI	172.4 Bars
Steering	Hydraulic load sensing	
Drive System		
Transmission style	4-Speed powershift	
First speed	1.9 mph	3.1 kmph
Second speed	3.5 mph	5.6 kmph
Third speed	6.0 mph	9.7 kmph
Fourth speed	9.5 mph	15.3 kmph
Tires		
Tire type	12.00R24	
Tire pressure (front)	145 PSI	10.0 Bars
Tire pressure (back)	145 PSI	10.0 Bars
Exterior Paint		
Color	Blue & Black	
Primer	2-part Epoxy	
Primer (mast & body)	Zinc and 2-part Epoxy	
Paint	2-part Urethane	

Model M2500 at Santangen in Norway

(Machine may be shown with options)

STANDARD EQUIPMENT

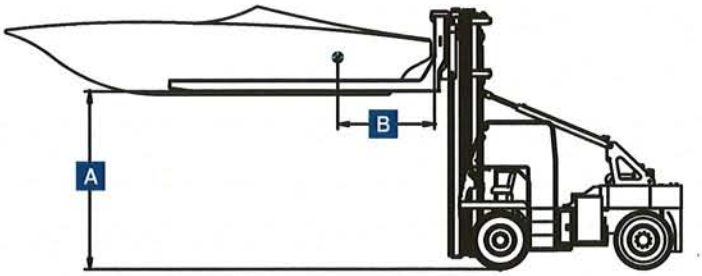
- Wide track for improved stability
- Swing-out forks and shift control
- Remote control for lift operation
- Side mounted cab
- Heavy duty 4-stage interlocking mast
- Remote cooling
- Wet-disk brakes and heavy duty axle
- Pilot operated controls
- Electronic engine display
- 316 Stainless steel tube lines
- Remote grease lines for mast
- Galvanized cab
- Meets CE and USA standards

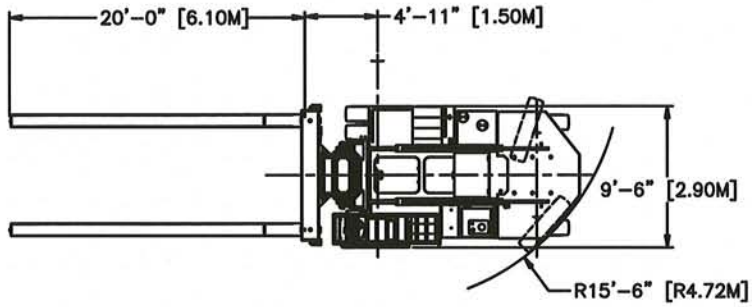
OPTIONS

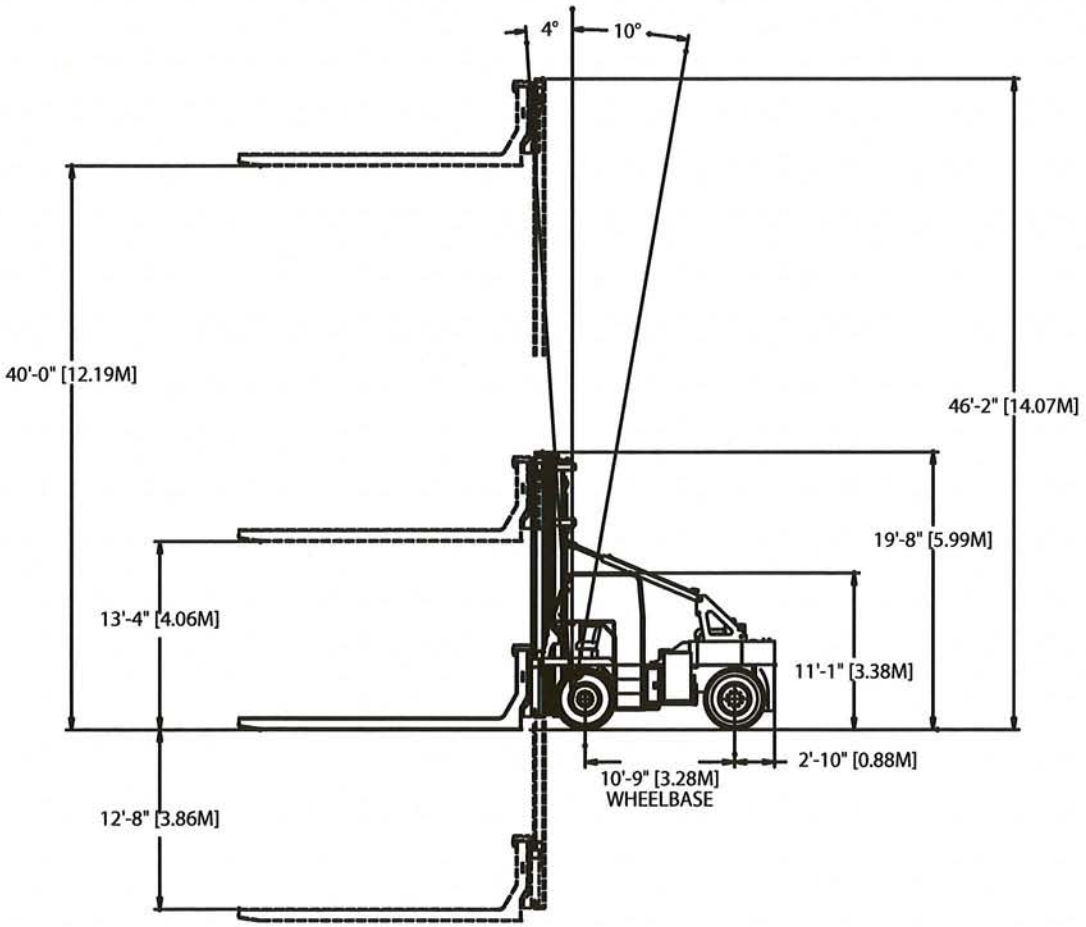
- Solid non-marking tires
- Solid tires
- Galvanized forks
- Galvanized carriage

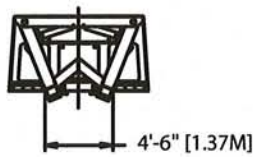
▶ Rated Capacity

DIMENSION "A"	LOAD CENTER FROM VERTICAL FORK FACE (DIMENSION "B")					
	8 Ft [2.44 m]	10 Ft [3.05 m]	12 Ft [3.66 m]	14 Ft [4.27 m]	16 Ft [4.88 m]	18 FT [5.49 m]
-12'8" to 4'0" [-3.86 m] to [1.22m]	25,000 lbs [11,340 kg]	21,500 lbs [9,752 kg]	18,750 lbs [8,505 kg]	16,750 lbs [7,598 kg]	15,250 lbs [6,917 kg]	13,750 lbs [6,237 kg]
Up to 13'4" [4.06 m]	23,000 lbs [10,433 kg]	19,780 lbs [8,972 kg]	17,250 lbs [7,825 kg]	15,410 lbs [6,990 kg]	14,030 lbs [6,364 kg]	12,650 lbs [5,738 kg]
Up to 20'0" [6.10 m]	16,500 lbs [7,484 kg]	14,190 lbs [6,437 kg]	12,375 lbs [5,613 kg]	11,055 lbs [5,015 kg]	10,065 lbs [4,565 kg]	9,075 lbs [4,116 kg]
Up to 30'0" [9.14 m]	15,000 lbs [6,804 kg]	12,900 lbs [5,851 kg]	11,250 lbs [5,103 kg]	10,050 lbs [4,559 kg]	9,150 lbs [4,150 kg]	8,250 lbs [3,742 kg]
Up to 40'0" [12.19 m]	13,000 lbs [5,897 kg]	11,180 lbs [5,071 kg]	9,750 lbs [4,423 kg]	8,710 lbs [3,951 kg]	7,930 lbs [3,597 kg]	7,150 lbs [3,243 kg]

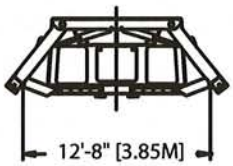








FORK SWING



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Appendix E

Mobile Hoist Information

MARINE TRAVELIFT INC.

The World's Number One Mobile Boat Hoist

MOBILE BOAT HOISTS

BFM II C-Series
15-1,000 TONS

Leading the world in mobile boat hoist technology.

A CONCEPT THAT STARTED A REVOLUTION IN BOAT HANDLING

Nearly 50 years ago, Marine Travelift had the idea that you could pick a boat out of the water with less stress on the hull, move it safely and quickly around a boat yard or marina with minimum labor and then just as easily put it back into the water. This idea launched a revolution in boat handling. From its first self-propelled, 7-ton, straddle-type mobile boat hoist in 1958 to the giant 800-ton units currently in service, Marine Travelift now has more than 3,500 boat hoists in use around the world.

Lead by one of the industries most talented engineering teams, and a half century of experience, Marine Travelift has established a reputation for quality, performance and customer satisfaction that is second to none. With 16 models, from 15 to 1,000 ton capacities, there's a Marine Travelift boat hoist for virtually any application. No wonder Marine Travelift is the boat hoist of choice for America's Cup and the Miami International Boat Show.

This year, use the boat handling expertise of Marine Travelift to raise your profitability. It's an investment which will hold its value through many years of profitable service.

300C, West Port, Washington USA

35BFMII, Marin Electro, Norway

50BFMII, America's Cup, Sicily, Italy

400C, Delta, Washington USA

500C, Burger Boats, Wisconsin USA

BFM II

15-100 TONS

Maximum versatility and legendary reliability.

50BFMII, Punta Arenas, Chile

WHEN ONLY THE BEST YACHT HANDLING HOIST WILL DO.

When it comes to handling your customer's prized yacht, they don't expect you to cut corners on your choice of boat hoist. They know when you have a Marine Travelift boat hoist you're giving them the best yacht handling service available. Marine Travelift's BFM II Series mobile boat hoists have become the gold standard for marina operators, boat yards, and other boat handling operations at home and abroad. No other brand offers a higher reputation for reliability, performance and factory support in the marine industry. That's because Marine Travelift is world renowned for the outstanding engineering that goes into every hoist it builds.

What's equally important, Marine Travelift has the kind of parts and service support that operators can rely on to keep their machines operating at peak performance and with minimal downtime. Less maintenance, easier operation and longer lasting value are just a few of the many reasons there are more than 3,500 Marine Travelift boat hoists in operation handling valuable yachts everyday.

50BFMII, Norway

50BFMII America's Cup, Valencia, Spain

100BFMII, Meridiano 87, Mexico

35BFMII, Aukra Maritime, Norway

Multiple 50BFMII & 75BFMII units, America's Cup, Sicily, Italy

BFM II

15-100 TONS

Features that make a difference to your bottom line.

MARINE TRAVELIFT ARTICULATED PIVOT TRUNION allows for the frame of our crane to relieve stress under uneven terrain without causing structural damage.

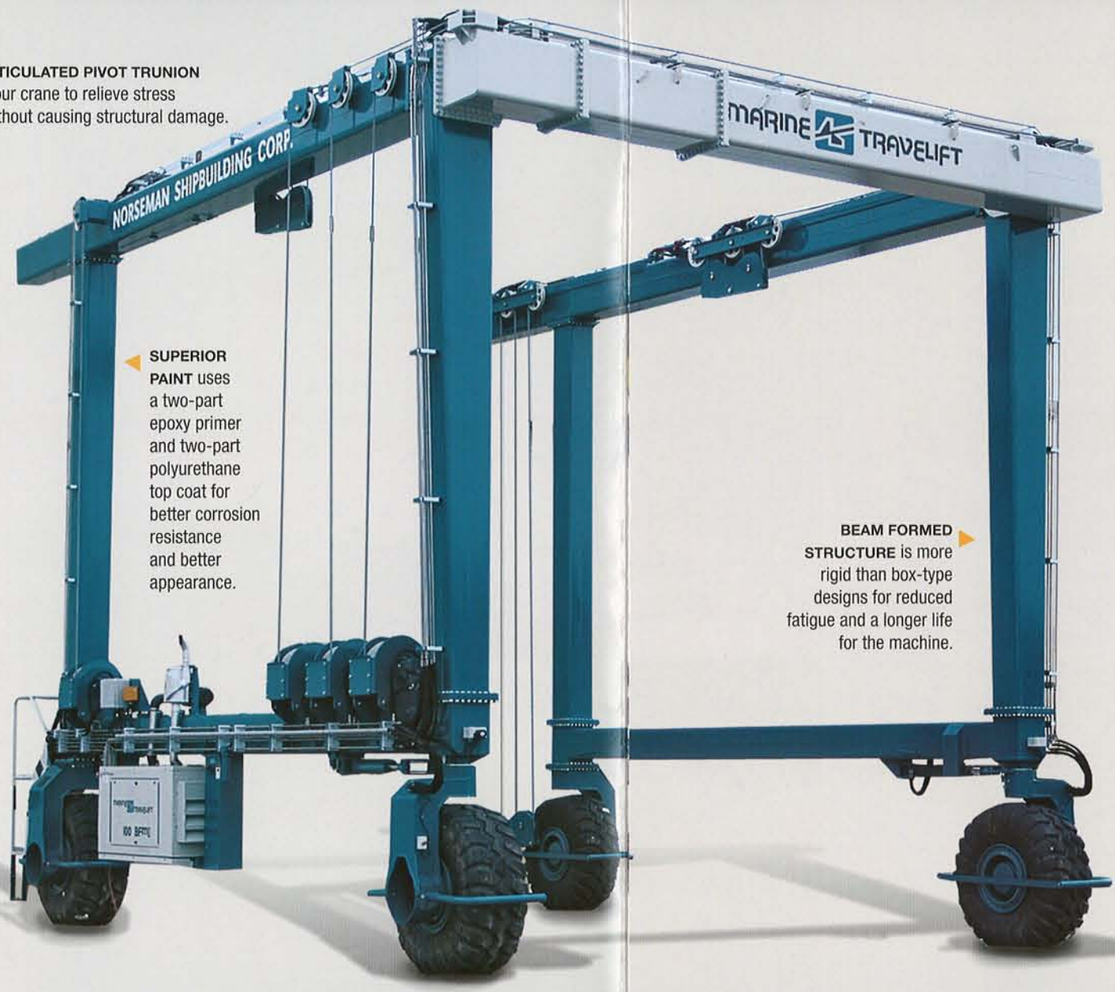
CORDURA COVERS protect hoses from damaging UV rays and abrasions for longer service life.

LEBUS GROOVES on the hoisting drums reduce wear on the wire rope by eliminating wire crossing.

MORE STEEL in every Marine Travelift means more weight per unit for more heavy-duty work year after year.

EASY ACCESS ENGINE compartment is made of fiberglass to eliminate corrosion and reduce noise. All routine maintenance points are easy to access.

ERGONOMIC OPERATOR CONTROLS reduce operator fatigue, allowing easier and more efficient operation of the hoist.



SUPERIOR PAINT uses a two-part epoxy primer and two-part polyurethane top coat for better corrosion resistance and better appearance.

BEAM FORMED STRUCTURE is more rigid than box-type designs for reduced fatigue and a longer life for the machine.

SLING ADJUST provides easy sling movement forward or aft on the vessel hull. No lubrication is required.

SEPARATE LIFTING PUMPS for each winch provide even lifting for both front and rear drum sets.

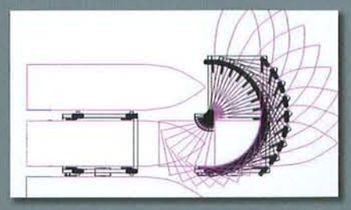
HOIST 2-BLOCK SYSTEM is designed so that 100% of the available travel height can be used. The operator has no worries and can hoist up until the very top without any chance of damage.

BOLTING FLANGE provides easy reconfiguration of the dimensions of the boat hoist to meet various hull requirements.

FLAT FACED O-RING seals prevent leaks and blow-outs in the hydraulic system.

316 STAINLESS STEEL TUBING with Cadmium coated bolts and Zinc covered pins mean our fasteners and tubing resist corrosion in a harsh marine environment.

OPTIONAL WIRELESS REMOTE CONTROL allows for total control of the boat hoist without touching the machine.



ACKERMAN STEERING PRINCIPAL provides a tighter turning radius which allows for more efficient maneuvering in your yard.

PATENTED 4-WHEEL STEERING is an option that offers even more flexibility and precision handling of boats in limited spaces.

BFM II MODEL SPECIFICATIONS

Boat Hoist Models	15 BFM	25 BFMII	35 BFMII	50 BFMII	75 BFMII	100 BFMII
Maximum capacity	33,000 lbs / 15,000 kg	55,000 lbs / 25, 000 kg	77,000 lbs / 35,000 kg	110,000 lbs / 50,000 kg	165,000 lbs / 75,000 kg	220,000 lbs / 100,000 kg
Inside clear height	16' / 4.88 m	18' / 5.49 m	18' / 5.49 m	20' / 6.10 m	22' / 6.71 m	28' / 8.53 m
Overall height	18' / 5.49 m	19'10" / 6.05 m	20' / 6.10 m	22'6" / 6.86 m	25' / 7.62 m	31'7" / 9.63 m
Inside clear width	15' / 4.57 m	17' / 5.18 m	17' / 5.18 m	20' / 6.10 m	21' / 6.40 m	26' / 7.92 m
Overall width	20' / 6.10 m	22' / 6.71 m	22'2" / 6.76 m	25'2" / 7.67 m	27' / 8.23 m	33'6" / 10.21 m
Wheelbase - Std.	14'6" / 4.42 m	16'6" / 5.03 m	18'6" / 5.64 m	21' / 6.40 m	22'6" / 6.86 m	30' / 9.14 m
Engine	Cummins diesel	Cummins diesel	Cummins diesel	Cummins diesel	John Deere diesel	John Deere diesel
Slings	(2) 8" x 23' Nylon / 0.2 m x 7.0 m	(2) 12" x 26' Nylon / 0.3 m x 7.9 m	(2) 12" x 26' Nylon / 0.3 m x 7.9 m	(2) 12" x 30' Nylon / 0.3 m x 9.1 m	(4) 12" x 34' Nylon / 0.3 m x 10.4 m	(6) 12" x 44' Nylon / 0.3 m x 13.4 m
Outside turning radius	2-WS 26' / 7.93 m	2-WS 26'7" / 8.10 m	2-WS 28'9" / 8.76 m	2-WS 33' / 10.06 m	2-WS 34' 4" / 10.47 m	2-WS 45'4" / 13.82 m
Shipping weight	14,000 lbs/6,350 kg	19,000 lbs / 8,620 kg	26,190 lbs / 11,880 kg	43,000 lbs / 19,500 kg	46,000 lbs / 20,870 kg	85,000 lbs / 38,560 kg

C-Series
MID-RANGE
150-500 TONS

Lift big yachts with greater confidence.

500C, Wavemaster Langkawi Yacht Center, Malaysia

ENGINEERING YOU CAN TRUST TO HANDLE THE JOB.

When the boats you need to move approach 150 to 500 tons, you need a mobile boat hoist that's been engineered to handle the load. That's where Marine Travelift's six-model C-Series takes charge. These heavy-duty haulers meet or exceed every standard that applies for the safest, most economical transportation of your customers' boats. And, with the Marine Travelift name, you can be sure that no shortcuts have been taken in their manufacture or assembly.

From its state-of-the-art facility in Sturgeon Bay, Wisconsin, Marine Travelift designers, engineers and craftsmen painstakingly develop systems, processes and quality-assurance standards that are unparalleled. They know that your profitability in the successful moving of large boats in and out of the water, without mishap or incident, is job one. That's why even the small details get big attention. After all, you're moving big yachts and big yachts deserve a hoist their owners can trust.

300C, Rybovich, Florida USA

400C, Promet Marine Services, Rhode Island USA

150C, Seaview East, Washington USA

500C, Burger Boats, Wisconsin USA

300C, Fairhaven, Rhode Island USA

C-Series
MID-RANGE
150-500 TONS

Features that make a difference to your bottom line.

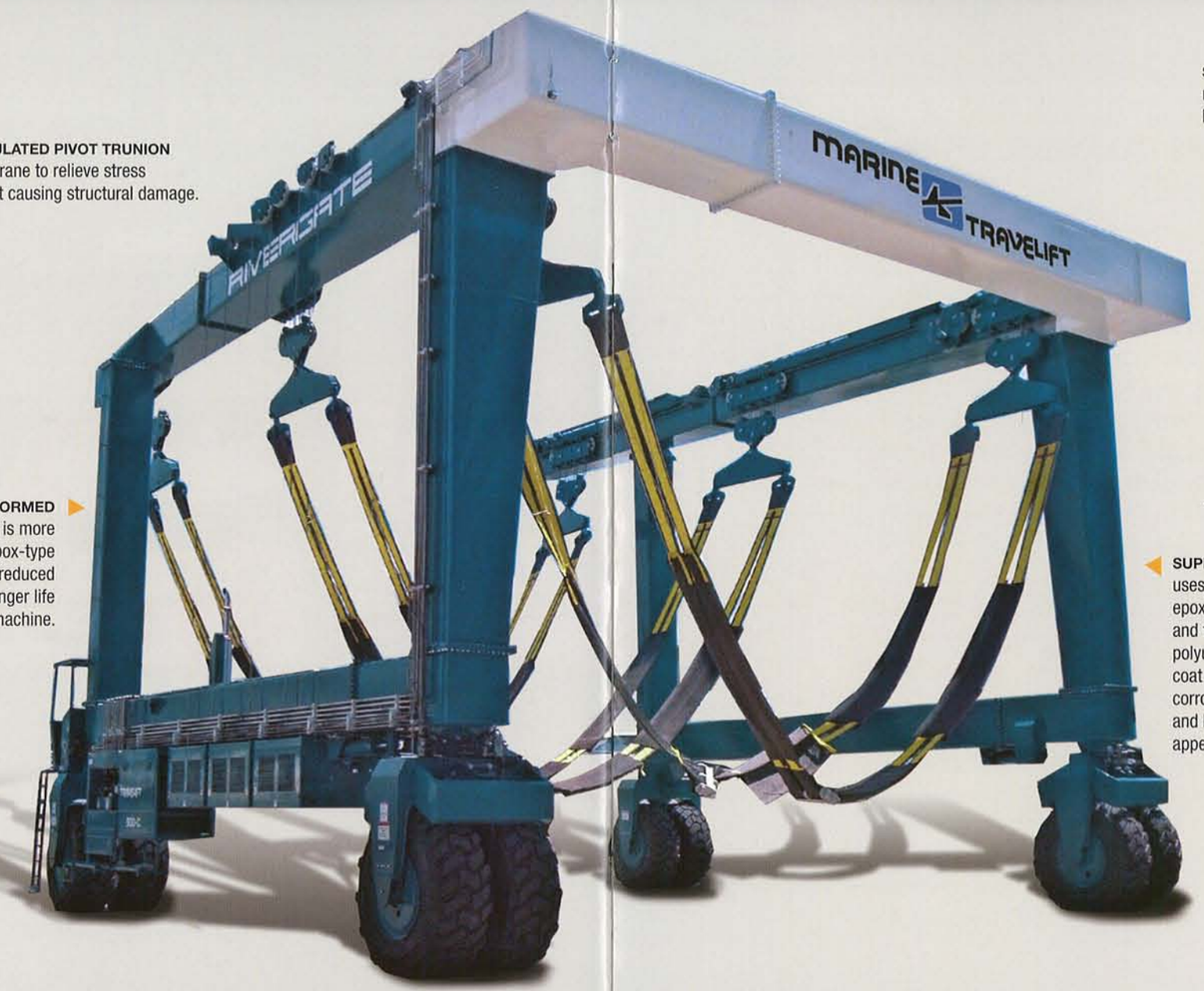
MARINE TRAVELIFT ARTICULATED PIVOT TRUNION allows for the frame of our crane to relieve stress under uneven terrain without causing structural damage.

MORE STEEL in every Marine Travelift means more weight per unit for more heavy-duty work year after year.

CORDURA COVERS protect hoses from damaging UV rays and abrasions for longer service life.

BEAM FORMED STRUCTURE is more rigid than box-type designs for reduced fatigue and a longer life for the machine.

CONSTANT HOIST EQUALIZATION is achieved by using a continuous reeving system to prevent hull damage due to sling overload.



SLING ADJUST provides easy sling movement forward or aft on the vessel hull. No lubrication is required.

SEPARATE LIFTING PUMPS for each winch provide even lifting for both front and rear drum sets.

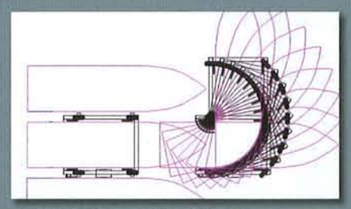
HOIST 2-BLOCK SYSTEM is designed so that 100% of the available travel height can be used. The operator has no worries and can hoist up until the very top without any chance of damage.

SUPERIOR PAINT uses a two-part epoxy primer and two-part polyurethane top coat for better corrosion resistance and better appearance.

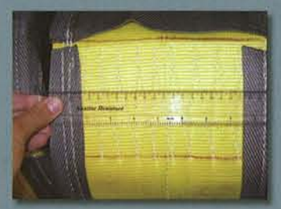
BOLTING FLANGE provides easy reconfiguration of the dimensions of the boat hoist to meet various hull requirements.

316 STAINLESS STEEL TUBING with Cadmium coated bolts and Zinc covered pins mean our fasteners and tubing resist corrosion in a harsh marine environment.

OPTIONAL WIRELESS REMOTE CONTROL allows for total control of the boat hoist without touching the machine.



ACKERMAN STEERING PRINCIPAL (Except 500C model) provides a tighter turning radius which allows for more efficient maneuvering in your yard.



4-PLY SLINGS provide maximum reliability and durability.

C-SERIES 150-500 TON MODEL SPECIFICATIONS

Boat Hoist Models	150CII	200CII	250C	300C	400C	500C
Maximum capacity	330,000 lbs / 150,000 kg	440,000 lbs / 200,000 kg	550,000 lbs / 250,000 kg	660,000 lbs / 300,000 kg	880,000 lbs / 400,000 kg	1,100,000 lbs / 500,000 kg
Inside clear height	30' / 9.14 m	32' / 9.75 m	32' / 9.75 m	34' / 10.36 m	37' / 11.27 m	40' / 12.19 m
Overall height	33' / 10.06 m	37' / 11.28 m	37'2" / 11.33 m	39' / 11.89 m	43' / 13.11 m	46'6" / 14.17 m
Inside clear width	28' / 8.53 m	30' / 9.14 m	30' / 9.14 m	32' / 9.75 m	35' / 10.67 m	38' / 11.58 m
Overall width	38'2" / 11.63 m	42'8" / 13.00 m	43' / 13.11 m	46' / 14.02 m	50'4" / 15.34 m	52' / 15.85 m
Wheelbase - Std.	32' / 9.75 m	36'6" / 11.13 m	41'6" / 12.65 m	41'6" / 12.65 m	48' / 14.63 m	60' / 18.29 m
Engine	John Deere diesel	John Deere diesel	John Deere diesel	John Deere diesel	John Deere diesel	John Deere diesel
Slings	(12) 12" x 44' Nylon / .3 m x 13.4 m	(8) 10" x 56' Nylon / .3 m x 17.1 m	(8) 10" x 56' Nylon / .3 m x 17.1 m	(12) 10" x 56' Nylon / .3 m x 17.1 m	(16) 10" x 56' Nylon / .3 m x 17.1 m	(24) 10" x 56' Nylon / .3 m x 17.1 m
Inside turning radius	0'0" / 0 m	0'0" / 0 m	0'0" / 0 m	0'0" / 0 m	0'0" / 0 m	4-WS 33' / 10.06 m
Outside turning radius	2-WS 52' / 15.85 m	2-WS 54'8" / 16.66 m	2-WS 58' 6" / 17.83 m	2-WS 64' / 19.51 m	2-WS 76' / 23.16 m	4-WS 93' / 28.35 m
Shipping weight	105,000 lbs / 47,630 kg	190,000 lbs / 86,180 kg	220,000 lbs / 99,790 kg	259,000 lbs / 117,480 kg	370,000 lbs / 167,830 kg	560,000 lbs / 249,480 kg

C-Series
MAX RANGE
600-1,000 TONS

Move the biggest loads with more precision.

800C, ASL Shipyard, Singapore

SUPERIOR BY DESIGN FOR HANDLING THE BIGGEST LIFTING CHALLENGES

This is a job where only the best and the biggest need apply. Moving boats from 600 to 1,000 tons, economically and without damage, is no job for lesser boat hoists. That's why the most progressive marine operations specify the Max-Duty mobile boat hoists from Marine Travelift. These four models, each uniquely engineered, handle everything from mega-yachts to large commercial vessels. With multiple wheels to evenly distribute the load, these heavy haulers are setting new productivity standards for the marine industry.

These giants are engineered to be more than scaled up versions of smaller units. They represent more than 50 years of experience in boat hoist design. Designs that began with a clear knowledge of the challenges of lifting and moving the heaviest of vessels with the same ease of operation as smaller machines, but with a margin of safety that far exceeds the standards of the day. In fact, no other brand is more trusted than Marine Travelift when it comes to more reliable and more efficient transportation of large vessels.

600C, Marine Group Boat Works, California USA

800C, ASL Shipyard, Singapore

600C, Marine Group Boat Works, California USA

500C, Burger Boats, Wisconsin USA

600C, Derecktor Shipyards, Connecticut USA

C-Series
MAX RANGE
600-1,000 TONS

Features that make a difference to your bottom line.

MARINE TRAVELIFT ARTICULATED PIVOT TRUNION allows for the frame of our crane to relieve stress under uneven terrain without causing structural damage.

CORDURA COVERS protect hoses from damaging UV rays and abrasions for longer service life.

SUPERIOR PAINT uses a two-part epoxy primer and two-part polyurethane top coat for better corrosion resistance and better appearance.

HOIST 2-BLOCK SYSTEM is designed so that 100% of the available travel height can be used. The operator has no worries and can hoist up until the very top without any chance of damage.

316 STAINLESS STEEL TUBING with Cadmium coated bolts and Zinc covered pins mean our fasteners and tubing resist corrosion in a harsh marine environment.

SEPARATE LIFTING PUMPS for each winch provide even lifting for both front and rear drum sets.

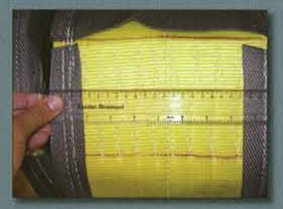
MORE STEEL in every Marine Travelift means more weight per unit for more heavy-duty work year after year.

BOLTING FLANGE provides easy reconfiguration of the dimensions of the boat hoist to meet various hull requirements.

CONSTANT HOIST EQUALIZATION is achieved by using a continuous reeving system to prevent hull damage due to sling overload.

SLING ADJUST provides easy sling movement forward or aft on the vessel hull. No lubrication is required.

WIRELESS REMOTE CONTROL allows for total control of the boat hoist without touching the machine.



4-PLY SLINGS provide maximum reliability and durability.

C-SERIES 600-1000 TON MODEL SPECIFICATIONS

Boat Hoist Models	600C	600C-IL8	700C	800C
Maximum capacity	1,320,000 lbs / 600,000 kg	1,320,000 lbs / 600,000 kg	1,540,000 lbs / 700,000 kg	1,760,000 lbs / 800,000 kg
Inside clear height	45' / 13.72 m	45' / 13.72 m	45' / 13.72 m	50' / 15.24 m
Overall height	53'4" / 16.26 m	53'4" / 16.26 m	53' 8" / 16.36 m	60'4" / 18.39 m
Inside clear width	38' / 11.58 m	38' / 11.58 m	38' / 11.58 m	48' / 14.63 m
Overall width	52' / 15.85 m	50'5" / 15.39 m	55' / 16.76 m	71' / 21.64 m
Wheelbase - Std.	64' / 19.51 m	64' / 19.51 m	64' / 19.51 m	68' / 20.73 m
Engine	John Deere diesel	John Deere diesel	John Deere diesel	John Deere diesel
Slings	(24) 10" x 56' Nylon / .3 m x 17.1 m	(24) 10" x 56' Nylon / .3 m x 17.1 m	(32) 10" x 56' Nylon / .3 m x 17.1 m	(32) 10" x 56' Nylon / .3 m x 17.1 m
Inside turning radius	4-WS 36'5" / 11.10 m	0'0" / 0 m	4-WS 36'5" / 11.10 m	4-WS 21'9" / 6.63 m
Outside turning radius	4-WS 97' / 29.56 m	97' / 29.56 m	4-WS 97' / 29.56 m	4-WS 98'9" / 30.10 m
Shipping weight	675,000 lbs / 306,180 kg	675,000 lbs / 306,180 kg	734,000 lbs / 332,940 kg	950,000 lbs / 430,910 kg

Our people make the difference.

For more than 50 years Marine Travelift has been recognized as the leader in mobile transport systems for the marine industry. What makes Marine Travelift different is the dedication and commitment of its people to provide each customer with a higher quality product and superior service. If this is your year for a new mobile transport system, strongly consider the difference the people of Marine Travelift can make.

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MARINE TRAVELIFT INC.

35 BFMII

MOBILE BOAT HOIST

35 Metric Ton Capacity

MARINE TRAVELIFT INC.

STANDARD SPECIFICATIONS

	US Measure	Metric
General Information		
Rated lifting capacity	77,000 lbs	35,000 kg
Shipping weight	26,190 lbs	11,880 kg
*Machine shipped disassembled.		
Inside clear height	18'0"	5.49 m
Inside clear width	17'0"	5.18 m
Engine		
Engine make/model	Cummins Diesel B3.3T - Tier 3	
Horsepower	80 HP @ 2200 RPM / 60 kW	
Cooling	Liquid	
Service Capacities		
Oil tank capacity	30 Gal	114 L
Fuel tank capacity	30 Gal	114 L
Hoist System		
Hoists	(4) Independent Hydraulic Controls	
Hoisting speed (std.)	14 ft/min	4.27 m/min
Hoisting speed (low/high) (optional)	14/31 ft/min	4.27/9.45 m/min
Wire rope		
Number of parts of lines	16	
Wire rope	1/2" (13 mm), 6 x 19 Class, Galvanized XIPS IWRC	
Depth below grade	5'0"	1.52 m
Depth below grade (optional)	20'0"	6.10 m
Slings		
Minimum sling spacing	7'0"	2.13 m
Maximum sling spacing	19'0"	5.79 m
Slings	(2) Nylon 2-ply, Quick disconnect pin	
Protection	Keel pads	
Sling dimension	12" x 26'	0.30 m x 7.92 m
Drive System		
Drive type	Hydrostatic, closed loop	
2-WD Travel speed (low/high)	86/200 ft/min	26.21/60.96 m/min
Gradeability		
2-WD Gradeability	6.5%	
4-WD Gradeability (optional)	10%	

*Increased gradeability reduces travel speeds.

**Gradeability shown for concrete or asphalt surfaces. For other surfaces, deduct as follows: Hard packed ground or gravel...2%; Loose gravel...2 to 7%; Mud...2 to 13%; Soft sand...4 to 13%.

Tires		
Tire type	(4) Recap 44.5 x 16.5	
Tire pressure	120 PSI	8.3 Bars
Steering type	2-WS at 90°	
2-WS outside turning radius	29'4"	8.94 m
Exterior Paint		
Color	Blue & Grey	
Primer	2-part Epoxy	
Paint	2-part Urethane	

Model 35 BFMII at Marin-Elektro A/S in Fredrikstad, Norway

(Machine may be shown with options)

STANDARD EQUIPMENT

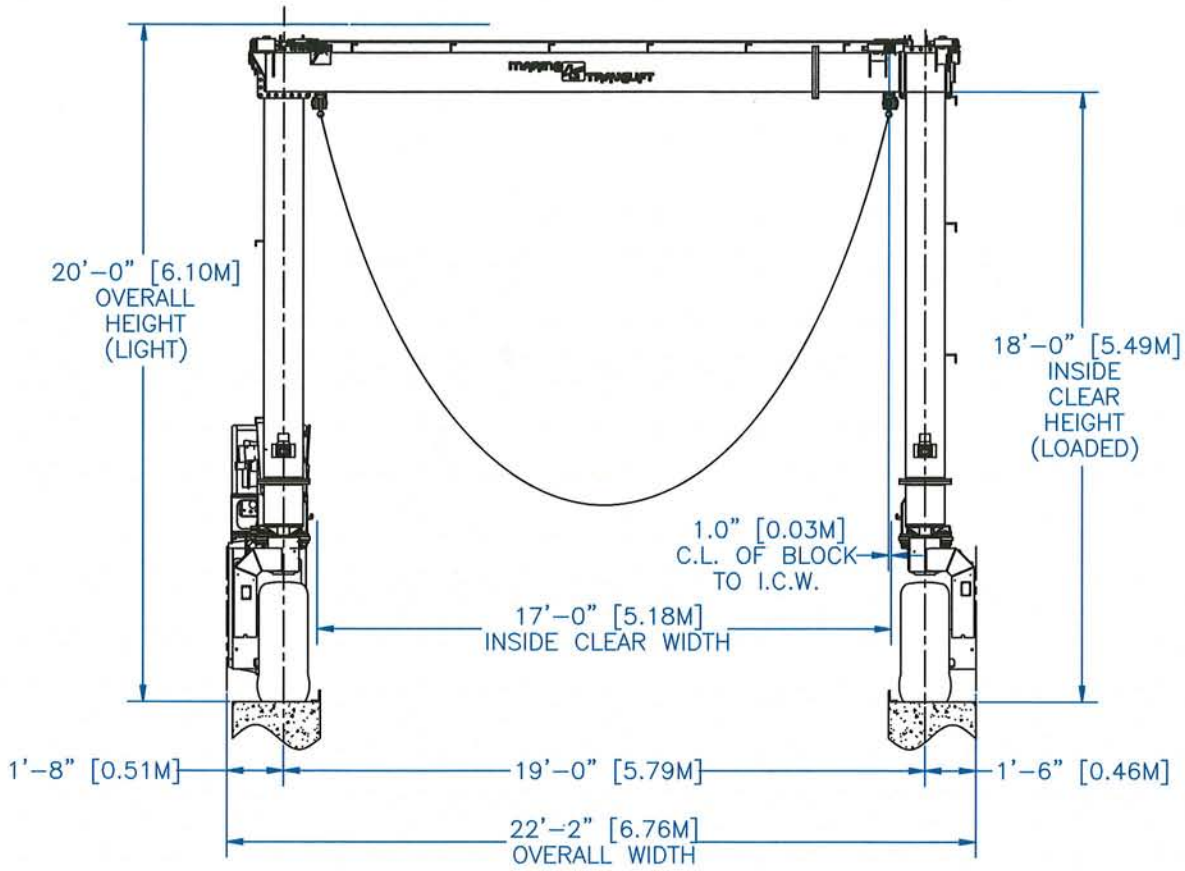
- Formed beam design (high strength, long life)
- Greaseless pivot trunnion
- Bolting flange in top beam
- No sheet metal
- O-ring face seal hydraulic fittings
- 316 Stainless steel hydraulic tubing
- Hydrostatic drive
- Inline hoist block sheaves (space efficient, no twisting)
- Powered sling adjustment
- Independent hoists (synchronized)
- Load indicators
- 2-Year warranty, 3-year warranty for structure

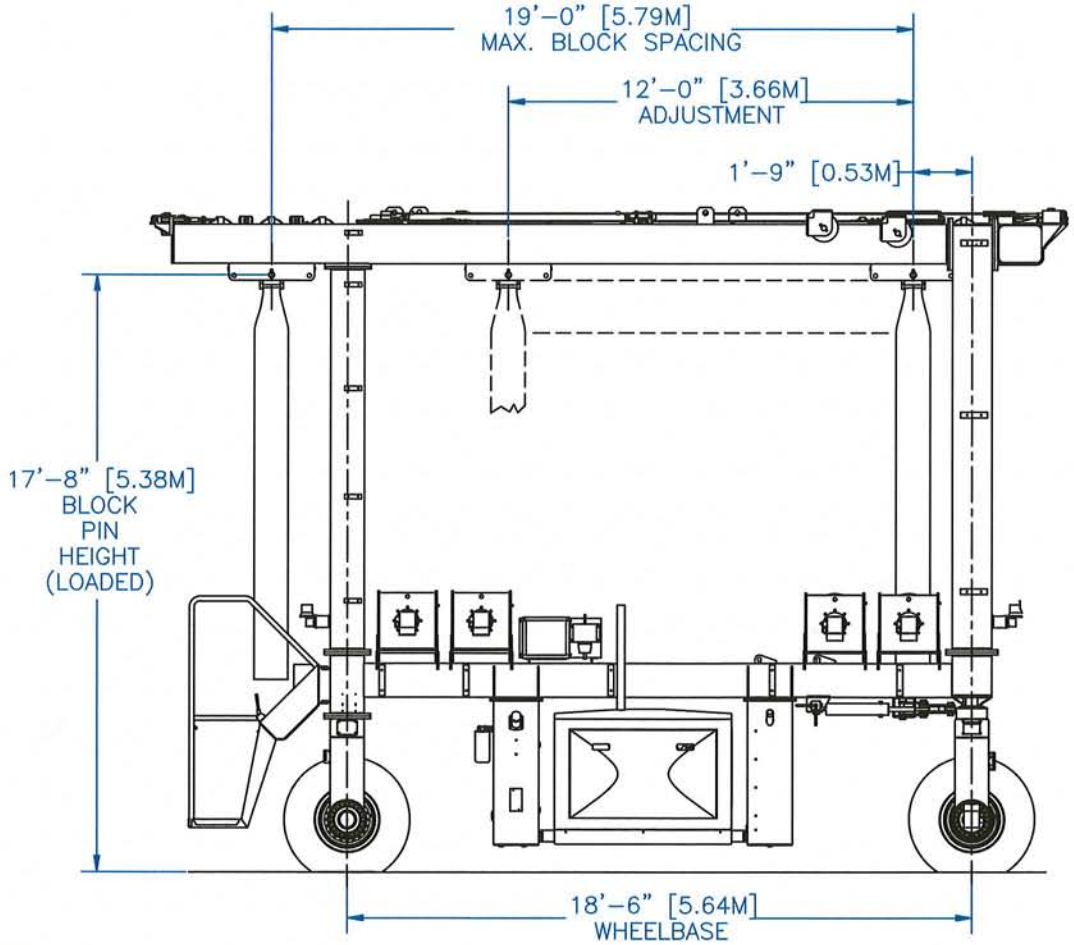
OPTIONS

- Changes in height and width
- Wireless remote control
- 2-Speed hoists
- Changes in block drop below pier level
- Jib crane 250
- All wheel electronic steering
- Spreader bars
- Enclosed cab w/heater, defroster, wiper
- Sound suppression kits
- Cold start kit

35 BFMII MOBILE BOAT HOIST

*Height & width changes can be modified to fit customer specifications.





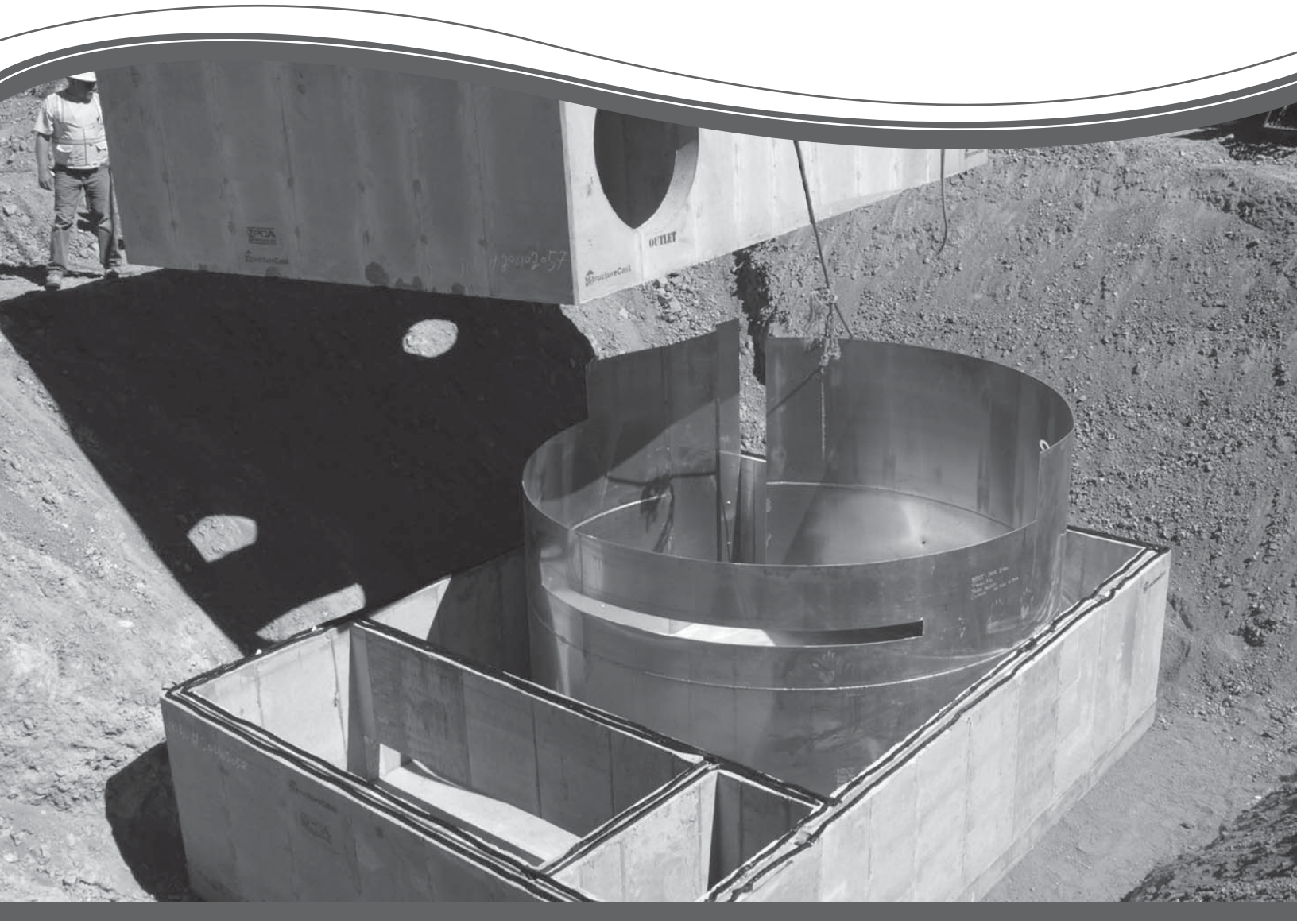
Marine Travelift, Inc. • 49 E. Yew St • Sturgeon Bay, WI 54235 USA • Phone: 920.743.6202 • Fax: 920.743.1522 • E-mail: sales@marinetravelift.com • www.marinetravelift.com
Marine Travelift International Ltd. • 12 Stratfield Park, Elettra Avenue • Waterlooville, Hampshire, PO7 7XN, England • Phone: 44 (0) 2392 230 811 • Fax: 44 (0) 2392 230 841

Appendix F

Pre-Wash Discharge Treatment Equipment

CONTECH®
STORMWATER SOLUTIONS™

Vortechs® Guide
Operation, Design, Performance and Maintenance



Vortechs®

Vortechs®

The Vortechs system is a high-performance hydrodynamic separator that effectively removes finer sediment (e.g. 50-microns (μm), oil, and floating and sinking debris. The swirl concentration operation and flow controls work together to minimize turbulence and provide stable storage of captured pollutants. Precast models can treat peak design flows up to 30-cfs (850-L/s); cast-in-place models handle even greater flows. A typical system is sized to provide a specific removal efficiency of a predefined particle size distribution (PSD).

Operation Overview

Stormwater enters the swirl chamber inducing a gentle swirling flow pattern and enhancing gravitational separation. Sinking pollutants stay in the swirl chamber while floatables are stopped at the baffle wall. Vortechs systems are usually sized to efficiently treat the frequently occurring runoff events and are primarily controlled by the low flow control orifice. This orifice effectively reduces inflow velocity and turbulence by inducing a slight backwater that is appropriate to the site.

During larger storms, the water level rises above the low flow control orifice and begins to flow through the high flow control. Any layer of floating pollutants is elevated above the invert of the Floatables Baffle Wall, preventing release. Swirling action increases in relation to the storm intensity, while sediment pile remains stable. When the storm drain is flowing at peak capacity, the water surface in the system approaches the top of the high flow control. The Vortechs system will be sized large enough so that previously captured pollutants are retained in the system, even during these infrequent events.

As a storm subsides, treated runoff decants out of the Vortechs system at a controlled rate, restoring the water level to a dry-weather level equal to the invert of the inlet pipe. The low water level facilitates easier inspection and cleaning, and significantly reduces maintenance costs by reducing pump-out volume.

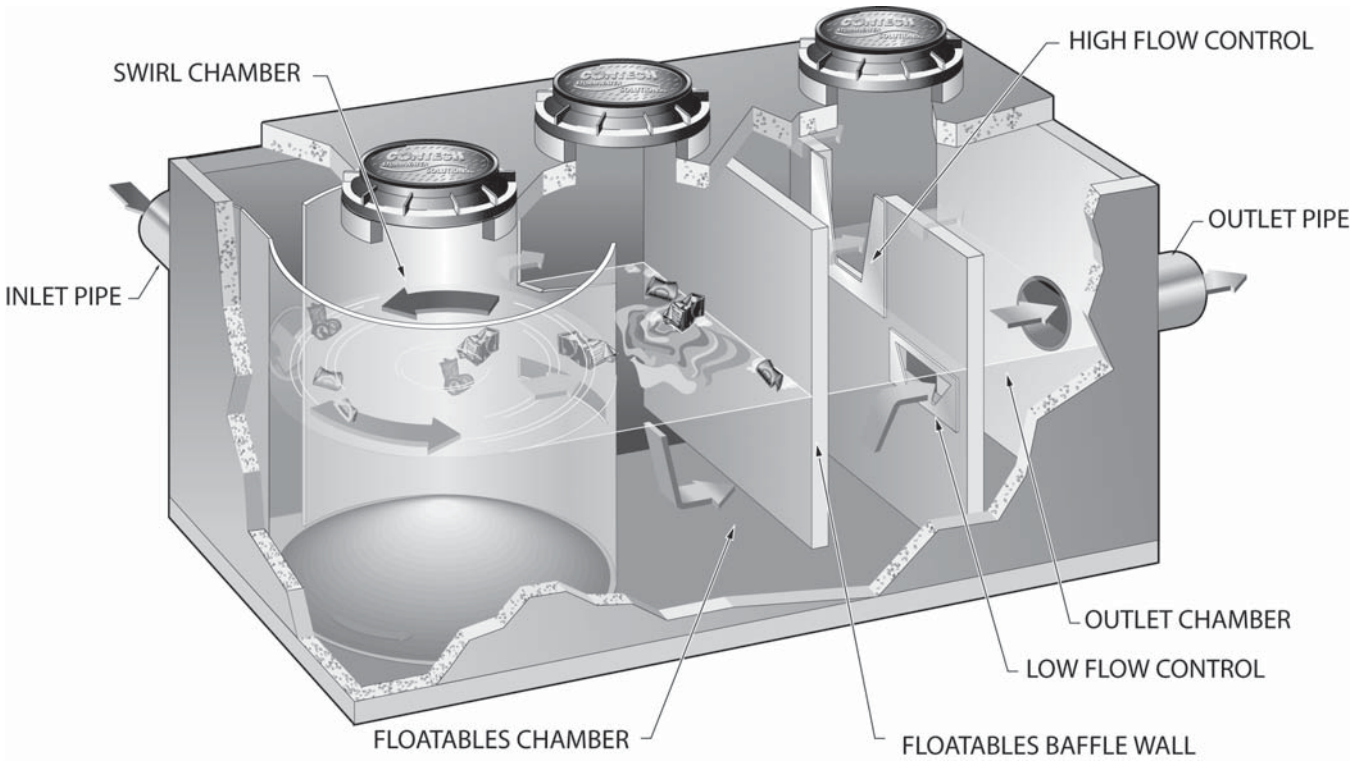
Design Basics

Each Vortechs system is custom designed based on site size, site runoff coefficient, regional precipitation intensity distribution, and anticipated pollutant characteristics. There are two primary methods of sizing a Vortechs system. The first is to determine which model size provides the desired removal efficiency at a given flow for a defined particle size or PSD. The second and more in depth method is the summation of Rational Rainfall Method™ which uses a summation process described below in detail and is used when a specific removal efficiency of the net annual sediment load is required.

Typically Vortechs systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for either 50-μm particles, or a particle gradation found in typical urban runoff (see performance section of this manual for more information).

The Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.



Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes or hourly and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed Vortechs system are determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Once a system size is established, the internal elements of the system are designed based on information provided by the site engineer. Flow control sizes and shapes, sump depth, oil spill storage capacity, sediment storage volume and inlet and outlet orientation are determined for each system. In addition, bypass weir calculations are made for off-line systems.

Flow Control Calculations

Low Flow Control

The low flow control, or orifice, is typically sized to submerge the inlet pipe when the Vortechs system is operating at 20% of its treatment capacity. The orifice is typically a Cippoletti shaped aperture defined by its flat crest and sides which incline outwardly at a slope of 1 horizontal to 4 vertical.

$$Q_{orfice} = C_d \bullet A \bullet \sqrt{2gh}$$

Where:

$Q_{orifice}$ = flow through orifice, cfs (L/s)

C_d = orifice coefficient of discharge = 0.56 (based on lab tests)

A = orifice flow area, ft^2 (m^2) (calculated by orifice geometry)

h = design head, ft (m) (equal to the inlet pipe diameter)

g = acceleration due to gravity (32.2-ft/s^2 (9.81-m/s^2)

The minimum orifice crest length is 3-in (76-mm) and the minimum orifice height is 4-in (102-mm). If flow must be restricted beyond what can be provided by this size aperture, a Fluidic-Amp™ HydroBrake flow control will be used. The HydroBrake allows the minimum flow constriction to remain at 3-in (76-mm) or greater while further reducing flow due to its unique throttling action.

High Flow Control

The high flow control, or weir, is sized to pass the peak system capacity minus the peak orifice flow when the water surface elevation is at the top of the weir. This flow control is also a Cippoletti type weir.

The weir flow control is sized by solving for the crest length and head in the following equation:

$$Q_{weir} = C_d \bullet L \bullet (h)^{3/2}$$

Where:

Q_{weir} = flow through weir, cfs (L/s)

C_d = Cippoletti weir coefficient = 3.37 (based on lab testing)

h = available head, ft (m) (height of weir)

L = design weir crest length, ft (m)

Bypass Calculations

In most all cases, pollutant removal goals can be met without treating peak flow rates and it is most feasible to use a smaller Vortechs system configured with an external bypass. In such cases, a bypass design is recommended by CONTECH Stormwater Solutions for each off-line system. To calculate the bypass capacity, first subtract the system's treatment capacity from the peak conveyance capacity of the collection system (minimum of 10-year recurrence interval). The result is the flow rate that must be bypassed to avoid surcharging the Vortechs system. Then use the following arrangement of the Francis formula to calculate the depth of flow over the bypass weir.

$$H = (Q_{bypass} / (C_d \bullet L))^{2/3}$$

Where:

H = depth of flow over bypass weir crest, ft (m)

Q_{bypass} = required bypass flow, cfs (L/s)

C_d = discharge coefficient = 3.3 for rectangular weir

L = length of bypass weir crest, ft

The bypass weir crest elevation is then calculated to be the elevation at the top of the Cippoletti weir minus the depth of flow.

Hydraulic Capacity

In the event that the peak design flow from the site is exceeded, it is important that the Vortechs system is not a constriction to runoff leaving the site. Therefore, each system is designed with enough hydraulic capacity to pass the 100-year flow rate. It is important to note that at operating rates above 100-gpm/ft^2 (68-Lps/m^2) of the swirl chamber area (peak treatment capacity), captured pollutants may be lost.

When the system is operating at peak hydraulic capacity, water will be flowing through the gap over the top of the flow control wall as well as the orifice and the weir.

Performance

Full Scale Laboratory Test Results

Laboratory testing was conducted on a full scale Vortechs model 2000. The 150-μm curve demonstrates the results of tests using particles that passed through a 60-mesh sieve and were retained on a 100-mesh sieve. The 50-μm curve is based on tests of particles passing through a 200-mesh sieve and retained on a 400-mesh sieve (38-μm). A gradation with an average particle size (d50) of 80-μm, containing particles ranging from 38–500-μm in diameter was used to represent typical stormwater solids. (Table 1)

Particle Size Distribution (μm)	Percentage of Sample Make-Up
<63	42%
63 - 75	4%
75 - 100	9%
100 - 150	7%
150 - 250	11%
>250	27%

Table 1: Particle gradation of typical urban runoff used for efficiency curve

As shown, the Vortechs system maintains positive total suspended solids (TSS), defined by the tested gradations, removal efficiencies over the full range of operating rates. This allows the system to effectively treat all runoff from large, infrequent design storms, as well as runoff from more frequent low-intensity storms.

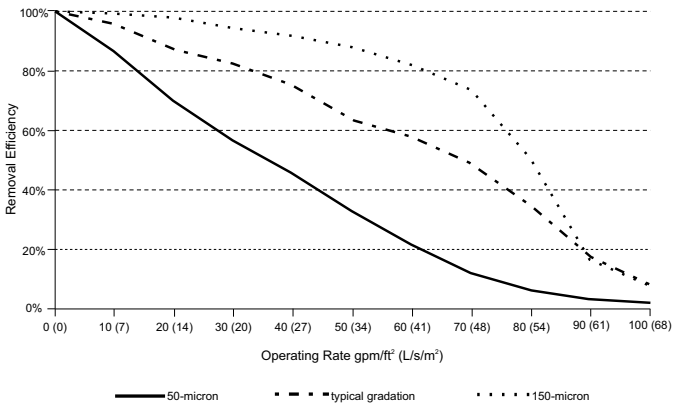


Figure 1: Vortechs model 2000 Removal Efficiencies

Typical Vortechs systems are designed to treat peak flows from 1.6-cfs (45-L/s) up to 30-cfs (850-L/s) online without the need for bypass. However, external bypasses can be configured to convey peak flows around the system if treatment capacity is exceeded. The system can also be configured to direct low flows from the last chamber of the system to polishing treatment when more stringent water quality standards are imposed. In all configurations, high removal efficiencies are achieved during the lower intensity storms, which constitute the majority of annual rainfall volume.

Full report available at www.contechstormwater.com.

Laboratory Testing

Full reports available at www.contechstormwater.com

Technical Bulletin 1: Removal Efficiencies for Selected Particle Gradations

Technical Bulletin 2: Particle Distribution of Sediments and the Effect on Heavy Metal Removal

Technical Bulletin 3: Sizing for Net Annual Sediment Removal

Technical Bulletin 3a: Determining Bypass Weir Elevation for Off-Line Systems

Technical Bulletin 4: Modeling Long Term Load Reduction: The Rational Rainfall Method

Technical Bulletin 5: Oil Removal Efficiency

Field Monitoring

Following are brief summaries of the field tests completed to date.

Full reports available at www.contechstormwater.com

DeLorme Mapping Company
Yarmouth, ME
CONTECH Stormwater Solutions

Prior to this premier field test of the Vortechs system, CONTECH developed an extensive body of laboratory data to document total suspended solids (TSS) removal efficiency. CONTECH performed this field study in order to compare the performance predicted using laboratory data to the performance of a correctly sized system in the field.

The study site was the headquarters of DeLorme Mapping in Yarmouth, Maine. The building, driveway, parking lot and ancillary facilities were constructed in 1996. A Vortechs model 11000 was installed to treat runoff from the 300-space, 4-acre (1.62-ha) parking lot.

Testing Period	May 1999 to Dec 1999
# of Storms Sampled	20
Mean Influent Concentration	328-mg/L
Mean Effluent Concentration	60-mg/L
Removal Efficiency	82%

The main purpose of the DeLorme study was to verify that the sizing methodology developed from our full-scale laboratory testing was valid and an accurate means of predicting field performance. The results of the study confirmed our sizing methodology.

Village Marine Drainage
Lake George, NY
New York State Department of Environmental Conservation, Division of Water

The New York State DEC used funds obtained in a Section 319 grant to initiate a study of the effectiveness of the Vortechs system to remove sediment and other pollutants transported

by stormwater to Lake George, Lake George Village, New York. "Since the 1970s, when there was a rapid increase in the rate and concentration of development along the southwestern shores of Lake George, we have been concerned about the impact of stormwater discharges into the lake," said Tracy West, co-author of the study.

Testing Period	Feb 2000 to Dec 2000
# of Storms Sampled	13
Mean Influent Concentration	801-mg/L
Mean Effluent Concentration	105-mg/L
Removal Efficiency	88%

The study concluded that the Village and Town of Lake George should consider installing additional Vortechs systems in areas where sedimentation and erosion have been identified as non-point source pollution problems.

Harding Township Rest Area
Harding Township, NJ
RTP Environmental Associates

This third party evaluation was performed under a U.S. Environmental Protection Agency grant, administered by the New Jersey Department of Environmental Protection. A. Roger Greenway, principal of RTP Environmental Associates, Inc., conducted the study in conjunction with Thonet Associates, which assisted with data analysis and helped develop best management practices (BMP) recommendations.

The Vortechs model 4000 was sized to handle a 100-year storm from the 3 acre (1.21 ha) paved parking area at the Harding Rest Stop, located off the northbound lane of I-287 in Harding Township, New Jersey.

Testing Period	May 1999 to Nov 2000
# of Storms Sampled	5
Mean Influent Concentration (TSS)	493-mg/L
Mean Effluent Concentration (TSS)	35-mg/L
Removal Efficiency (TSS)	93%
Mean Influent Concentration (TPH)	16-mg/L
Mean Effluent Concentration (TPH)	5-mg/L
Removal Efficienty (TPH)	67%

The study concluded that truck rest stops and similar parking areas would benefit from installing stormwater treatment systems to mitigate the water quality impacts associated with stormwater runoff from these sites.

Timothy Edwards Middle School
South Windsor, CT
UCONN Department of Civil & Environmental Engineering

This study of the Vortechs system was published as a thesis by Susan Mary Board, as part of the requirements for a Master of Science degree from the University of Connecticut. Her objective was to determine how well the Vortechs system retained pollutants from parking lot runoff, including total suspended solids (TSS), nutrients, metals, and petroleum hydrocarbons.

A Vortechs model 5000 was installed in 1998 to treat runoff from the 82-space parking lot of Timothy Edwards Middle School. The entire watershed was approximately 2 acres (0.81 ha), and was 80% impervious.

Testing Period	Jul 2000 to Apr 2001
# of Storms Sampled	weekly composite samples taken
Mean Influent Concentration	324-mg/L
Mean Effluent Concentration	73-mg/L
Removal Efficiency	77%

Additionally, the Vortechs system was particularly effective in removing zinc (85%), lead (46%), copper (56%), phosphorus (67%) and nitrate (54%).

The study concluded that the Vortechs system significantly reduced effluent concentrations of many pollutants in stormwater runoff.

Maintenance

The Vortechs system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit, e.g., unstable soils or heavy winter sanding will cause the swirl chamber to fill more quickly but regular sweeping will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant deposition and transport may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. Inspections should be performed twice per year (i.e. spring and fall) however more frequent inspections may be necessary in equipment washdown areas and in climates where winter sanding operations may lead to rapid accumulations. It is useful and often required as part of a permit to keep a record of each inspection. A simple inspection and maintenance log form for doing so is provided on the following page, and is also available on contechstormwater.com.

The Vortechs system should be cleaned when inspection reveals that the sediment depth has accumulated to within 12 to 18 inches (300 to 450 mm) of the dry-weather water surface elevation. This determination can be made by taking two measurements with a stadia rod or similar measuring device; one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.

Cleaning

Cleaning of the Vortechs system should be done during dry weather conditions when no flow is entering the system. Clean-out of the Vortechs system with a vacuum truck is generally the most effective and convenient method of excavating pollutants from the system. If such a truck is not available, a "clamshell" grab may be used, but it is difficult to remove all accumulated pollutants using a "clamshell".

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use adsorbent pads to solidify the oil since these pads are usually much easier to remove from the unit individually and less expensive to dispose of than the oil/water emulsion that may be created by vacuuming the oily layer. Floating trash can be netted out if you wish to separate it from the other pollutants.

Cleaning of a Vortechs system is typically done by inserting a vacuum hose into the swirl chamber and evacuating this chamber of water and pollutants. As water is evacuated, the water level outside of the swirl chamber will drop to a level roughly equal to the crest of the lower aperture of the swirl chamber. The water outside the swirl chamber should remain near this level throughout pumping as the bottom and sides of the swirl chamber are sealed to the tank floor and walls. This "water lock" feature prevents water from migrating into the swirl chamber, exposing the bottom of the baffle wall and creating excess pump-out volume. Floating pollutants will decant into the swirl chamber as the water level is drawn down. This allows most floating material to be withdrawn from the same access point above the swirl chamber. Floating material that does not decant into the swirl chamber during draw down should be skimmed from the baffle chamber. If maintenance is not performed as recommended, sediment may accumulate outside the swirl chamber. If this is the case, it may be necessary to pump out other chambers. It is advisable to check for sediment accumulation in all chambers during inspection and maintenance.

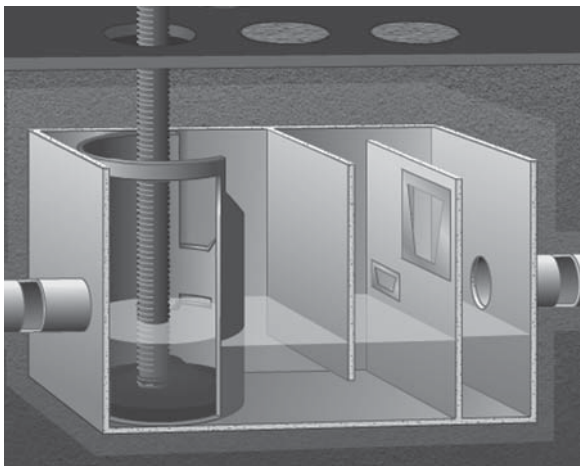
These maintenance recommendations apply to all Vortechs systems with the following exceptions:

1. It is strongly recommended that when cleaning systems larger than the Model 16000 the baffle chamber be drawn down to depth of three feet prior to beginning clean-out of the swirl chamber. Drawing down this chamber prior to the swirl chamber reduces adverse structural forces pushing upstream on the swirl chamber once that chamber is empty.
2. Entry into a Vortechs system is generally not required as cleaning can be done from the ground surface. However, if manned entry into a system is required the entire system should be evacuated of water prior to entry regardless of the system size.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure proper safety precautions. If anyone physically enters the unit, Confined Space Entry procedures need to be followed.

Disposal of all material removed from the Vortechs system should be done in accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

For assistance with maintaining your Vortechs system, contact us regarding the CONTECH Maintenance Compliance Certification Program.



Vortechs Inspection & Maintenance Log

Vortech Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than eighteen inches the system should be cleaned out. Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

RECYCLED PAPER

CONTECH® STORMWATER SOLUTIONS™

Support

800.925.5240
contechstormwater.com

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

CONTECH Construction Products Inc. provides site solutions for the civil engineering industry. CONTECH's portfolio includes bridges, drainage, sanitary sewer, stormwater and earth stabilization products. For information on other CONTECH division offerings, visit contech-cpi.com or call 800.338.1122

Nothing in this catalog should be construed as an expressed warranty or an implied warranty of merchantability or fitness for any particular purpose. See the CONTECH standard quotation or acknowledgement for applicable warranties and other terms and conditions of sale.

vx_manual 03/08 3M

Appendix G

Hot Water Treatment System Equipment

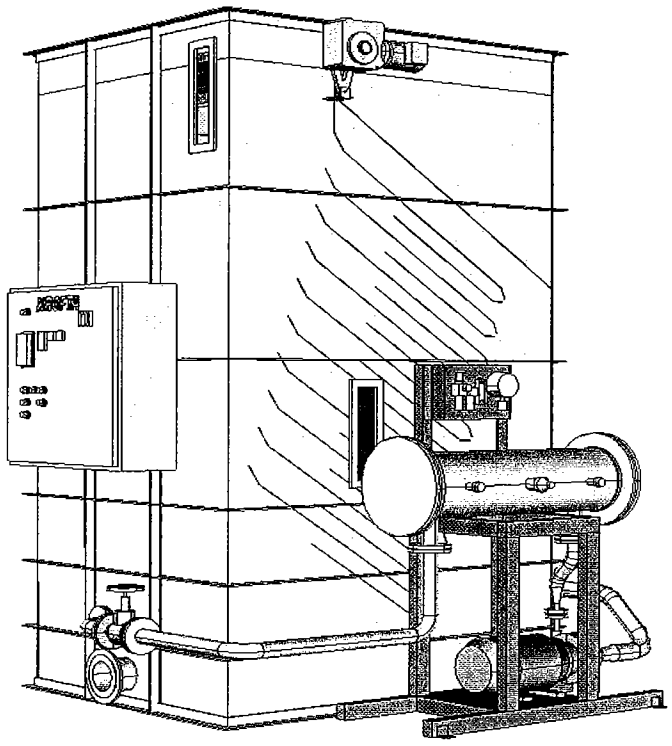
KROFTA SALES PROPOSAL # 2008-295

STS – FOX RIVER BOAT WASH PROJECT

WISCONSIN

Multifloat MFV-600 DAF

September 2, 2008



KROFTA MULTIFLOAT MFV DAF

Ecolab Krofta Technologies 401 South Street PO Box 7 Dalton, Massachusetts USA 01227
Phone: 413-236-5634 Fax: 413-236-6917 Email: Info@kroftatech.com

ECOLAB

Proprietary Notice

This proposal includes confidential information of Ecolab Krofta Technologies which is provided for the sole purpose of permitting the recipient to evaluate the proposal submitted herewith. In consideration of receipt of this document, the recipient agrees to maintain such information in confidence and not reproduce or otherwise disclose the information to any person outside the group directly responsible for evaluation of its contents, except that there is no obligation to maintain the confidentiality of any information that becomes publicly known through no fault of recipient. By receiving and accepting this proposal, recipient agrees to the stated terms.

Overview

Ecolab Krofta Technologies will provide the customer with a dissolved air flotation water treatment unit that is easy to install, operate and maintain. Specifically, our mission is to provide a system that offers the following advantages:

- **A comprehensive total solution** – our proposed system provides a reliable method for treating process wastewater, designed to minimize organic and suspended solids loadings in the plant effluent stream.
- **Ease of Installation** – we will provide the delivery of a bolted packaged dissolved air flotation (DAF) system in stainless steel. This unit is easily set in place minimizing installation costs. Once final mechanical and electrical tie-ins are completed, the system will be commissioned by our experienced staff and turned over to trained client personnel.
- **Ease of Operation** – the process selected was driven by our extensive treatment experience and with ease of operation and maintenance for the plant operator in mind. Our proposed system can be operated with minimal manpower, requires low electrical demand and is easy to maintain.
- **Environmental sustainability** – The Ecolab Krofta proprietary DAF treatment technology provides the following environmentally sustainable benefits:
  - Smaller footprint compared to other competing technologies
  - Low energy usage
  - Ease of installation and operation
  - Robust treatment process
  - Stainless steel equipment minimizes maintenance and up-keep

ECOLAB

EQUIPMENT SPECIFICATIONS KROFTA MFV-600:

Materials of Construction wetted	304 Stainless steel
Materials of Construction – ADT	304 Stainless steel
Scraper Drive	1.0 HP SEW-Eurodrive Motor & Gearbox
Design Hydraulic Capacity at 500 mg/L TSS	500 US GPM
Flotation Area	188 SF
Main Tank Pieces	1
Estimated Empty Weight	12,000 lbs.
Estimated Flooded Weight	34,800 lbs.

KROFTA QUOTED SCOPE OF SUPPLY #2008-295:

Item	Description	KTC
MFV-600	304 Stainless steel (see attached drawing)	X
Stairs / Platform	Mild steel ladder / fiberglass grating on platform	X
Scraper Drive	SEW-Eurodrive – 1.0 HP	X
Air Dissolving System	ADT-500 304L SS w/SS piping sized for 100 US GPM	X
Air Dissolving System Components	Air Regulator, Pressure Gauge, Rotometers, Check Valves, Site Tube, SS Panel	X
ADT Recycle Pump / Motor	One (1) 10 HP Goulds or equal	X
Power Requirements	480V/3Ph/60 Hz	X
Control Panel – standard local controls	NEMA 4 Enclosure, (1) Drive panel with AB scraper / purge timer, scraper VFD, recycle pump starter, HOA switches, Red Lion PCU	X
Auto-Level System	Valve/Actuator/Positioner/Transmitter	X
Auto-Purge System	Valve/Actuator/Solenoid (120V)	X
ADT Pressure Release Valve	(1) SS Flanged Globe Valve	X
O&M Manuals	3 Copies	X
Other:		

OPTIONAL EQUIPMENT AND SERVICES *NOT* SUPPLIED BY KROFTA #2008-295

Item	Description	
Control Panel – PLC	NEMA 4 Enclosure, (1) Allen Bradley VFD, - Allen Bradley Panel View & Processor	
Compressed Air Supply	Ingersoll-Rand or Equal 7.5 Hp for ADT & Control Valves	
Chemical Feed – Polymer	Liquid Make-Down Unit/Bracket	
Chemical Feed – Coagulant	Metering Pump/Mounting Bracket	
Control Panel Upgrade	NEMA 4X Enclosure for STD or PLC Panel	
Sludge Pump Upgrade	Progressive Cavity	
Chemical Feed – pH	Metering Pump, pH Probe and mix tank	
Flow Meter	MAG meter for flow measurement	
Sludge Transfer Pump	Air Diaphragm	
Sludge Holding Tank	External with level sensor – PVC	
Start up assistance	1 trip / 3 days total on site assistance	
Krofta Solids Detector	Sensor for automatic scoop control based on sludge depth	

Not Included in quotation - #2008-295:

Sludge Press	By Customer – If Necessary
Feed Pump	By Customer -If Necessary
Installation, Piping & Electrical	By Customer
Offloading, Storage & Shipping	FOB Dalton, Massachusetts USA
Duties, Taxes (GST), Fees	Customer

MECHANICAL GUARANTEE:

Krofta Technologies Corporation (KTC) will guarantee the mechanical components and fabricated parts of the equipment supplied by them for a period of **12 months** from the date of start-up provided that the following has occurred:

- The unit was operated as instructed by KTC
- The failure cannot be attributed to abuse or misuse
- The unit was maintained as instructed by KTC

DESIGN CONSIDERATIONS:

Application: River water boat wash		
Design Flow Rate (Avg/Max)	500 US GPM max	**Effluent Requirements**
Design TSS Load	TBD	TBD
Design BOD Load	----	----
Design FOG Load	TBD	TBD

PERFORMANCE GUARANTEE

KTC guarantees that the equipment supplied by them will be capable of achieving the performance criteria listed in the Design Considerations section above provided the following occurs:

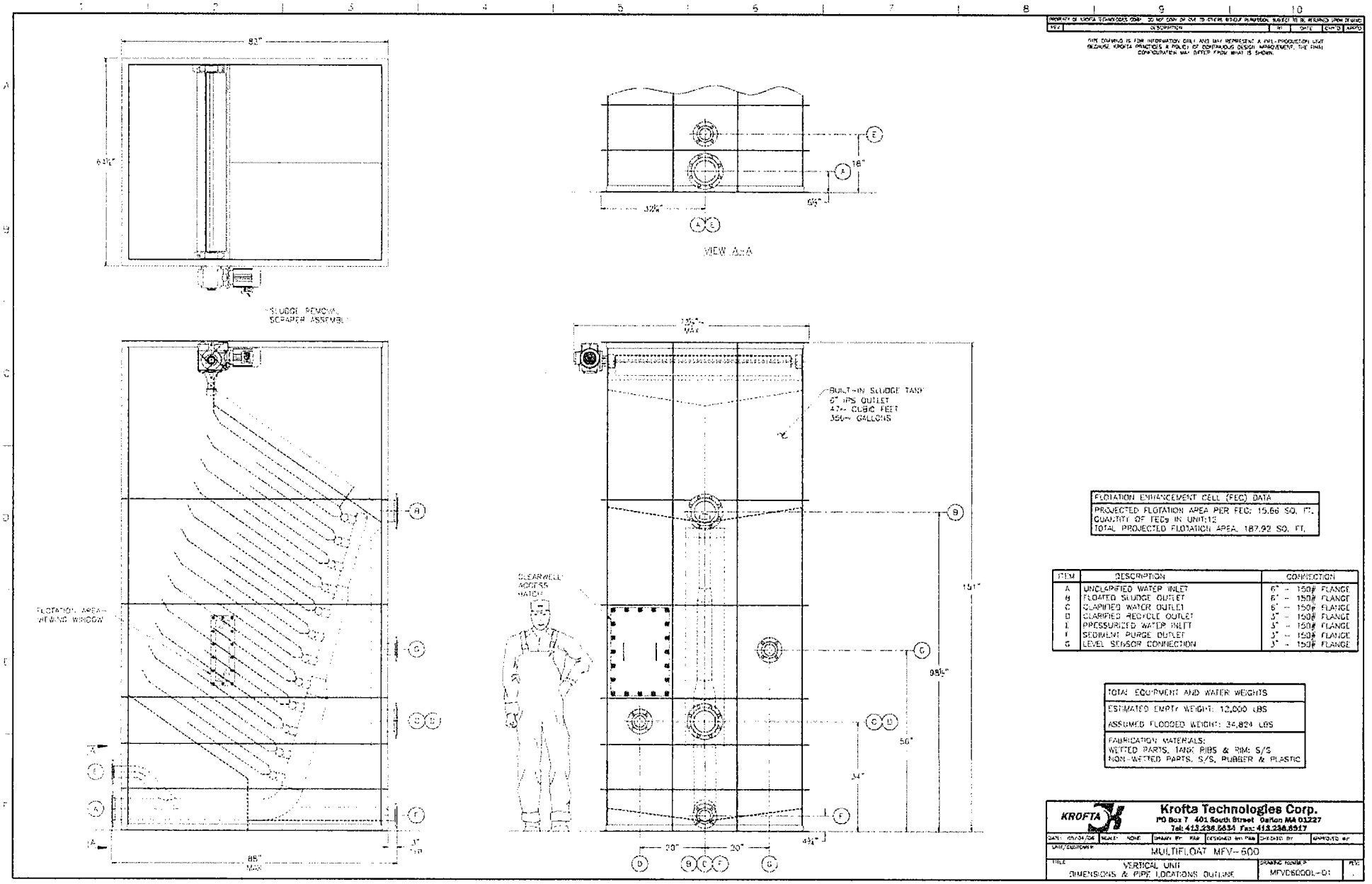
- The specified flow rates and loadings do not change from those specified (as noted in the "Design Considerations" section of this document)
- The correct amounts and types of flocculants, coagulants, and pH controls as directed by KTC are utilized to achieve the desired results (if necessary)
- The unit is kept in good clean operation order and regular maintenance procedures are carried out as recommended by KTC

PRICING, TERMS & DELIVERY:

One (1) Multifloat MFV-600 in 304 SS as described.....$178,700.00 USD

- **10% w/ Written Purchase Order**
- **35% w/ Submittal Package Acceptance**
- **45% when the Equipment is ready to ship**
- **10% with successful start-up, NTE60 days after delivery**

Normal delivery is 18-22 weeks after receipt of written order and down payment. Faster delivery may be available depending on shop schedule or for an additional charge. Applicable taxes, duties or fees by customer. Please refer to the Standard Krofta Terms & Conditions for additional details.
The price quoted above is valid for 60 days from 9/2/2008.



FLOTATION ENHANCEMENT CELL (FEC) DATA
PROJECTED FLOTATION AREA PER FEC: 15.66 SQ. FT.
QUANTITY OF FECs IN UNIT: 12
TOTAL PROJECTED FLOTATION AREA: 187.92 SQ. FT.

ITEM	DESCRIPTION	CONNECTION
A	UNCLARIFIED WATER INLET	6" – 150# FLANGE
B	FLOATED SLUDGE OUTLET	6" – 150# FLANGE
C	CLARIFIED WATER OUTLET	6" – 150# FLANGE
D	CLARIFIED RECYCLE OUTLET	3" – 150# FLANGE
E	PRESSURIZED WATER INLET	3" – 150# FLANGE
F	SEDIMENT PURGE OUTLET	3" – 150# FLANGE
G	LEVEL SENSOR CONNECTION	3" – 150# FLANGE

TOTAL EQUIPMENT AND WATER WEIGHTS
ESTIMATED EMPTY WEIGHT: 13,000 LBS
ASSUMED FLOODED WEIGHT: 34,824 LBS
FABRICATION MATERIALS: WETTED PARTS, TANK RIBS & RIM: S/S NON-WETTED PARTS: S/S, RUBBER & PLASTIC

KROFTA

Krofta Technologies Corp.
PO Box 7 401 South Street Dalton MA 01227
Tel: 413.236.5634 Fax: 413.236.6917

DATE: 05/24/06	SCALE: NONE	DRAWN BY: RAH	DESIGNED BY: RAH	CHECKED BY:	APPROVED BY:

UNIT/EQUIPMENT: MULTIFLOAT MFV-500

TITLE: VERTICAL UNIT DIMENSIONS & PIPE LOCATIONS OUTLINE

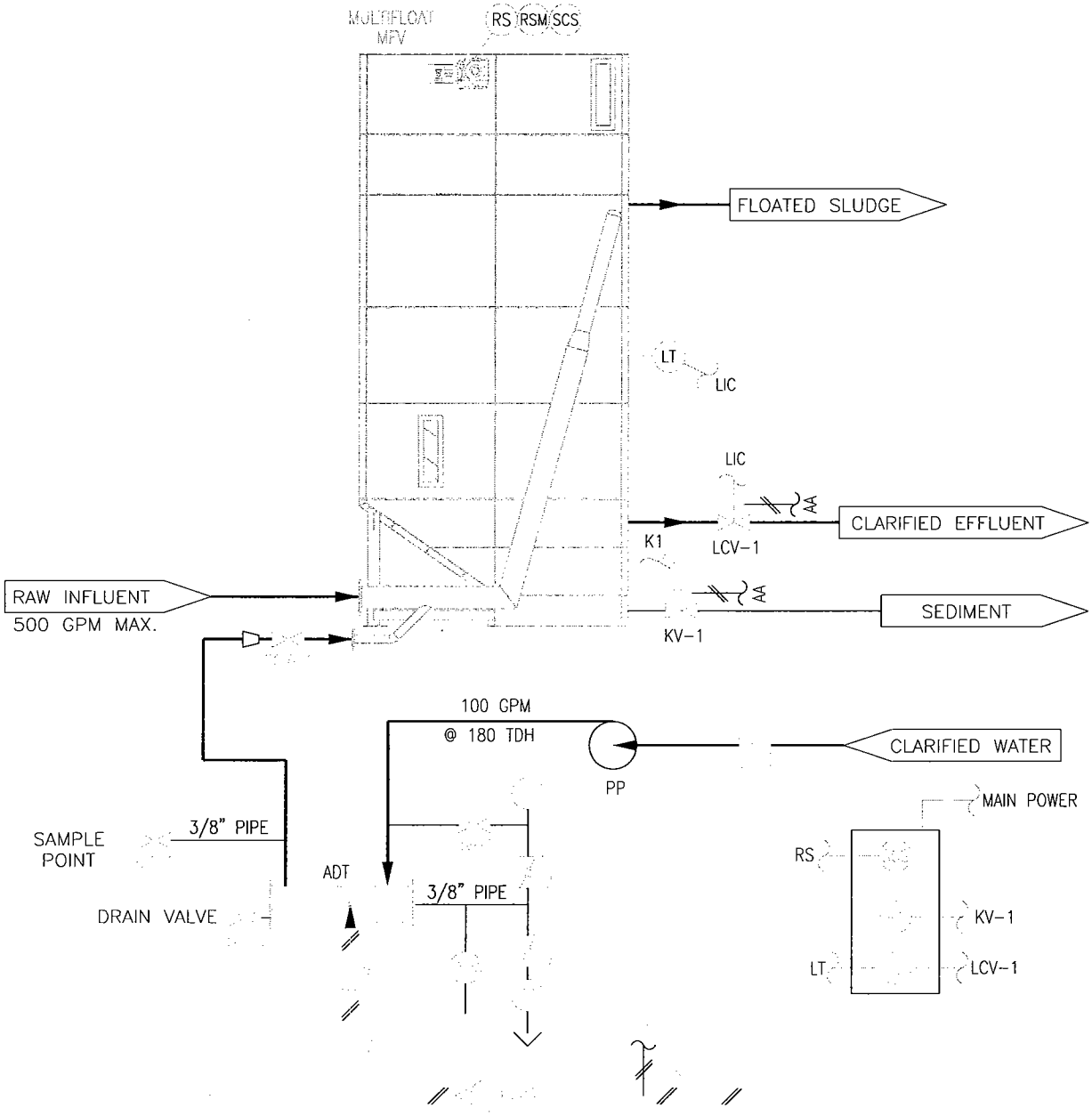
DRAWING NUMBER: MFVDSCOOL-01

REV: .

Ecolab Krofta Technologies 401 South Street PO Box 7 Dalton, Massachusetts USA 01227
Phone: 413-236-5634 Fax: 413-236-6917 Email: Info@kroftatech.com

FABRICATION TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMALS ±.005 FRACTIONS ±1/16" ANGLES ±½°

REV	DESCRIPTION	BY	DATE	CHK'D	APP'D



Krofta Technologies Corp.
PO Box 7 401 South Street Dalton MA 01227
Tel: 413.236.5634 Fax: 413.236.6917

DATE: 04/13/05	SCALE: NONE	DRAWN BY: PAW	DESIGNED BY: N/A	CHECKED BY: XXX	APPROVED BY: XXX

UNIT/CUSTOMER: MULTIFLOAT VERTICAL UNIT

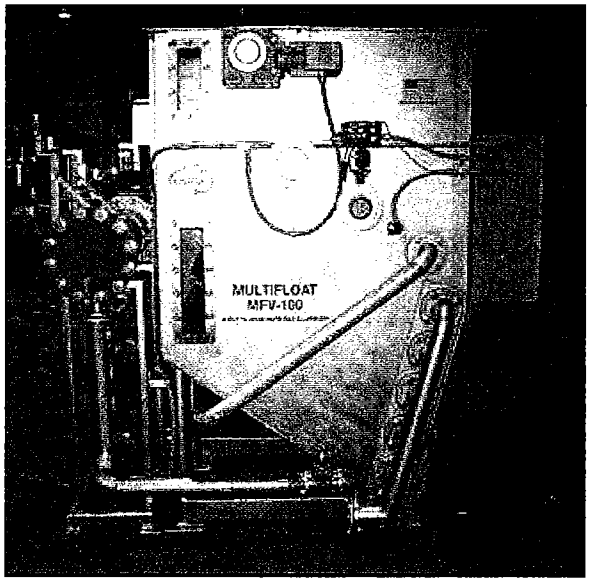
TITLE:	DRAWING NUMBER:	REV:
TYPICAL P&ID	KTC-0103	.

MULTIFLOAT (MF) DESCRIPTION

The Krofta Technologies Corporation MULTIFLOAT (MF) is a rectangular DAF unit (vertical or horizontal arrangement available) engineered to be installed on a wide variety of industrial or municipal applications. The design is of a modular configuration, which allows additional Flotation Enhancement Cells (FECs) to be added or subtracted from the flotation cell to accommodate different flow capacities. The all stainless steel rectangular units are offered in 50-3000 gpm capacity standard designs. However, should space be a critical factor, the MULTIFLOAT can be customized to fit any situation by changing the surface area of the FECs within the unit. This will allow the dimensions of the unit to vary in the X, Y, and Z-axis to fit any situation.

PROCESS DESCRIPTION

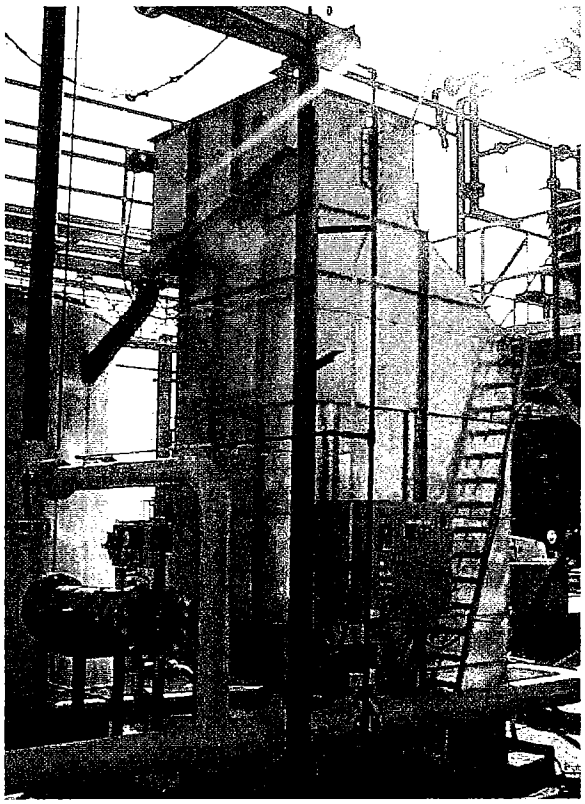
A mix of raw wastewater and aerated recycle flow are introduced at the bottom side of the unit. A header pipe is affixed to the outside of the unit that will distribute the flow to the individual FECs within the flotation tank. This arrangement also allows the unit to be customized so that the unit can be installed tight against a wall on either side of a room by swapping the influent / effluent piping to either side of the unit. FEC design allows for even distribution of the flow across the unit. Retention time within the unit will vary with the amount of raw water being processed but it is generally a minimum of 3-4 minutes. Flocculated particles attach to the aerated water and rise to the surface close to the plate inside the FEC. The plates assist in the rise rate by reducing the hydraulic head over the particle allowing it to rise at an increased rate. Clarified water is drawn back down between the FECs to a collection area below the bottom of the FECs. The clarified water flows up over a divider plate at the top of the tank, into a clearwell reservoir and is then discharged by gravity out of the unit. The Krofta automatic level control system maintains a constant level. A portion of the flow is captured and "recycled" back to the Air Dissolving Tube (ADT) through a separate connection below the effluent connection. Should flow be shut-off to the unit, this ensures the flow to the recycle pump will not stop and cause damage to the pump. Floated materials are collected at the top of the FECs and directed towards the sludge collection rake assembly. The rake pushes the floated material over a simple beach design and deposits the material into a small sludge collection trough that is discharged by gravity. Grit or other debris, which do not float, are collected in the v-bottom of the unit. Because of the small footprint of the unit, a scraping mechanism is not required. The bottom sediment sump is intermittently purged automatically. One or more (depending on the size of the unit) butterfly valves for the purge are controlled by a simple timer in the control panel or PLC.

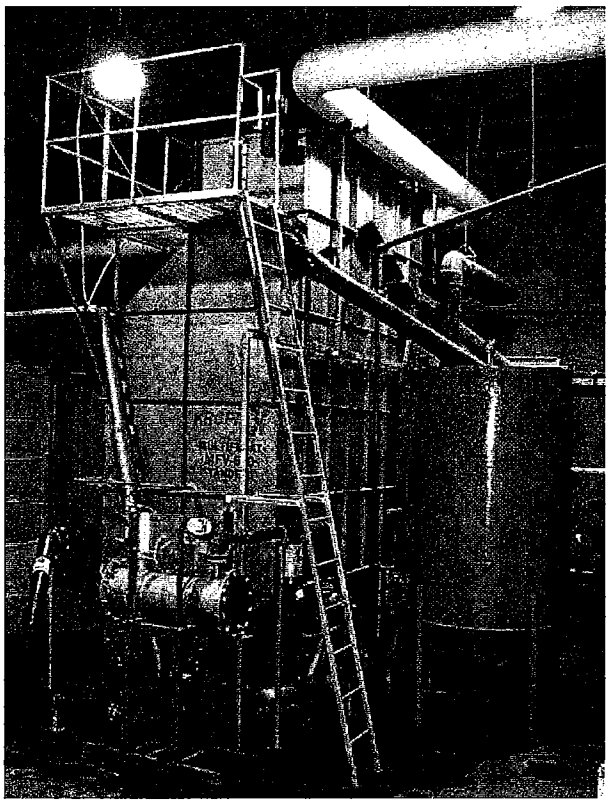


AIR DISSOLVING SYSTEM: A portion of the clarified water (typically 15% - 50% or more depending on the application) is recycled to feed the air dissolving system. The water is drawn from the clarified water source and pumped through a standard centrifugal pump at ~180 ft./hd. It then enters the ADT where it has an 8-12 second retention time. A globe valve located on the discharge line controls the flow. The pressurized flow is connected to the inlet header where it is mixed with raw water flow. The ADT has been used on thousands of Krofta style DAF units since the late 1970s. A specially designed influent nozzle will cause the flow from the recycle pump to enter the ADT in a spiraling pattern. Air is injected from a compressor across the surface of a panel located inside the ADT that disperses the air evenly throughout the tube. The air mixes with the recycle water stream and is dissolved into the stream. A "bleed-off" mechanism ensures that too much air is never introduced to the recycle stream, which could cause air binding in the tube, or coarse air / large air bubbles in the unit. Flow can be easily measured through the tube by measuring the pressure drop form the inlet nozzle to he center of the tube. Krofta provides the valves, gauges, rotometers, site tube, and safety relief valves for this system.

OTHER FEATURES:

- Flotation Viewing Windows - Two Plexi-glass viewing windows for flotation observation
- Skid Mount Packages Available - The MULTIFLOAT can be ordered with complete process piping, control panel packages, compressor, chemical feed equipment, or pumps mounted to a skid frame which can be quickly installed on a flat concrete pad
- The MULTIFLOAT is available for explosive environments
- Vertical (MFV) or horizontal (MFH) configurations available
- 304L or 316L stainless steel construction





ECOLAB

TERMS & CONDITIONS

1. GENERAL: Products and Services provided by KROFTA as specified in the Proposal are made solely under the conditions expressly set forth herein. Any proposed changes or exceptions to these conditions, or additional terms and conditions, included or referenced in Customer's order or acceptance of this offer, are hereby rejected by KROFTA, and shall be of no force or effect upon KROFTA unless expressly accepted in writing by KROFTA. This Contract shall bind and inure to the benefit of Customer and KROFTA, as well as their respective successors and assigns; however, Customer may not assign this Contract without the prior written consent of KROFTA. Neither party shall be deemed to have waived its rights by failing to enforce any particular provision of this Contract. If a court invalidates any portion of this Contract, the rest of this Contract shall remain valid and be construed as if not containing the invalidated provision. Massachusetts law shall govern the rights and obligations of the parties.

2. CREDIT APPROVAL: If at any time information available on Customer's financial condition or credit history, in KROFTA's sole judgment, does not justify the terms of payment specified in the Proposal, KROFTA may require full or partial payment in advance, or an acceptable form of payment guarantee such as a bank letter of credit, or other modifications to the terms of payment.

3. PROPRIETARY INFORMATION: All information, data, drawings, instruction and operation manuals furnished by KROFTA with this Contract are proprietary to KROFTA, submitted in strict confidence, and are to be used by Customer solely for the purposes of this Contract, and shall not be reproduced, transmitted, disclosed or used in any other manner without KROFTA's prior written authorization.

4. DELIVERY AND INSTALLATION OF PRODUCTS: All responsibility and costs relating to delivery and installation of Products will be incurred and paid as set forth in the Proposal.

5. EXCUSABLE INACTION AND/OR DELAY: KROFTA shall not be liable for failure to perform or for delay in performance due to fire, flood or any other act of God, strike or other labor difficulty, act of any civil or military authority or of Customer, riot, embargo, terrorism, delay in or shortage of transportation facilities, or any other delay beyond KROFTA's reasonable control. In the event KROFTA's performance is prohibited and/or delayed by any such cause, KROFTA's schedule for performance shall be excused or extended accordingly. If Customer's actions delay KROFTA's performance, Customer shall pay KROFTA any additional costs incurred by KROFTA resulting from such delay.

6. TAXES: The dollar amounts set forth in the Proposal do not include any Federal, State or local taxes of any kind applicable to the Products and Services covered under this Contract. Customer shall pay direct or reimburse KROFTA for any such taxes that KROFTA or KROFTA'S subcontractors or suppliers are required to pay.

7. WARRANTY DISCLAIMER: EXCEPT AS SPECIFICALLY SET FORTH IN THE PROPOSAL, KROFTA DOES NOT MAKE ANY REPRESENTATION, WARRANTY OR COVENANT EXPRESS OR IMPLIED, WITH RESPECT TO THE MERCHANTABILITY, CONDITION, QUALITY, DURABILITY, DESIGN, OPERATION, PERFORMANCE, FITNESS FOR USE OR SUITABILITY OF THE PRODUCTS.

8. WARRANTY LIMITATION: Any warranty or guarantee, if any, shall be null and void if: (i) changes in flow, load or composition of the material being treated occur, (ii) the Products are not installed, maintained and operated (including using the correct amounts and types of flocculants, coagulants and pH controls as directed by KROFTA) in accordance with KROFTA's written instructions, or (iii) Customer makes any replacements and/or alterations to the Product without KROFTA's prior written authorization. KROFTA shall not be liable for any damages or costs incurred by Customer as a result of any item listed in the prior sentence. Notwithstanding any language to the contrary contained in any document, (i) no warranty shall survive past 12 months from the date of delivery to customer of the product, and (ii) all performance / process guarantees shall terminate on the earlier to occur of successful completion of performance testing or 12 months from the date of delivery to Customer of the product. Customer shall give KROFTA prompt written notice of a breach of any warranty or guarantee, with specific details and access to relevant records and the product, necessary. If it is determined that KROFTA is responsible for such breach, KROFTA will make every reasonable effort to either repair or replace the defective Product piece at its option and expense. If it is determined that KROFTA is not responsible, customer agrees to reimburse KROFTA for costs incurred in investigating and substantiating such alleged breach.

9. LIMITATION OF LIABILITY: KROFTA SHALL NOT BE LIABLE TO CUSTOMER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM KROFTA'S OBLIGATIONS UNDER THIS CONTRACT, WHETHER SUCH DAMAGES ARE BASED UPON BREACH OF CONTRACT, BREACH OF WARRANTY, TORT, STRICT LIABILITY OR OTHERWISE. IN ANY EVENT, NOTWITHSTANDING ANY LANGUAGE TO THE CONTRARY CONTAINED IN ANY DOCUMENT, KROFTA'S LIABILITY WHATSOEVER TO CUSTOMER (INCLUDING ALL COSTS INCURRED IN ATTEMPTING TO CORRECT ALL BREACHES) SHALL NOT EXCEED IN THE AGGREGATE THE AMOUNT TO BE PAID BY CUSTOMER FOR THE PRODUCT AND SERVICES AS SET FORTH IN THE PROPOSAL, OR IF SUCH BREACH IS ATTRIBUTABLE TO SPECIFIC PARTS OF THE PRODUCT OR SERVICES, THE VALUE OF THE SPECIFIC PRODUCT OR SERVICE THAT IS THE CAUSE OF SUCH BREACH.

10. CANCELLATION BY CUSTOMER: If Customer cancels this Contract before delivery of the Product or refuses to accept delivery of the Product, Customer shall be liable to KROFTA for reasonable cancellation charges, including loss of anticipated profits, administrative costs, commissions to sales representatives, costs incurred by KROFTA for all work performed or in process up to the time of cancellation or refusal to accept delivery, cancellation charges from KROFTA's suppliers or subcontractors, and any other expenses incurred by KROFTA in connection with Customer's cancellation or refusal to accept delivery.

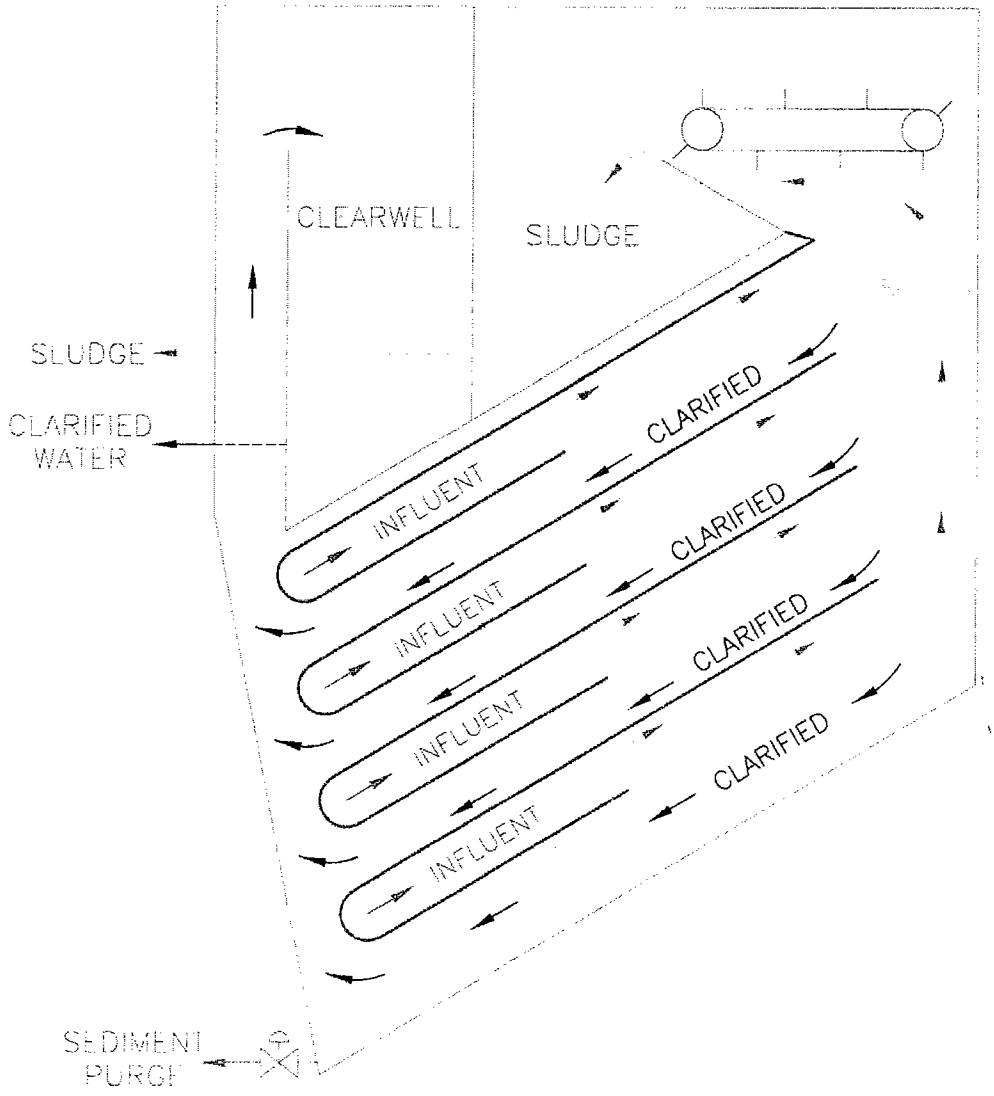
11. DEFAULT BY CUSTOMER: Without incurring any liability or waiving any claim for damages KROFTA may have against Customer, or the ability to exercise any other right, remedy or privilege in law or equity that KROFTA may have, KROFTA may refuse to make or delay making delivery, withhold any service and/or immediately reclaim possession of the Product if (a) Customer threatens to breach and/or breaches the terms contained in the Proposal, this Contract or any contract with KROFTA; (b) KROFTA becomes aware of facts which, in its judgment, render Customer's financial condition unsatisfactory or cast doubt on Customer's willingness or ability to pay for the Product and/or Services; or (c) Customer engages in or consents to liquidation, commission of any act of insolvency, appointment of a receiver of assets or assignment for the benefit of creditors, or if Customer becomes the subject of any bankruptcy or insolvency proceeding. Customer will remain liable for all covenants and indemnities under the Proposal and this Contract and for all legal fees and other costs and expenses, including court costs, incurred by KROFTA with respect to the enforcement of any of the remedies listed above or any other remedies available to KROFTA. If Customer is late in paying the amounts set forth in the Proposal or any partial payment due under this Contract, or otherwise breaches this Contract, KROFTA shall be entitled to interest at the rate of 1.5% per month on the overdue amount, and on its damages, calculated from the date of default in payment or other breach, plus court costs, reasonable attorneys' fees and other expenses incurred in any effort to collect.

12. ENTIRE AGREEMENT: The Proposal and this Contract, and other documents or instruments executed by KROFTA and Customer in connection herewith, shall constitute the entire agreement between the parties with respect to the Product and Services, and these documents shall not be modified, amended, altered or changed except with the written consent of both parties.

FABRICATION TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMALS ±.005 FRACTIONS ±1/16" ANGLES ±1/2°

REV	DESCRIPTION	BY	DATE	CHK'D	APP'D

THIS DRAWING IS FOR INFORMATION ONLY AND MAY REPRESENT A PRE-PRODUCTION UNIT. BECAUSE KROFTA PRACTICES A POLICY OF CONTINUOUS DESIGN IMPROVEMENT, THE FINAL CONFIGURATION MAY DIFFER FROM WHAT IS SHOWN.



KROFTA

Krofta Technologies Corp.
PO Box 7 401 South Street Dalton MA 01227
Tel: 413.236.5634 Fax: 413.236.6917

DATE: 03/20/07	SCALE: NONE	DRAWN BY: PAW	REVISED BY: EMF	CHECKED BY:	APPROVED BY:

UNIT/CUSTOMER: MULTIFLOAT

TITLE:	DRAWING NUMBER:	REV:
BASIC FLOW DIAGRAM	MTF-FLOW	A

DRAFT

Appendix H

Environmental Permitting Information

Waterway & Wetland Permit Process

Placement of structures, dredging and similar activities in or adjacent to navigable waters are regulated under chapter 30 of Wisconsin Statutes, and often require permits from the Department of Natural Resources. This page explains the procedures for:

- **Exemptions**
- **General Permits**
- **Individual Permits**

Exemptions

Chapter 30, Wis. Stats. provides permit exemptions for a small group of activities in navigable waters. Exemptions are not allowed in "Areas of Special Natural Resource Interest" (ASNRI). To determine if your project qualifies for an exemption, follow the steps below:

Step 1

Determine if your activity is one where a statutory exemption is available.

The list of statutory exemptions (with attached checklists) is:

- Boat Shelters, Boat Lifts and Boat Hoists [PDF, 79KB]
- Biological Shore Erosion Control [PDF, 82KB]
- Culvert Replacement (Previously Permitted) [PDF, 73KB]
- Culvert Replacement (Up to 24" in Diameter) [PDF, 29KB]
- Dry Fire Hydrant [PDF, 81KB]
- Fish Habitat Structures
  - Fish Crib [PDF, 78KB]
  - Spawning Reef [PDF, 82KB]
  - Wing Deflector [PDF, 78KB]
  - Tree Drop [PDF, 75KB]
  - Half-Log Structure [PDF, 76KB]
- Intake or Outfall Structure [PDF, 83KB]
- Manual Dredging [PDF, 72KB]
- Pier or Wharf [PDF, 80KB]
- Pilings [PDF, 76KB]
- Riprap Repair [PDF, 84KB]

- Fords
- Grading
- Intake/Outfall Structure
- Irrigation
- Lake Levels
- Misc. Structures
- Nonmetallic Mining
- Pea Gravel Blanket
- Piers, Docks, Wharves
- Pilings
- Ponds
- Shoreline Erosion Control-Lakes
- Streambank Erosion Control
- Stream Realignment
- Swimming Rafts
- Utility Waterway Crossing
- Water Ski Platforms
- Wetlands

- Riprap Replacement [PDF, 85KB]
- Swim Rafts [PDF, 51KB]
- Wildlife Habitat Structure [PDF, 70KB]

Step 2

Determine if your waterway has a special designation that might affect the permit requirements.

By law, exemptions are not allowed in "areas of special natural resource interest" (ASNRI). These areas include state natural areas, trout streams, outstanding or exceptional resource waters, and other waters designated by the department as having significant scientific value. Certain exemptions are also not allowed in locations of "public rights features" (PRF). To determine if your project site is an ASNRI or PRF, visit the search page below, enter the information about your waterway, and record any designations that it may have:

- Designated Waters Search

You may also visit a DNR office to look at a list of Designated Waters. If your project site is an ASNRI, your project is not exempt. Click on an activity in the list to your left to find more information about permit requirements.

Step 3

Design your project to meet standards to qualify for the exemption.

If your project is not in an ASNRI, you can be exempt if your project meets specific standards in Department rules. Click on the specific activity listed in Step 1 for a checklist of exemption requirements.

Step 4

If you are uncertain, ask DNR for an Exemption Determination.

If you would like assistance from the DNR to determine if an activity is eligible for an exemption, download and print the Exemption Determination Request [PDF 64KB], or obtain the form at your local DNR Service Center. Fill in all of the requested information, sign the form, and submit it by mail or FAX to the address on the form. You will receive a response within 15 days of our receipt of your request (provided the owner of the project site has signed the form). If your project is not exempt, click on an activity in the list to your left to find more information about permit requirements

General Permits

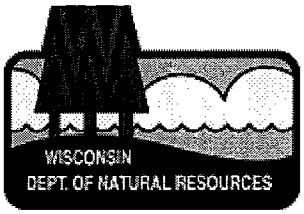
General Permits are granted for projects that meet all of the design, construction and location specifications set by administrative rule. To qualify for a general permit, all required application items need to be submitted elements (see form

and checklists for specific activities in list to the left of your screen). DNR reviews general permit applications within 30 days and notifies an applicant if any required items are missing. Once all required items have been submitted, DNR check to see that the plans and location match the general permit specifications in the rule, and if so grants the permit in 30 days. In special circumstances where the review shows that the general permit conditions are not sufficient to protect habitat, water quality, natural scenic beauty or navigation, DNR may inform an applicant that an individual permit is needed to allow detailed review.

Individual Permits

For activities in a category or location, or where a design is chosen, where no exemption or general permit is available, an individual permit is required. Individual permit application forms and checklists are available by clicking on the activity in the list at the left of your screen. Because these projects are not pre-approved designs, a more detailed application is required. DNR reviews local fishery, wildlife and water quality data and visits the site to observe navigation patterns, habitat and similar features of the site. Individual permits require a 30-day comment period of which people are notified by a newspaper notice and mailing to interested parties. During the comment period, an informational hearing may be requested. DNR staff conducts the informational hearing to gather observations and facts from others to consider in addition to its own data in making to decision. A permit is granted for projects when the DNR concludes from this process that habitat, navigation, natural beauty and similar public rights are not harmed. DNR staff routinely advise applicants on project modifications to reduce impacts and gain approval. In 2003, DNR granted permits for 92% of all applications. Permit decisions are subject to appeal for review by an administrative law judge within 30-days of the decision.

Last Revised: Monday February 04 2008



State of Wisconsin
Department of Natural Resources

APPLICATION FOR PIERS
Form 3500-53H (R 1/2002)

Thank you for contacting the Wisconsin Department of Natural Resources.
Enclosed are the project application materials you have requested.

The Wisconsin Department of Natural Resources helps protect your rights in public waters as well as public safety, by ensuring adequate planning and design of projects affecting fish and wildlife habitat, water quality and natural scenic beauty. This is done through permit and plan approval requirements for individual water projects. Chapters 30 and 31 of the Wisconsin Statutes require written permits for certain activities on or near a waterway: for example, to place any material below the ordinary high water mark (such as rock riprap, fish cribs, culverts, fords, etc.); to construct a bridge, dredge material from a lake or stream; create a pond; or to construct, operate, or maintain a dam. A single pier or wharf can generally be placed without a permit, provided state standards are met; more extensive piers or marinas require a permit.

Before submitting this application for a pier permit, please contact your county, city or village zoning department to find out if your project site is in either a mapped wetland or floodplain and if local zoning restrictions could affect your project. Please see the Wetland Information topic (found in the Waterway and Wetland Permits Web Page) or request Wetland Packet #20 in addition to this packet for details.

A complete application with detailed drawings will help us make a decision about your application for a permit. The following information is necessary for a complete application.

To help us make a decision in the shortest time possible, please submit the following information:

1. **A copy of your deed or similar proof of ownership** (e.g. land contract, current property tax receipt).

2. **Good photographs that clearly show the existing project area.** Remember, too much snow cover or vegetation may obscure important details. If possible, have another person stand near the project area for size reference.

3. **Five (5) copies of a completed application Form 3500-53H including applicant information page and project plans.** When completing your application, **please use a ballpoint pen with black ink.** The site location sketch and plan drawings (see Sample Drawing) should be clear and to scale and have enough detail to find the site and understand the project proposal. **Please follow the sample drawing and information requirements pages attached. Also, make sure your phone number (both business and home) and property address or fire number is on the application. Plans may be submitted on a separate page(s), but please submit five (5) copies.**

4. **Five (5) copies of a narrative description of your proposal**, on a separate blank page. Please state:
   - what the project is,
   - how you intend to carry out the project, including methods, materials and equipment,
   - your proposed construction schedule and sequence of work,
   - what temporary and permanent erosion control measures will be used, and
   - the location of any disposal area for dredged or excavated materials.

5. **Five (5) copies of site maps.** Provide copies of relevant maps (when possible), such as USGS topographic map, Wisconsin Wetland Inventory map, FEMA floodplain maps, soil or zoning maps, with the project location clearly identified.

6. **The appropriate application fee (complete Form 3500-53A).**

When you are finished compiling your application materials, remember to check your application for completeness. Then make copies of all materials so that you can submit **five copies** of the requested information to the Department. We also recommend that you keep a complete copy for your own records. Remember, incomplete applications may cause a delay in processing.

NOTE: Depending upon the type, complexity, and location of your proposed project, **processing can take 60 working days (3 months) or longer to complete a review, public notice and any required environmental analysis if your application is completed in detail.**

Piers Application Information Requirements

A permit is required for marinas, solid piers, piers on cribs, piers that go beyond a local pierhead line, some multiple-slip piers, and any piers that may interfere with public or private rights. See DNR brochure **"Pier Planner"** for more information.

All applications require the following information on the application form and plan drawing sheet supplied or on additional sheets if necessary.

1. Please submit a copy of the deed, lease, land contract or other documents showing riparian status. Wisconsin law generally allows piers to be placed only by waterfront property owners. Supply the names and addresses of the adjacent riparian landowners on both sides of your project.

2. In the **"location sketch"** box, sketch or trace a map that clearly indicates the location of your project. Recommended scale is 1"=2000'.

3. Supply project plans showing a **top view** and a **side view** of the project, including dimensions. Also show a detailed top view of the pier cribs or any other solid supports if applicable.

   The top view of the pier should include the following:
   a. The length and location of the shoreline;
   b. The location of adjacent property lines and piers or other structures in the water;
   c. The names of the neighbors on each side;
   d. Water depth contours at one-foot intervals from shore to the end of the proposed pier showing up to the depth contour beyond the end of the proposed pier (draw contours at normal lake level);
   e. A north arrow;
   f. The scale of the top view, or dimensions on the drawing;
   g. Length and width of pier and any hoist, shelter or in-water structures.

   The side view of the pier should include the location of supports.

4. Provide construction details of the pier and any supports including dimensions and materials

5. Provide information about the proposed (or existing) use of the pier

   a. The total number and types of boats to be moored;
   b. The length and draft of the boats;
   c. An estimate of the water depth necessary for mooring;
   d. The location and number of any existing mooring buoys, piers, boat lifts or other structures;
   e. How the boat slips and use are assigned (if multiple users);
   f. The historic use, placement and configuration of piers at the subject property.

Please select the scale of the drawing carefully to fit all the necessary information on the plan drawing sheet. If necessary, use additional sheets. Be sure to draw all the plans as accurately as possible. The Department may require additional information to evaluate the project.

Please send the completed application to the Water Management Specialist for the county where your project is located (a complete listing of addresses by county can be found on the Waterway and Wetland Permits web page link below).

http://www.dnr.state.wi.us/org/water/fhp/waterway/wmscoun.htm

DRAWINGS OF PROPOSED ACTIVITY SHOULD BE PREPARED IN ACCORDANCE WITH SAMPLE DRAWING

Location Sketch (Indicate scale.) Show route to project site: include nearest main road and crossroad.

PIERS
SAMPLE DRAWING

Proposed Materials:

16 pipe supports

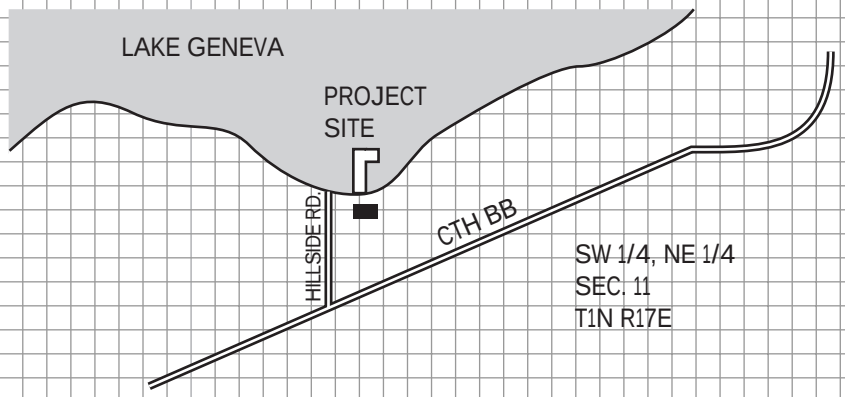
Pier deck planks are 2"x8"x5'

Estimated project cost: $3,000

N

1"= 2000' ft.

Fire Number W3338

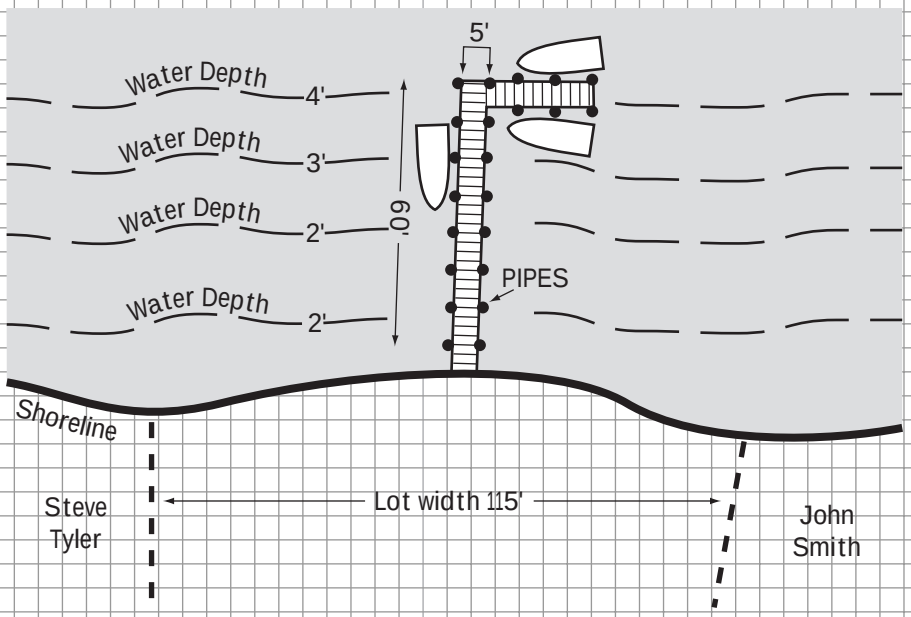


Project Plans. (Include top view and typical cross sections. Clearly identify features and dimensions or indicate scale.) Use additional sheets if necessary.

N

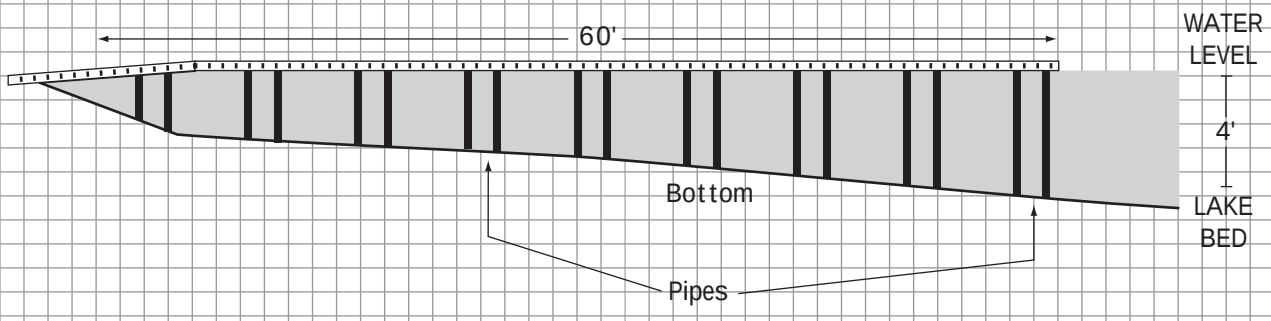
1" = 40'

Top View



1" = 12'

Cross Section



State of Wisconsin
Department of Natural Resources
(Return to appropriate DNR Regional/Service Center Office)

State / Federal Application for Water Regulatory Permits and Approvals

Form 3500-053 (R 4/01)

PLEASE COMPLETE BOTH PAGES 1 & 2 OF THIS APPLICATION. PRINT OR TYPE. The Department requires use of this form for any application filed pursuant to Chapter 30, Wis. Stats. The Department will not consider your application unless you complete and submit this application form. Personally identifiable information on this form will not be used for any other purpose, but it must be made available to requesters under Wisconsin's open records law [s. 19.31-19.39, Wis. Stats.].

1. Applicant (Individual or corporate name)

Address

City, State, Zip Code | Fire Number

Telephone No. (Include area code) | Tax Parcel Number

2. Agent/Contractor (firm name)

Address

City, State, Zip Code

Telephone No. (Include area code)

3. If applicant is not owner of the property where the proposed activity will be conducted, provide name and address of owner and include letter of authorization from owner. Owner must be the applicant or co-applicant for structure, diversion and stream realignment activities.

Owner's Name | Address | City, State, Zip Code

4. Is the applicant a business? ☐ Yes ☐ No

If YES, is the permit or approval you are applying for necessary for you to conduct this business in the State of Wisconsin?

☐ Yes ☐ No

If YES, please explain why (attach additional sheets if necessary):

5. Project Location

Address _____

Village/City/Town _____

Fire Number _____ Tax Parcel Number _____

Waterway _____

County _____

Govt. Lot _____ OR ____1/4,____1/4, of Section _____ ,

Township _____North, Range _____ (East) (West)

6. Adjoining Riparian (Neighboring Waterfront Property Owner) Information

Name of Riparian #1 | Address | City, State, Zip Code

Name of Riparian #2 | Address | City, State, Zip Code

7. Project Information (Attach additional sheets if necessary)

(a) Describe proposed activity (include how this project will be constructed)

(b) Purpose, need and intended use of project

(c) I have applied for or received permits from the following agencies: (Check all that apply)

☐ Municipal ☐ County ☐ Wis. DNR ☐ Corps of Engineers

(d) Date activity will begin if permit is issued _____; be completed: _____.

(e) Is any portion of the requested project now complete? ☐ Yes ☐ No

If yes, identify the completed portion on the enclosed drawings and indicate here the date activity was completed:

I hereby certify that the information contained herein is true and accurate. I also certify that I am entitled to apply for a permit, or that I am the duly authorized representative or agent of an applicant who is entitled to apply for a permit. Any inaccurate information submitted may result in permit revocation, the imposition of a forfeiture(s) and requirement of restoration.

Signature of Applicant(s) or Duly Authorized Agent | Date Signed

LEAVE BLANK - FOR RECEIVING AGENCY USE ONLY		
Corps of Engineers Process No.	Wisconsin DNR File No.	
Received By	Date Received	Date Application Was Complete

Drawings of proposed activity should be prepared in accordance with sample drawing.

Proposed Materials

Location Sketch (Indicate scale)
Show route to project site: include nearest main road and crossroad.

N 1" = _____ ft.

Fire Number _____

Project Plans (Include top view and typical cross sections. Clearly identify features and dimensions or indicate scale.)
Use additional sheets if necessary.

N 1" = _____ ft.

Top View

Cross Section

Types of WPDES Wastewater Permits

The DNR, through the Bureau of Watershed Management, regulates the discharge of pollutants to waters of the state. The DNR currently has 5 types of Wisconsin Pollutant Discharge Elimination System (WPDES) Wastewater permits. This page contains basic information on each of them. For more specific information on WPDES Wastewater permits, contact your local WPDES Wastewater Permit Staff.

Outline of Wastewater Discharge Permit Format

Wastewater Permits contain all the monitoring requirements, special reports, and compliance actions appropriate to the facility in question and follow this outline:

- Cover Page. This identifies the facility, its location, permit effective date, expiration date, and authorizing signature, and date signed.
- Table of Contents. This page includes report due dates and page numbers
- Monitoring and reporting requirements, effluent limitations and groundwater quality standards:
  - Influent Monitoring Requirements
  - Effluent Monitoring Requirements and Limitations - a page for each outfall and sample point, as appropriate
  - Groundwater Monitoring Requirements and Limitations
  - Facility Diagram (optional)
  - Special Report Requirements (including information required and submittal deadlines):
  - Compliance Maintenance Annual Reports
  - Sludge Monitoring Requirements

- Wastewater Systems Plan Review
- Wastewater Systems Security

Resources

- Rules and Regulations
- Related Wastewater Sites
- Permit Staff

Current Issues and Projects

- NR 208 - CMAR
- Mercury in Wastewater Rule
- Electronic Transfer of WPDES Monitoring Data (EDMR)

Water Permits

- Monitoring for Toxic Substances and Biomonitoring
- Other Special Reports as appropriate
- Schedule of Compliance (includes actions needed and deadlines)
- General Conditions. This includes standard language for all wastewater dischargers

WPDES Industrial Wastewater Discharge Permits

Wisconsin's industrial wastewater permit program regulates industrial wastewater discharges to surface waters and groundwater. Among industrial facilities, approximately 415 dischargers to surface water and/or groundwater require individual (e.g., site-specific) WPDES permits as of 2005.

The Department administers 45 major industrial permits issued primarily to paper mills and steam electric facilities. Minor industrial permits span a variety of industrial activities including dairy, food processing, metal finishing, meat processing and manufacturing plants. Many of the facilities have both surface water and groundwater discharges regulated by the same permit.

Major industrial permits are issued for industries with significant wastewater volumes which can impact the receiving water. Before DNR can issue or reissue a major permit, EPA concurrence is needed. Majors are determined by calculating an EPA score which considers the 6 factors listed below. A score of 80 or more results in classification as a major.

1. Toxic pollutant protection
2. Wastewater volume/stream flow
3. Conventional pollutants
4. Public health impacts
5. Water quality factors
6. Proximity to coastal waters or Great Lakes

All other specific (individual) industrial permits are considered industrial minors. Besides being classified as major or minor, industrial permits are also determined to be complex and non- complex. Complex permits are those surface water discharges with water quality based effluent limits, categorical limits (the industry has wastewater which fits in an industrial category identified in Wisconsin Administrative Code NR 221-297) and land disposal systems with groundwater monitoring wells. Industrial Non-complex permits include discharges of low strength wastewater (which may or may not be treated) from small industries discharging to surface water with categorical limits

WPDES Municipal Wastewater Discharge Permits

Since passage of the 1972 Federal Clean Water Act, Wisconsin communities invested a tremendous amount of time, labor, and money to

upgrade and construct wastewater treatment facilities for water quality improvements.

As of 2005, approximately 690 municipalities held WPDES permits to discharge to surface and/or groundwater in Wisconsin. As communities upgrade treatment facilities, some find combining systems into a joint regional treatment facility more economical. Other municipalities upgrade the existing facility or construct a new one at or near the existing site.

Publically owned wastewater treatment plants which have a design flow of 1.0 million gallons per day or greater are considered "majors." Publicly owned wastewater treatment plants which have a design average flow of less than 1.0 million gallons per day are "minors."

Pretreatment Program

The Wisconsin DNR's Pretreatment Program is a requirement of the federal Clean Water Act law outlined in the Code of Federal Regulations (CFR) 40., in various sections and subsections. The term "pretreatment discharger" refers to the situation where the facility does not discharge their wastewater directly to the waters of the state. Instead, the discharge flows into a municipal sewage treatment plant (also called a POTW or publicly owned treatment works) and mixes with other sewage for treatment before it is discharged to the waters of the state. The US EPA has designated the State of Wisconsin DNR to administer this federal code within the state. In response to this designation, the State has adopted several State Administrative Codes that describe the requirements for pretreatment discharges. These are contained in Wis. Admin. Codes NR 211, and NR 220-297.

Pretreatment dischargers are issued permits if regulated by publically owned treatment works (POTWs) delegated to implement the program, or they are issued control documents if regulated by the Department. Control documents can be issued directly to the facility by the DNR, or the DNR can pass this permitting authority on to the local POTW if the POTW is designated as a "control authority" for this function. Permits issued by control authorities have an expiration date; control documents issued by the DNR do not have expiration dates. A control authority can develop its own discharge requirements under its municipal ordinances, but they cannot be less restrictive than the federal regulations. The discharge limitations are grouped by categories of industrial and commercial dischargers and subgrouped by the federal standard industrial coding or SIC code that applies to that facility.

Facilities that discharge in the pretreatment program are required to send periodic compliance reports (PCRs) to the DNR or the control authority for review of their compliance with pretreatment discharge limitations. These PCRs are reviewed and the data entered into a computer system for compliance tracking. The actual data entry and compliance tracking is decentralized across the state. For facilities that have DNR control documents, the compliance tracking is done by the Regional Office of the

DNR. For facilities that are indirectly regulated by the control authorities, each Regional Office has designated a person or persons to track compliance and do compliance inspections and enforcement.

For more information on the pretreatment program, contact: Chuck Schuler at (608) 267-7631 or your local WPDES Permit Staff.

WPDES General Wastewater Discharge Permits

Under the authority in section 283.35, Wis. Stats., the Department may issue WPDES general permits applicable to categories or classes of point source discharges. Section NR 205.08, Wis. Adm. Code, contains further requirements concerning the issuance of general permits. The information provided on this web page applies only to WPDES general wastewater discharge permits that cover groups of facilities or industries with similar types of wastewater discharges to surface waters and/or groundwater. The Department also issues general permits for discharges of storm water under the authority of s. 283.33, Wis. Stats., and may also issue a general permit for certain concentrated animal feeding operations (CAFOs). General permits applicable to storm water discharges and CAFOs may be found at the following link: http://dnr.wi.gov/runoff/

The following general permits have been issued for the noted categories and classes of discharges:

- Carriage and Interstitial Water from Dredging Operations (WI-0046558-4)
- Concrete Products Operations (WI-0046507-4)
- Contaminated Groundwater from Remedial Action Operations (WI-0046566-5)
- Domestic Wastewater to Subsurface Soil Absorption Systems (WI-0062901-1)
- Hydrostatic Test Water and Water Supply System Water (WI-0057681-4)
- Land Application of By-Product Solids (WI-0057665-4)
- Land Application of Industrial Sludge (WI-0057657-4)
- Land Application of Liquid Industrial Wastes (WI-0055867-5)
- Non-Contact Cooling Water or Condensate and Boiler Blowdown (WI-0044938-5)
- Nondomestic Wastewater to Subsurface Absorption Systems (WI-0055611-5)
- Nonmetallic Mining Operations (WI-0046515-4)
- Petroleum Contaminated Water (WI-0046531-4)
- Pit/Trench Dewatering (WI-0049344-3)
- Potable Water Treatment and Conditioning (WI-0046540-5)
- Sanitary Sewer Overflows (SSO) from Sewage Collection Systems (WI-0047341-4)
- Swimming Pool Facilities (WI-0046523-4)
- Wastewater from the Outside Washing of Vehicles, Equipment and Other Objects (WI-0059153-2)

As with other WPDES permits, general permits are issued for a term of 5 years. If the general permit expires prior to reissuance or revocation, the terms and conditions of the expired permit continue until the permit is reissued or revoked. Issuance of the permit follows all the applicable public noticing requirements associated with other WPDES permit issuances. Following issuance, the Department may grant or confer coverage, without further public notification, to any facility or operation at any time during the permit term, provided the facility or operation meets the applicability requirements of the general permit. Compliance with limitations contained in the permit must be attained at the time coverage is granted. If a facility is not meeting those terms and conditions, then coverage under the general permit cannot be granted or continued and a discharge may not occur until an individual permit is issued.

Once coverage under a general permit has been granted, compliance with the terms and conditions must be maintained or the Department may take an enforcement action under the provisions of s. 283.89, Wis. Stats., for permit violations. The Department may revoke general permit coverage for a discharger and issue an individual permit following the conditions in NR 205.08.

To obtain initial coverage under a general permit a discharger must contact the Department by completing and submitting a "Request for Coverage" form to the WPDES staff in the applicable Regional office of the Department. (Note that special coverage provisions apply to the "Outside Washing of Vehicles, Equipment and Other Objects (WI-0059153-1)" general permit.) Following reissuance of a general permit, the Department may grant continuing coverage under the reissued general permit or may request that permittees submit a new or revised "Request for Coverage" document to be granted continuing coverage. Most of the general permits issued under s. 283.35, Wis. Stats., require periodic monitoring and reporting. Forms to report monitoring data will be provided when coverage under the permit is granted or otherwise may be requested from WPDES staff in the appropriate Regional DNR office.

Please see Industrial and Municipal Wastewater General Discharge Permits for permit documents, request for coverage forms and other information on each of the general permits that has been issued. General permit staff in the statewide DNR Office in Madison may be contacted with questions or comments about the content of any general permit. DNR Regional Staff should be contacted to obtain permit coverage or with specific questions about a facility.

Other WPDES Permits

WPDES Storm Water Discharge Permits

To meet the requirements of Section 402 of the federal Clean Water Act, the DNR has developed a state Storm Water Discharge Permit Program under Wisconsin Administrative Code NR 216. There are three categories

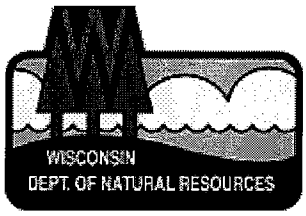
of discharges to be regulated by WPDES storm water permits: industrial, municipal and construction site erosion control. Storm water permits are regulated through the DNR Runoff Management Section. Click on this link for more information: www.dnr.state.wi.us/runoff/stormwater.htm

WPDES Animal Waste Discharge Permits

Permits for Concentrated Animal Feeding Operations (CAFOs) are regulated through the DNR Runoff Management Section. Click on this link for more information: www.dnr.state.wi.us/runoff/animal.htm

For more information, contact: Duane Schuettpelz, Bureau of Watershed Management.

Last Revised: Monday April 28 2008



dnr.wi.gov

The Official Internet Site for the Wisconsin Department of Natural Resources

101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

WASTEWATER FROM THE OUTSIDE WASHING OF VEHICLES,
EQUIPMENT AND OTHER OBJECTS
Briefing Memo
WPDES Permit No. WI-0059153-2
February 2004

GENERAL DESCRIPTION OF OPERATIONS COVERED UNDER THIS PERMIT

Outside washing of vehicles, equipment (such as construction equipment) and other objects is a common practice in the state of Wisconsin. Outside washing is done for cosmetic purposes, proper operation and as a beginning step for further maintenance procedures (i.e., painting). This general permit (GP) has been created to address those situations where a discharge to a sanitary sewer connected to a Publicly Owned Treatment Works (POTW) or an onsite system is not an available or preferred option for an outside washing operation.

This permit provides answers in a consistent manner to questions that have arose about outside washing and steam cleaning of vehicles, construction equipment, recreational equipment, lawnmowers, buildings, engines, truck hauling compartments, and similar objects.

This GP contains best management practices designed to prevent degradation of surface waters and/or groundwater. Surface waters are defined in s. NR 102.03(6), Wis. Adm. Code as "all natural and artificial named and unnamed lakes and all naturally flowing streams within the boundaries of the state, but not including cooling lakes, farm ponds, and facilities constructed for the treatment of wastewater." A discharge to surface waters includes ditches, storm sewers, and pipes that convey wastewater to creeks, streams, rivers, and lakes. Groundwater is defined in s. NR 140.05(9), Wis. Adm. Code, as waters of the state "occurring in a saturated subsurface geological formation of rock or soil." A discharge to groundwater in Wisconsin includes infiltration or seepage of wastewater via irrigation, drain fields, ditches, and ponds that may impact the water beneath the ground surface.

1. APPLICABILITY CRITERIA

This WPDES general permit is unique from most other WPDES permits in that it is designed to cover discharges of washwater from outside washing operations listed below, without requiring facilities to apply for the permit. While a facility does not need to apply for the permit or receive Department approval prior to commencing operations, the facility is required to meet the applicability criteria and implement the Best Management Practices (BMPs) contained in the permit. If the Department has contact with a permitee regarding washing activities, the Department employee will ensure the individual is given a copy of this permit and document the event in the Department's database Event Tracker for future possible enforcement actions. In addition, the Department employee may require, by letter, that a copy of applicable BMPs be maintained at the site where the washing is being performed.

It is important to note that facilities that discharge their wastewater to a Publicly Owned Treatment Works (POTW), either directly via a drain or pump or via containerizing and hauling the wastewater, do not need this permit. However, discharges to a POTW are subject to the requirements associated with that particular POTW. This permit does not require a discharge to a POTW; however, there may be instances where discharge to a POTW may be a facility's preferred option

Facilities that discharge their wastewater to an approved alternative onsite wastewater treatment system that discharges to a subsurface soil absorption system designed to treat the wastes, are also not covered by this permit. However, discharges to these systems would be subject to requirements associated with the WPDES permit for the treatment system.

1.1. Activities Covered

This permit is applicable to a wide variety of outside washing activities where the water is not directed to a sanitary sewer. Discharges from washing activities regulated by this permit typically contain contaminants that can be addressed by Best Management Practices (BMPs) prior to discharge to surface waters and/or groundwater.

1.1.1.

1.1.2. Vehicle and Equipment Washing

An example of vehicle or equipment washing operations regulated by this permit include truck terminals where the entire fleet of trucks is washed at one time or new and used car lots where the cars are periodically cleaned to enhance their appearance. Washing may be done by the dealership or, as is often the case, by a contract washer. This permit would also cover highway or county maintenance areas where mowing and maintenance equipment is routinely washed outside.

It is not the Department's intent to regulate certain washing activities, such as the common practice of homeowners washing their own vehicles and homes or not-for-profit fund raising events. However, on request, we will provide anyone with a copy of the BMPs and encourage these practices.

1.1.3. Hauling Compartments Containing Inert or Readily Biodegradable Material

The washing of hauling compartments must be limited to compartments containing inert or biodegradable material. The washing of the inside of trucks poses a greater environmental risk than washing the outside surfaces because of the wide variety of material that may have been in the truck. Therefore, it is important to know what material was hauled last in the truck. In many operations, such as a gravel quarry or ready-mixed concrete trucks and chutes, the hauled commodity is inert and always the same so the appropriate BMP for that specific material can be easily implemented. When washing trucks or railroad cars in which the previous cargo is unknown, more caution is necessary to avoid creating a serious pollution problem. If in doubt, the washwater should be contained and hauled to a Publicly Owned Treatment Works (POTW).

1.1.4. Recreational and Lawn Equipment

Outside washing of golf carts, fertilizing equipment, lawn-mowing equipment, and boats are other examples of activities that are covered under this permit. Rinsing-in-place of boats, trailers, and other aquatic equipment associated with Department requirements for aquatic species controls are not regulated by this permit.

1.1.5. Nonemergency Degreasing

Occasional discharges from a degreasing operation (once a month on average, over a six month period) and emergency degreasing performed in association with equipment malfunction that are treated for oil and grease removal are not considered a significant environmental threat and are allowed under this permit. Examples of occasional, nonemergency degreasing include degreasing done as part of routine maintenance or degreasing that occurs continually in the same location or a designated degreasing area.

1.1.6. Emergency Degreasing

Emergency degreasing applies to situations where towing or moving a malfunctioning vehicle or piece of equipment to a maintenance area is impractical either because of field conditions or time constraints. An example of such a situation is where a piece of construction equipment fails in a remote location or far from a maintenance area and in-field degreasing is necessary to repair the equipment in a timely manner.

Degreasing of a malfunctioning vehicle or piece of equipment where time and proximity to a maintenance area allow the vehicle or equipment to be moved to the designated maintenance area is not considered emergency degreasing. In addition, discharges from continual degreasing of malfunctioning vehicles or equipment in the same area are not considered emergency degreasing. Degreasing of malfunctioning vehicles or equipment that occurs in areas set aside for maintenance or degreasing is also not considered emergency degreasing. Restrictions on the number of emergency degreasings allowed have not been included in the permit because with the implementation of Best Management Practices and the fact that emergency degreasing should not occur in the same area, environmental impacts are expected to be minimal.

The Department recognizes that although nondegreasing washing operations (i.e., cosmetic washing designed to make an object look and function better by removing dirt, mud, sand, debris, or deicing agents such as road salt) may result in incidental contact with oil and grease, this is not considered a discharge from a degreasing operation.

1.1.7. Commercial Building Washing

Commercial building washing is also covered under this permit. While this is not intended to cover homeowners washing their individual residences, it does apply to residence and building washing conducted as part of a commercial washing operation. Building washers should be aware of the potential of lead being washed off of buildings and other structures. It is unclear at this time as to why, but elevated levels of lead have been found in the wastewater from the washing of brick buildings in the older industrial part of a city. It is believed that together with the lead spewed out by vehicles in heavy traffic areas when gasoline still contained lead and the possibility of nearby smoke stacks dispersing lead as part of its emissions, lead has accumulated in these certain areas. If a building washer plans on working in an area that has the potential of high lead levels, they should contact the local municipality to see if high lead levels have been discovered in the area. If no information is known, testing should be done prior to beginning operations to ensure the wastewater is handled appropriately.

1.2. Activities not Covered

1.2.1. Activities Covered by Another WPDES Permit or Trans 401

Facilities already addressing washing activities through another WPDES permit do not require additional coverage under this permit. This is intended to avoid duplicate permitting of washing activities. Other general permits may already address or may be able to address washwater discharges, such WPDES Permit Numbers WI-S067849 and S067857 (Tier 1 and Tier 2 Industrial Storm Water Discharge permits, respectively), WI-0067831 (Construction Site Storm Water Discharge Permit), WI-S058831 (Storm Water Associated with Recycling of Scrap and Waste Materials), WI-S059145 (Storm Water Associated with the Dismantling of Vehicles for Parts Selling and Salvage) and WI-0046515 (Nonmetallic Mining Operations).

For example, if a construction site has erected an erosion control device such as a silt fence or a retention pond in accordance with the general permit for Construction Sites (WI-0067831) and all vehicle washing is done so that any settleable solids are caught in the control devices associated with the construction site, the washwater would already be addressed by that permit and would not require additional coverage under the Outside Washing permit. However, if the washing of vehicles and equipment operating at a site is being done off-site and is not truly associated with the construction site, the Outside Washing permit would apply to the washing activity.

As another example, if a truck terminal has a general permit for storm water, they will be submitting a pollution prevention plan. In that plan, they could list outside truck washing as a continuing activity and specify which BMPs are being implemented to address discharges of truck washwater. This will achieve

the Department's objective, which is to minimize discharge of pollutants to waters of the State and coverage under the Outside Washing permit is not necessary.

The same logic holds for washing activities on projects that are covered under Trans 401. If the erosion control plans address discharges of washwater, additional coverage under the Outside Washing permit is not necessary.

For the most part, it is not expected that BMP plans that have already been submitted to the Department need to be updated to include specific provisions for vehicle and equipment washing activities. If the BMPs that are being implemented under a BMP plan already address vehicle and equipment washing, a modified BMP plan is not required. However, future submittals of plans required under other permits should specifically address vehicle and equipment washing. In addition, if a BMP plan does not adequately address vehicle and equipment washing, the BMP plan should be updated immediately.

1.2.2. Nonemergency Degreasing Operations Occurring more than once a Month at a Given Site

Degreasing operations typically involve the use of steam cleaning or high pressure water cleaning and are intended to remove accumulated petroleum products, such as oil and grease, from areas that are normally lubricated (for example, hydraulic pumps, axles, and semi-tractor fifth wheels). Frequent discharges from routine degreasing require more oversight than that provided for under this permit and thus, is not covered by this permit. The concern is that when degreasing activities occur regularly at the same location, there is an increased risk of petroleum products, such as fuel oil, impacting aquatic life in a surface water or seeping to groundwater and impacting groundwater. Many operations cleaning engines or other oily equipment are housed in a building and connected to a wastewater treatment system.

1.2.3. Permanent (i.e., non-mobile) Facilities Washing Vehicles on a Commercial Basis

Permanent commercial car washes cannot be covered under this permit. Because of the number of vehicles, frequency of washing, and possible long term impacts associated with these types of operations, discharges from these facilities require review and oversight not provided by this general permit.

1.2.4. Degreasing Operations Using Halogenated Hydrocarbon Degreasing Agents

Chemical degreasing with solvents, such as trichlorethylene, poses a high risk of water contamination and is not allowed under this permit.

1.2.5. Other limiting circumstances

Certain environmental conditions dictate more stringent requirements than those provided by this general permit. Discharges to wetlands may require coverage under an individual permit and discharges to outstanding and exceptional surface waters require coverage under an individual permit.

Proper containment and disposal of lead-based paints, asbestos and other pollutants of concern need to be addressed prior to work being initiated. Washwater from the high pressure washing of buildings with asbestos siding, asbestos shingles or lead based paint likely can not be covered underneath this permit due to the health risk associated with these materials. Contact the Department’s Bureau of Air Management at (608) 266-7718 for further information. A separate permit may be required depending on the specific circumstances.

2. BEST MANAGEMENT PRACTICES (BMPs)

BMPs must be implemented to protect groundwater and surface waters. The BMPs outlined in this permit are designed to address pollutants typically associated with washwater discharges. These include Oil and Grease, Suspended Solids/Particulates, Detergents, Plant and Animal Wastes, Chemical Brighteners/Cleaners and Road Deicing Agents. The goal of a given BMP is to ensure that harmful quantities of a given pollutant do not enter surface waters or groundwater.

2.1. Total Suspended Solids

Solids and particulates are a primary concern for discharges to surface waters. Solids and particulates can cover stream beds and affect fish and plant life as well as being unsightly. Solids and particulates are not a significant concern when it comes to discharges to groundwater since soils serve as a natural filter to remove these contaminants. Therefore, the preferred BMP for handling washwater containing solids and particulates, is to direct washwater to a seepage area, such as a grassy area, so that solids are trapped by the soil as the washwater seeps to groundwater.

However, if discharging to seepage is not an option, discharges to surface waters must be treated for solids removal. BMPs for solids removal are designed to separate the solids from the washwater by (1) slowing down the velocity of the washwater or holding the washwater for a period of time to allow solids to settle out or (2) trapping the solids in a filter prior to discharge to surface waters. Settling can be accomplished in a number of ways. Temporary settling basins can be constructed of sandbags or straw bales, a temporarily blocked off storm drain, or a low spot in the terrain. A settling tank is an example of a more permanent settling basin. When the same site is used to wash many vehicles over an extended period of time, a permanent settling basin will probably be easier to manage. Removal of solids by filtration usually entails the use of a silt fence or other similar structure. Collected solids must be periodically removed from settling and filtration areas to ensure continued settling and filtration capacity and to avoid solids carry over to surface waters during periods of high flow.

Paint chips removed from buildings with high-pressure water must be settled from washwater prior to discharge and disposed of in a sanitary landfill. When lead-based paint is peeled from a building with high-pressure water, special precautions are necessary to collect the lead paint chips and washwater. Contact local health officials or this Department for special requirements for lead based paint removal.

In general, solids associated with washing operations may contain pollutants that can pose an environmental problem if they were to be landspread or improperly landfilled. Therefore, the Department currently requires that solids removed from washing sites be disposed of in a licensed landfill, unless a determination has been made exempting the solids from this requirement. Such an exemption exists for clean concrete and gravel materials, which are exempt from solid waste requirements, as long as they are not disposed of in an environmentally sensitive area. Clean concrete and gravel materials can be disposed of in a construction and demolition landfill. If a facility has specific questions regarding the disposal of solids associated with a washing operation, it should contact the local Department Waste Management Specialist.

Standard Practice for all Washing Operations: For the most part, it is preferred that washing activities occur in areas where there is adequate soil to provide a barrier between the washing operation and the groundwater or surface water in the area. Soils act as a natural filter and can help degrade certain pollutants. Areas composed of highly permeable materials such gravel or coarse sand, while acceptable, do not provide the filtering and treatment benefits of grass or less permeable soils. For certain pollutants, such as oil and grease, soil does not provide treatment. If treatment for oil and grease is necessary in addition to other contaminants, treatment for oil and grease shall always occur prior to washwater being

discharged to groundwater or surface waters. In addition, washing areas shall be properly maintained to prevent erosion off-site and erosion that would result in carry over of sediments to area surface waters.

2.2. Detergents

Comments received from affected parties have indicated that it does not seem workable or practical to prohibit the use of detergents for cleaning and since treatment for surfactant removal is impractical, BMPs for detergents include (1) requiring the use of biodegradable detergents and (2) limiting the use or amount of detergent to the maximum extent possible. Most detergents used in washing activities contain a surfactant and may contain small quantities of phosphorus. Phosphorus contributes to algae growth in surface waters, thus making it important to limit the amount of phosphorus discharged to lakes and streams. Surfactants can be detrimental to surface waters because even biodegradable surfactants reduce the dissolved oxygen concentration in the surface water as they degrade. Although surfactants can impact groundwater quality, the preferred method of discharge for washwater containing detergents is to direct washwater to a seepage area, such as a grassy area.

However, if discharging to seepage is not an option, in addition to the BMPs listed above, only low phosphate, less than 0.5%, or nonphosphate detergents can be used in washing operations with discharges to surface waters. The discharge shall be free of visible foam.

The Department recommends that if a high volume washing operation requires detergents or other cleaning chemicals, the wastewater should be directed to a sanitary sewer or some other type of wastewater treatment system.

2.3. Nonbiodegradable degreasers

Degreasing chemicals that contain halogenated hydrocarbon can not be used in conjunction with this permit. Chemical degreasing with solvents, such as trichlorethylene, poses a high risk of water contamination and is not allowed under this permit. These chemicals should not be discharged to any plumbing system; rather wiping off and disposal as a solid waste is preferred.

Also, the use of a biodegradable paint or varnish stripper does not mean this material is safe to be washed down a storm drain. The resulting material that is washed off will contain whatever was removed and will need to be collected and disposed of in a sanitary sewer

2.4. Chemical Brighteners/Cleaners

Comments received from truck washers explained that it is common practice to spray acid and other chemical cleaners on the outwardly visible metal components of semi-trailers during the washing operation in order to loosen dirt and enhance appearance. The Department is concerned that mismanagement of these types of chemical brighteners could cause metal ions to be washed off in the washwater and/or significantly change the pH of the washwater discharge. However, it is believed that with careful chemical management (which is to be accomplished by limiting application of the brighteners to only the aforementioned metal components and limiting quantities of brighteners applied), the discharge will be acceptable. A significant change in the wastewater pH indicates excessive use of cleaning chemicals. The operator is encouraged to periodically monitor the pH of the wastewater during this phase of the washing process and to develop a plan to minimize the use of chemical brighteners.

2.5. Oil and Grease:

A discharge of oil and grease poses an environmental concern to both surface waters and to groundwater. Some of the concerns for surface waters include the impairment of activities of aquatic plants and animals. For groundwater, the concern is the petroleum products will not be filtered out by the soil and

will eventually seep into the groundwater. Very small amounts of petroleum can negatively impact groundwater. Therefore, there is no real preferred discharge option for discharges contaminated with oil and grease. Treatment must be provided to remove the oil and grease prior to discharge. Once the oil and grease has been removed, the washwater can be discharged to groundwater or surface waters.

There are two primary methods of removing oil and grease. A good system will be able to remove all visible oil to the point where there is no visible oil sheen floating on the surface of the washwater. This would be equivalent to 15 mg/L oil and grease or less in a laboratory analysis. One system is a gravity oil/water separator, which provides a tank where washwater slows down and allows oil, grease, and other petroleum products to float to the top. The petroleum then can be skimmed off, collected, and disposed of properly while the treated washwater is discharged to groundwater or surface waters. Another method is to use an absorbent material that will selectively absorb petroleum from water. This material could be placed directly in the water channel through which the washwater is discharged or placed directly on the surface of the washwater where the oil and grease has accumulated prior to discharge to surface waters or seepage to groundwater.

Oil/water separator devices need to be serviced periodically to removed collected oil and grease. Absorbent materials will need periodic servicing which could mean replacing the media or squeezing out the collected oil so that the material is rejuvenated. Wastes collected from the servicing of oil and grease treatment systems must be disposed of at a Department regulated operation. The local Department Waste Management Specialist can provide the best information on how to dispose of this type of waste.

Washwater with an oil and grease sheen resulting from incidental contact with an engine or oily piece of equipment that is not the result of intentional degreasing is most easily treated with an oil absorbent material, such as an oil/water boom, although an oil/water separator device can be used. Incidental contact should not result in significant amount of oil and grease being present in the washwater.

Washwater from degreasing operations (nonemergency or emergency steam or high-pressure water degreasing of engines or oily pieces of equipment) can contain a large amount of oil and grease. Since nonemergency degreasing can be planned, it shall occur on an impermeable surface (concrete, asphalt, or other impermeable barrier such as thick plastic sheeting) so that the water can be collected or containerized. Given that emergency degreasing occurs without notice and under varying site conditions, it is recognized that an impermeable surface may not always be available. Washwater from emergency degreasing shall be collected or containerized to the maximum extent possible, most likely by using thick plastic sheeting. If possible, water that could not be collected or containerized and forms puddles of water should be treated with an oil absorbent material if oil sheen is present.

A possible discharge option is to haul containerized degreasing washwater to a POTW, <u>if allowed by the POTW</u>. Any collected/containerized washwater that is discharged to groundwater or surface waters shall be treated with an oil/water separator or oil absorbent material, such as an oil/water boom, prior to discharge.

Another common practice is to wash out kitchen ventilation systems to remove cooking oil and grease. The grease and oil must be removed from the wastewater before it reaches a storm sewer or waters of the state.

2.6. <u>Road Deicing Agents:</u>

One of the primary reasons for washing vehicles and equipment in the winter is to remove road salt, which is generally sodium chloride, and other road deicing agents that have accumulated on the bodies of the vehicle and equipment. This can result in a significant quantity of chloride ions being dissolved in the washwater. Chloride ions cannot be removed by settling or filtering and there is no effective way of removing them from washwater. Chloride ions can have a detrimental effect on both surface waters and

groundwater. A concentration of 750-mg/Ll is the level of concern for discharges to surface waters. This is approximately the concentration at which chloride can be toxic to aquatic life as a result of short-term exposure (acute toxicity). Impact on aquatic life associated with long term exposure (chronic toxicity) to chloride is lower than 750 mg/L, but since washing operations are intermittent, chronic toxicity is not considered a significant concern.

For discharges to groundwater from washing operations, 250 mg/L is the level of concern based on the enforcement standard for drinking water which is Wisconsin's groundwater quality standard from NR 140 Wis. Adm. Code. This assumes that there will be no dilution of the washwater as it percolates down through the soil and mixes with groundwater. More study is needed to determine if chlorides discharged from vehicle washing are near these concentration levels. Operators are encouraged to discharge washwater with high chloride concentrations to a POTW, if allowed by the POTW. Where this is not possible, reducing the amount of chloride discharged to surface waters or groundwater can be accomplished by limiting the frequency and number of vehicles and equipment washed at a site. In addition, vehicles and equipment associated with road deicing should have deicing agents removed from areas where they have accumulated, typically by sweeping. The removed deicing agents shall be collected and handled in accordance with ch. TRANS 277, Wis. Adm. Code.

3. OTHER PERMIT REQUIREMENTS

Discharge Monitoring: There are a number of pollutants of concern in water from washing operations (e.g., suspended solids, chlorides, and oils and grease). Comments received from commercial pressure washers and other affected operators expressed doubts about obtaining representative wastewater samples for chemical analysis. The very nature of how objects are washed makes the pollutant concentration in the water leaving the wash area quite variable. Also, if a sample and chemical analysis were required, it would likely be an extra cost to the operator that would provide highly variable and unreliable data. In addition, the applicability criteria of this permit have been designed so that this permit deals primarily with activities and contaminants where BMPs provide relative assurance of contaminant control. The reliance will be on visual observance of the washwater discharge to determine the effectiveness of BMPs, such as no visible sheen for oil and grease (which equates about to 15 mg/L or less of oil and grease) or no visible impact in terms of color and turbidity (this equates to about 40 mg/L or less of total suspended solids).

Although monitoring is not required as part of the permit, operators are encouraged to sample periodically for parameters of concern to determine the effectiveness of their BMPs. In cases where the Department investigates a washing operation due to a complaint or suspects a water quality problem, we may collect samples of the waste stream. With the pollutant limits mentioned above as a reference, the Department will make a determination of compliance with the GP.
Other Permits: Other permits or approvals may be required of the discharger. The discharger is responsible for obtaining necessary approvals.

4. STANDARD REQUIREMENTS

The "Standard Requirements" are a group of requirements that apply to all dischargers and are conditions associated with a WPDES general permit.

Respectfully Submitted,

Jim Kinney
Bureau of Watershed Management

GENERAL PERMIT INFORMATION CHECKLIST
Swimming Pool Facility
WPDES Permit No. WI-0046523-4

State of Wisconsin
Department of Natural Resources

Rev. 6/1/01

For Department Use Only
Stamp date Received

FID #:

SECTION I: **FACILITY LOCATION INFORMATION**		
Facility Name	Contact	Title
Facility Address – Street	Phone #	Fax #
City, State, Zip Code	County	Internet Address
Site Map: Attach a site map, such as a USGS topographic map, showing the location of the facility, the discharge site for groundwater discharges, and/or receiving water for surface water discharges.		

SECTION II: **MAILING ADDRESS INFORMATION (Parent Company/Owner - if different from above)**		
Parent Company/Owner	Company Contact	Phone #
Mailing Address - P.O. Box, Street, or Route	Title	
City, State, Zip Code	Fax #	Internet Address

Complete SECTION III <u>only</u> for those outfalls that are identified as surface or groundwater discharges in SECTION IV, question 1, of the ELIGIBILITY CHECKLIST.

SECTION III: **DISCHARGE CHARACTERIZATION**

Type of Wastewater (check all that apply):	**Outfall #** (#1, #2, etc.)	**Average Daily Flow** (gallons of water discharged per day)	**Type of Wastewater** (check all that apply):	**Outfall #** (#1, #2, etc.)	**Average Daily Flow** (gallons of water discharged per day)
Pool Cleaning Water	#		Other (describe type)	#	
	#			#	
	#			#	
Pool Draining	#		Other (describe type)	#	
	#			#	
	#			#	
Pool Filter Backwash Water	#		Other (describe type)	#	
	#			#	
	#			#	
Overflow flow or drainage from aquatic amusement ride	#		Other (describe type)	#	
	#			#	
	#			#	

SECTION IV: **ELIGIBILITY CHECKLIST**

1. What is the receiving water for your discharge, not including discharges of domestic wastes? If your facility has more than one outfall (an outfall is an individual discharge point, like a pipe, channel, or seepage pond, that wastewater enters prior to discharging to a receiving water), indicate in the space provided which outfalls go to groundwater and which go to surface waters. *(check all that apply)*

Groundwater (this includes infiltration of wastewater through the soil via irrigation, **septic systems and associated drain fields**, ditches, absorption ponds, etc.).

Outfall #(s):_____

Surface Water (this includes creeks, streams, rivers, and lakes and any ditches, stormsewers, and pipes that convey wastewater to a creek, stream, river, and lake).

Outfall #(s):_____

What is the name of the surface water your discharge enters?

_____

How far is it from the point where it leaves your plant until it reaches the surface water (how far does it travel through storm sewers or drainage ditches)? (Check one):

Less than 1000 feet
Between 1000 and 5000 feet
Greater than 5000 feet

Sanitary Sewer (discharge to a Publically Owned Treatment Works). A septic system is not considered a sanitary sewer. *If all discharges from your facility go to a sanitary sewer, you do not require regulation under a WPDES discharge permit. Therefore, skip the rest of the checklist and sign page 4. We will remove you from our tracking system. If at some point in the future operations at your facility result in a discharge, you will need to inform the Department. If only some or no discharges from your facility go to the sanitary sewer, identify the receiving water for the other discharges below.*

For facilities with discharges to groundwater or surface waters, continue on to question #2.

For Department Use Only:

Eligible

F & AL: Meets TEVs?

Spring	Yes	No
Summer	Yes	No
Fall	Yes	No
Winter	Yes	No

Non- F & AL; Great Lakes
TEV = 120^{o}F

Ineligible

ERW
ORW

2. Are any of the following wastewaters from your facility discharged to surface waters or groundwater? *(check all that apply)*

No Yes Contact cooling water.

No Yes Water from boiler cleaning operations.

No Yes Air compressor condensate contaminated with oil and grease.

No Yes Water softener regeneration backwash.

No Yes Other process wastewaters (wastewaters that come in contact with or are the result of production operations at a facility).

If you answered yes to any of the above, your discharge is not eligible for this general permit. Skip the rest of the checklist and complete the signatory requirements on page 4. Contact the Department to obtain application for an individual WPDES discharge permit. If you answered no to all of the above, continue on to question #3.

(Continued on next page)

SECTION IV: **ELIGIBILITY CHECKLIST**

3. To the fullest extent of your knowledge, does your discharge contain any of the substances listed below or other substances that would be harmful to animal, plant, aquatic life (metals, volatile compounds, etc.)?

alpha - BHC	4,4'-DDT	Polychlorinated Biphenyls (PCB)
beta - BHC	Dieldrin	Pentachlorobenzene
gamma - BHC (Lindane)	Hexachlorobenzene	Photomirex
delta - BHC	Hexachlorobutadiene	1,2,3,4-Tetrachlorobenzene
Chlordane	Mercury	1,2,4,5-Tetrachlorobenzene
4,4'-DDD	Mirex	2,3,7,8-Tetrachlorodibenzo-p-dioxin
4,4'-DDE	Octachlorostyrene	Toxaphene

No. *Continue on to question #4.*

Yes. *Your discharge is not eligible for this general permit. Skip the rest of the checklist and complete the signatory requirements on page 4. Contact the Department to obtain application for an individual WPDES discharge permit..*

4. Does your discharge flow to a wetland?

No. *Continue on to question #5.*

Yes. *The Department will need to determine if your discharge causes significant adverse impacts to wetlands. Continue on to question #5.*

NR 103 Completed:_____
N/A

5. Are Water Treatment Additives used in wastestreams that are discharged to surface waters or groundwater (scale and rust inhibitors, biocides such as chlorine, etc.)?

No. a. Do <u>all</u> discharges from your facility go to groundwater (see your answer to question #1)? No Yes

b. Did you answer <u>no</u> to question #4? No Yes

If you answered yes to <u>both</u> questions a. and b. above, your discharge is eligible for the general permit. Complete the signatory requirements on page 4. Read the attached permit and comply with its requirements, submitting annual summaries as required by the permit. Facilities with discharges to surface waters also complete the signatory requirements on page 4. However, surface water discharges will need additional Department review to determine if your facility is eligible for this general permit.

Yes. Is the additive considered a biocide (biocides are designed to control biological growth, such as algae, in tanks, cooling towers, and other equipment)?
No Yes

For each additive used, you must submit the following information in order for the Department to determine eligibility for this general permit:

a. Commercial name of the additive to be used.
b. Amount or concentration of additive to be used.
c. Anticipated discharge concentration of additive.
d. Proposed frequency of usage.

If your discharge enters a surface water, you must also submit the following information:

e. At least one 48-hour LC_{50} or EC_{50} value for Ceriodaphnia dubia or daphnia magna, and at least one 96-hour LC_{50} or EC_{50} value for either fathead minnow, rainbow trout, or bluegill.. The toxicity values must be based on the whole product rather than components or active ingredients.

NOTE: The above information should be provided to you by your additive supplier.

For Department Use Only:

Completed:_____
Re-sent:_____

Additive follow-up necessary:
Yes No

End of Checklist - Complete Signatory Requirements on Next Page

SECTION V: **SIGNATORY REQUIREMENTS**

This form must be signed by the official representative of the permitted facility who is: the owner; the sole proprietor for a sole proprietorship; a general partner for a partnership; a ranking elected official or other duly authorized representative for a unit of government; a member or manager for a limited liability company; or, for a corporation, by a responsible corporate officer including a president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation of the facility for which this permit is issued. If this form is not signed, or is found to be incomplete, it will be returned.	
Signature	Date Signed
Typed or Printed Name and Title	Phone #
Fax #	Internet Address

Mail to: Regional Wastewater Permit Coordinator
Wisconsin Department of Natural Resources

APPENDIX A - WATER TREATMENT ADDITIVE INFORMATION

Outfall #	Additive Name and Manufacturer	Additive* Type	Amount or Concentration Used (mg/l or lbs/day)	Anticipated Discharge Concentration (mg/l)	Frequency of use (Continuous, 1x/week, etc.)	Ceriodaphnia dubia 48-HR LC_{50} or EC_{50} (mg/l)	Fathead Minnow 96-HR LC_{50} or EC_{50} (mg/l)	Rainbow Trout 96-HR LC_{50} or EC_{50} (mg/l)	Blue Gill 96-HR LC_{50} or EC_{50} (mg/l)

* Additive type refers to the use of the additive as a biocide, pH adjuster, scale inhibitor, rust inhibitor, etc.

ATTACH MATERIAL SAFETY DATA SHEETS (MSDS's) TO BACK OF THIS APPENDIX

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 283, Wisconsin Statutes, any facility that meets the applicability criteria listed in this permit is permitted to discharge a

WASTEWATER FROM THE OUTSIDE WASHING OF VEHICLES, EQUIPMENT AND OTHER OBJECTS

to State surface waters, groundwater, or both in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this permit.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____

Russell A. Rasmussen, Director
Bureau of Watershed Management
Division of Water

03/31/2004
Date Permit Signed/Issued

Permit Effective April 1, 2004 **Permit Expires March 31, 2009**

1. APPLICABILITY CRITERIA

Any outside washing activity that meets the applicability criteria of this permit is required to comply with the conditions of this permit. Facilities that can be covered by this permit do not need Department approval prior to discharge.

1.1. Activities covered:

- Vehicle washing, except occasional vehicle washing done as a not-for-profit fund raising event and noncommercial washing of vehicles at individual residences,
- Equipment washing,
- Washing of hauling compartments containing inert (i.e. dirt, sand, gravel, or concrete) or readily biodegradable materials,
- Washing of recreational and lawn equipment (such as golf carts, boats, and lawn mowers), except for the rinsing in-place of boats, trailers, and other aquatic equipment to control exotic species,
- Nonemergency steam or high pressure water degreasing of an average of one or less engines or oily pieces of equipment per month at a site in any 6 month period,
- Emergency degreasing associated with equipment malfunction,
- Commercial washing of the exterior of buildings, or
- Washing activities similar in nature to above activities.

1.2. Activities not covered:

- Washing activities that are covered under an individual permit or another general permit that contain requirements for the washing of vehicles or equipment,
- Nonemergency steam or high pressure water degreasing of an average of more than one engine or oily piece of equipment per month at a given site in any given 6 month period,
- Vehicle washing within permanent structures on a commercial basis,
- Degreasing operations using degreasing agents containing halogenated hydrocarbons, or
- Washing activities where:
  - The discharge will be to a wetland unless the Department has determined that the discharge of pollutants will meet the requirements of ch. NR 103, Wis. Adm. Code.

- The discharge will be to an outstanding resource water, as defined in s. NR 102.10, Wis. Adm. Code, or will lower the water quality of a downstream outstanding resource water.

- The discharge will be to an exceptional resource water, as defined in s. NR 102.11, Wis. Adm. Code, or will lower the water quality of a downstream exceptional resource water.

- The discharge will contain pollutants, other than those specified in this permit, in quantities that must be limited to prevent harm to animal, plant, or aquatic life, or would violate the surface water quality standards in chs. NR 102, NR 105, NR 106, and NR 207, Wis. Adm. Code, or groundwater quality standards in ch. NR 140, Wis. Adm. Code.

2. BEST MANAGEMENT PRACTICES (BMPs)

Activities covered by this permit shall implement applicable BMPs listed below to minimize or eliminate the discharge of contaminants to groundwater and/or surface waters. The Department may require, by letter, that the permittee maintain a copy of BMPs at the site where washing is being performed.

2.1. Total Suspended Solids (TSS): TSS in discharges to surface waters shall not exceed 40 mg/L. The permitee may attain this limit by implementing one or more of the following BMPs:

2.1.1. Washing activities shall occur on grass, soil, or gravel areas to the extent possible and infiltration of washwater shall be maximized.

2.1.2. Washing activities that occur primarily on impervious surfaces shall;

2.1.2.1. Direct washwater to a settling basin, tank, or other settling device to remove suspended solids and particulates prior to discharge to surface waters or an infiltration area,

2.1.2.2. Temporarily block, barricade, or plug areas of channeled flow to surface waters, such as storm sewers, and allow suspended solids and particulate matter to settle prior to discharge to a surface water or an infiltration area or,

2.1.2.3. Direct washwater to grass, soil, or gravel areas where the water and accompanying material can infiltrate.

2.1.3. Washing activities that produce solids or particulate matter such as dirt, paint, and other particles that may contain toxic substances from the washing of buildings shall:

2.1.3.1. To the maximum extent feasible, prevent direct discharges to surface waters (diverting this washwater to the sanitary sewers is an approved disposal practice), and

2.1.3.2. To the maximum extent feasible, separate and/or collect the solids from the washwater at the site of the washing activity and properly dispose of the solids as a solid waste.

2.1.4. Solids and particulate matter collected in a settling device or area shall be periodically removed and properly managed to prevent discharge of this material to surface waters.

2.2. Detergents: Detergents in discharges to surface waters shall not be present in amounts that cause visible foam in other than trace amounts by implementing one or more of the following BMPs:

2.2.1. Only biodegradable soaps and detergents shall be used; the quantity of soaps and detergents used shall be limited to the minimum amount needed to clean the object.

2.2.2. Only low (less than 0.5%) phosphate or nonphosphate soaps and detergents shall be used if the wastewater discharges directly to surface waters.

2.3. Degreasing chemicals: Degreasing chemicals that contain halogenated hydrocarbons shall not be added to washing solutions.

2.4. Chemical brighteners/cleaners: Any such materials, such as hydrofluoric acid on stainless steel, shall be limited to maintain the pH of the washwater discharge between 6.0 and 9.0 standard units, inclusive.

2.5. Oil and grease: Oil and grease in discharges shall not exceed 15 mg/L (NOTE: A visible oil sheen indicates the level of oil and grease has exceeded 15 mg/L). The permittee may attain this limit by implementing one or more of the following BMPs:

2.5.1. Nonemergency steam or high-pressure water degreasing of engines or oily pieces of equipment shall occur on an impermeable surface (concrete, asphalt, or other impermeable barrier such as thick plastic sheeting). Washwater shall be retained and treated with an oil/water separator or oil absorbent material prior to discharge,

2.5.2. Emergency degreasing of engines or oily pieces of equipment associated with equipment malfunction shall occur on an impervious surface (concrete, asphalt, or other barrier such as thick plastic sheeting) to the maximum extent feasible. Washwater retained shall be treated with an oil/water separator or oil absorbent material prior to discharge, and/or

2.5.3. Grease and oil from other objects shall be physically removed to the maximum extent feasible and disposed of as a solid waste or recycled.

2.6. Road deicing agents: Deicing agents that have accumulated on vehicles and equipment associated with road deicing activities shall be physically removed to the extent practical and disposed as solid waste or returned to material storage. The number of vehicles and equipment containing significant amounts of these materials and washed at a site shall be limited to the maximum extent practicable.

3. OTHER PERMIT REQUIREMENTS

3.1. Discharge monitoring and reporting: Monitoring and reporting is not required by this permit.

4. STANDARD REQUIREMENTS

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(3), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements, except for s. NR 205.07(1)(n), which does not apply to facilities covered under general permits. Selected NR 205.07 requirements are listed below for convenience.

4.1. Spill Reporting for Hazardous Substances: The permittee shall immediately notify the Department of an accidental release or spill of any hazardous substance to the environment as specified in ch. NR 706 and s. NR 205.07(3) b, Wis. Adm. Code. The Department shall be notified via the 24-hour toll free spills hotline (1-800-943-0003).

4.2. Duty to Halt or Reduce Activity: Upon failure or impairment of treatment facility operation, the permittee shall as required in NR 205.07(3)(e) and to the extent necessary to maintain compliance with its permit, curtail production or wastewater discharges or both until the treatment facility operations are restored or an alternative method of treatment is provided.

4.3. Inspection and Entry: The permittee shall allow an authorized representative of the Department, upon the presentation of credentials, to enter the permittee's premises, have access to records, and inspect and monitor the discharge as described in s. NR 205.07(1)(d).

4.4. Authorized Signature: Reports, records, and monitoring results required by this permit shall be signed by the permittee's authorized representative or, in his or her absence, as specified in s. NR 205.07(1)(g).

4.5. Retention and Submittal of Reports, Records, and Monitoring Results: The permittee shall retain records of all monitoring required by this permit and report monitoring results as set forth in secs. NR 205.07(1)(f) and (r). Reports, records, and monitoring results required by this permit shall be retained by the permittee for the duration of this permit or three years after this data is generated, whichever is longer.

4.6. Continuation of an Expired General Permit: As provided in s. NR 205.08(9), the terms and conditions of this general permit shall continue to apply until this general permit is reissued or revoked or until an individual permit is issued for the discharge to which the general permit applied.

4.7. Enforcement: Any violation of this permit is enforceable under ss. 283.89 and 283.91, Wisconsin Statutes.

4.8. Severability: The provisions of this permit are severable, and if any provisions of this permit or the application of any provision of this permit to any circumstance is held invalid the remainder of this permit shall not be affected thereby.

Appendix I

Probable Cost Information

Last Update: 6-Oct-08

MARINE TRAVELIFT INC.

M2500

MARINE TRAVELIFT INC		DOCUMENT #	STS-7927444
STURGEON BAY		**PRINT DATE:**	8-Oct-08
USA	Contact Name	**QUOTE REL:**	1
920-743-6202	STS	**DEALER REF:**	0
http://www.marinetravelift.com	Address		
mailto:sales@marinetravelift.com	Country of Destination	$ 1.00 =1 $ USD	

REFERENCE:

Specification reference: M2500-071808
Options catalog: N/A
Feature Reference: N/A
Payment terms: MTI Payment-Options-043008
Warranty reference: Warranty - Forklift 020106
Erection data sheet: 0
Recommended parts: N/A
Operator manual : N/A

OPTIONS

QTY	SEC#	DESCRIPTION		Leadtime	EACH		TOTAL
1		Complete Standard Machine	M2500	150	307,455	$	307,455.00
		Hot Galvanized forks			3,710	$	
		Hot Galvanized carriage			3,915	$	
		Solid white non marking tires			CF	$	
		Solid black tires			19,300	$	
		Seat switch and CE compliance			0	$	
		Engine shutdown gauges			520	$	
		Cold start kit			595	$	
		Spare wheel (w/t air tire, complete)			CF	$	
		Consumables for 2 years (estimated)			CF	$	
		Recommended spare parts (+ consumables)			CF	$	
		Special color (one color by one color)			3,500	$	

CAPACITY 11364 KG 25000 LBS **MACHINE PRICE $ 307,455.00**

SURCHARGE

Estimated based on expected cost increase, may be adjusted at time of shipping 27160 $ 27,160.00

FACTORY SHIPPING (Estimated)

Transport complete with mast down in N.America. 2 OTC and RORO for international.

Loading: 1 truck load for US, Canada, parts of Mexico 600 $ 600.00

Incoterms: EX-WORKS **Shipping Zone:** North America Zone 3 Load: 0 3000 * $

Freight Insurance: NOT APPLICABLE 0 $

ASSEMBLY

1	Factory Supervisor	Americas	$ 3,500	$	3,500.00

TOTALS

VALIDITY FROM LAST UPDATE DATE 30 DAYS **TOTAL PRICE $ 338,715.00**

DOWN PAYMENT MUST BE RECEIVED BY: 05-Nov-08

ESTIMATED LEADTIME EX-WORKS 150 DAYS

TERMS

For: **Customer** ESTIMATED OR FINAL ORDER, CONTRACT & DOWN PAYMENT DATE: 10/23/2008

			%	Day:	Date:		Amount:
1	Wire Transfer	CUSTOMER PRICE + ITEMS	20%	0	10/23/2008	$	67,743.00
2				0			0.00
3				0			0.00
4				0			0.00
5	Wire Transfer	BALANCE OF TOTAL PRICE	BAL	145	3/14/2009	$	270,972.00

ESTIMATED DATE OF COMPLETION BASED ON ESTIMATED ORDER DATE: 3/22/2009

MARINE TRAVELIFT INC	STS
D:	D:
SALES	Contact Name

MARINE TRAVELIFT INC.

File: STS-6619241
UPDT: 8-Sep-08
REV: 0

Proposal for: **STS, Wisconsin, USA** **08-Sep-08**

Marine Travelift 35BFMII Mobile Boat hoist Drawing # **0**

Rated capacity at 35 M Ton
Inside Clear Width 17'0"
Inside Clear Height 20'0"
Hoist Drop below piers 5'0"

For additional information see accompanying sheet: 35BFMII-072808

Dear Mr. Contact Name

Thank you for the opportunity to provide quotation on the gantry per dimensions listed above. The options we discussed are listed separately below. We look forward to discussing any questions or concerns you may have about this quote.

Base Unit Ex-Factory Sturgeon Bay WI		$	**244,716.00**
Erection Supervisor		$	**6,000.00**
Loading		$	**600.00**
Freight Estimate	CIF Port or site addres:	$	**4,050.00**

Freight Insurance if applicable
Excluding all applicable fees and taxes

OPTIONS INCLUDED IN BASE PRICE

2-Speed hoist	
Wireless remote control	INCLUDED
Sound suppression kit level I	INCLUDED
Zinc enriched primer	

TERMS

20% Non refundable down payment required at time of order
Balance 5 Days before shipping
Estimated shipping at 120 days from receipt of order.
Quotation is valid until 08-Oct-08

SALES
Sales Manager
MARINE TRAVELIFT INC
STURGEON BAY, USA
T:920-743-6202
mailto:sales@marinetravelift.com
http://www.marinetravelift.com

ITT

ITT Water & Wastewater U.S.A. Flygt Products
N27W23291 Roundy Dr
Pewaukee, WI 53072
Tel (262) 544-1922
Fax (262) 544-1399

October 6, 2008

STS Consultants
Green Bay, WI 54311

Attn: Terry Stebor
Phone: 920-406-3206

Quote # 2008-PEW-0722

Re: Rapid Croche Boat Transfer Station

ITT Water & Wastewater U.S.A. is pleased to provide a quote for the following Flygt equipment.

Transfer Pump

Qty	Description
1	Flygt Model NP-3085.183 3" volute Submersible pump equipped with a 460 Volt / 3 phase / 60 Hz 3 HP 1750 RPM motor, 462 impeller, 1 x 50 Ft. length of SUBCAB 14AWG/7 submersible cable, FLS leakage detector, volute is prepared for Flush Valve.
1	3" Cast Iron Discharge Connection
1	2" Upper Guide Bar Bracket (316SS)
2	2" (316SS) Sch'd 40 Guide Rail x 20'-0"
1	Lifting Chain Safety Hook Assembly
1	3/16" (316SS) Lifting Chain x 20'-0"
1	Lifting Chain Fitting Kit (316SS)

Transfer Pump Price $6,863.00

Pump Control

Qty	Description	Unit Price
1	Simplex Pump Control, NEMA 4X (stainless steel) enclosure, Heavy duty motor starter and circuit breakers, Hand/Off/Auto selector switch, Float level control relay, Alarm light.	$4,056.00
1	Duplex Pump Control, NEMA 4X (stainless steel) enclosure, Heavy duty motor starter and circuit breakers, Hand/Off/Auto selector switch, Float level control relay, Alarm light.	$6,124.00
1	ENM-10 Liquid Level Sensor Float	$254.00

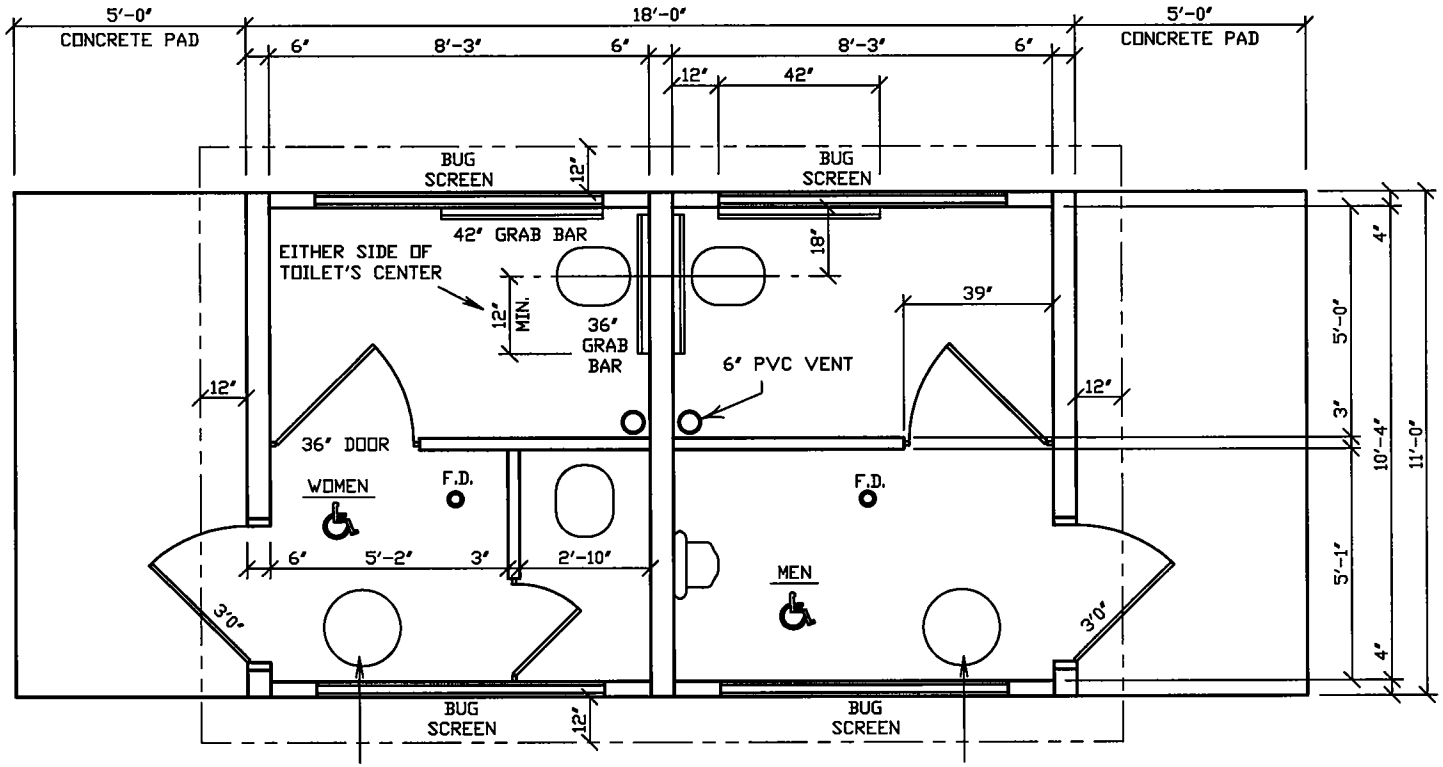
Time of delivery: Approx. 10 to 12 working weeks after receipt of order.
Terms of delivery: Freight Prepaid / Add Actual
Terms of payment: T.B.D.
Taxes: State, local and other applicable taxes are not included in this quotation.

Please feel free to call if you have any questions or if you require assistance.

Sincerely,

Greg Stark
Inside Sales Representative
Phone: 262/544-1922 Ext. 345
gregory.stark@itt.com

$50,000 estimate (includes installation per mr. Steve olsen at Huffcutt
10/11/08
-msm



FLOOR PLAN

SCALE: 1/4" = 1'-0"

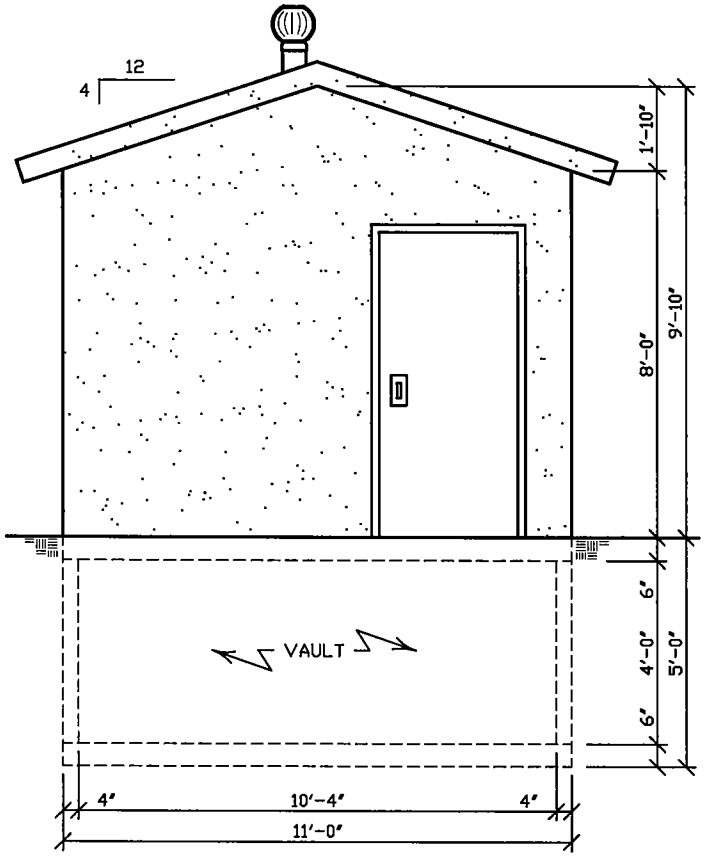
PT450

SHEET: 1 OF 2

PROJECT: PT450

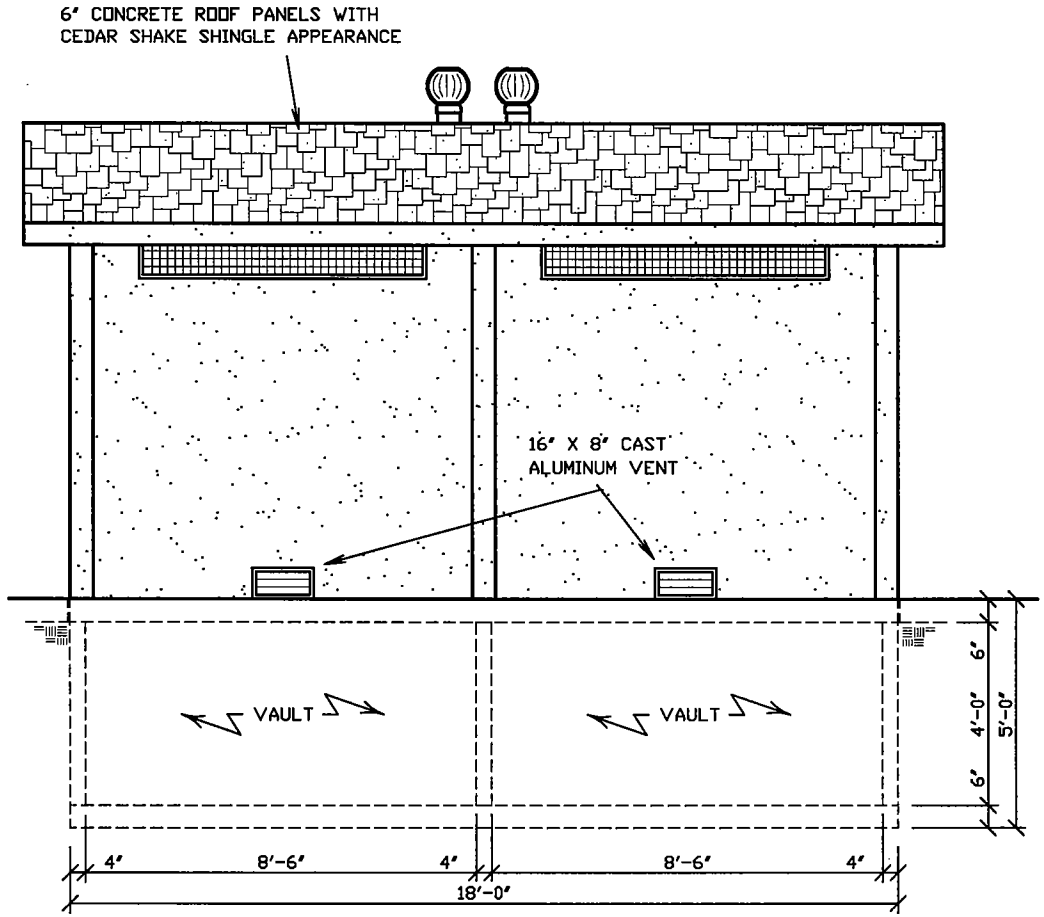
HUFFCUTT CONCRETE
737 HERBERT STREET
CHIPPEWA FALLS, WI 54729
(715) 723-7446 * FAX (715) 723-7111
(800) 924-1516

MEMBERS OF:
NATIONAL PRECAST CONCRETE ASSOCIATION
WISCONSIN PRECAST CONCRETE ASSOCIATION



END ELEVATION

SCALE: 1/4" = 1'-0"



SIDE ELEVATION

SCALE: 1/4" = 1'-0"

PT450

SHEET: 2 OF 2

PROJECT: PT450

HUFFCUTT CONCRETE
737 HERBERT STREET
CHIPPEWA FALLS, WI 54729
(715) 723-7446 * FAX (715) 723-7111
(800) 924-1516

MEMBERS OF:
NATIONAL PRECAST CONCRETE ASSOCIATION
WISCONSIN PRECAST CONCRETE ASSOCIATION

Proposal

Security Fence

& SUPPLY CO,. INC.

☑ N1357 Municipal Dr., Greenville, WI 54942-8653 (920) 757-7240 FAX 757-7245
☐ 1508 DuBay Ave., Stevens Point, WI 54481 (715) 344-6340 FAX 344-4254
☐ Wausau (715) 359-7266 ☐ Green Bay (920) 435-9060 ☐ Oshkosh (920) 231-1472

OFFICE USE ONLY
FAXED
OCT 10 2008

DATE: 10/10/08 THIS PROPOSAL EXPIRES IF NOT SIGNED AND RETURNED WITHIN 30 DAYS

PROPOSAL FOR (NAME): STS Consultants Att: Mike Malmstead

STREET: JOB LOCATION: Kaukauna,Wi.

CITY, STATE, ZIP: Green Bay, Wi.

TELEPHONE: WORK- 920-406-3208 Fax 920-468-3312 HOME-

RESIDENTIAL SPECIFICATIONS				COMMERCIAL SPECIFICATIONS			
WIRE.....		End Post.....	O.D.	WIRE.....		Corner Post.....	O.D
Top Rail.....	O.D.	Corner Post.....	O.D.	Top Rail.....	O.D.	Drive Gate Post	O.D.
Line Post....	O.D.	Drive Gate Post....	O.D.	Line Post....	O.D.	Barbed Wire....	
				End Post....	O.D.	Tension Wire...	

Furnish and install 250 l.f. of 8' high Ameristar Montage Plus 3rail Classic Style - Black commercial ornamental fence. Including (1) 14' cantilever slide gate and (1) 4' walk gate. All posts set in concrete. The excavated soil will be left on site.

Total $ 18,695.00

50% Down payment is required on ornamental fence orders

Note : This quote is subject to site inspection , and no unusual sub-soil conditions .

OWNER'S RESPONSIBILITY
1. LOCATE YOUR PROPERTY LINES
2. SECURE FENCE PERMIT IF NEEDED
3. CHECK LOCAL ORDINANCES
4. LOCATE PRIVATE UNDERGROUND UTILITIES (i.e. pool lines, sprinklers etc.)

TERMS OF PAYMENT: UPON COMPLETION: $ MC/VISA # Exp.

This Proposal presented on behalf of SECURITY by: Steve Wallace

Acceptance of Proposal

The above prices, terms and specifications together with the TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF WHICH THE UNDERSIGNED HAS READ are hereby accepted and agreed.

Please sign and return ONE copy Signature:

Date Signed: 20__ If signed in a representative capacity, complete reverse side information.

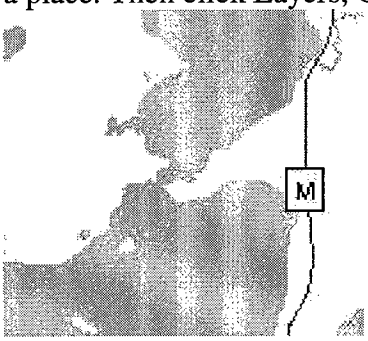
Appendix J

WDNR Grant Programs

Lake and Aquatic Invasives Grants

Interactive Map

Browse lake grants using our interactive mapping tool. (Use "Zoom To" to go to a place. Then click Layers, Grant Locations, Lake Grants)



Wisconsin has several types of lake grants available to qualified lake organizations and municipalities.

Small-Scale Lake Planning Grants

Small-scale lake planning grants of up to $3,000 are available to get you started. They can be used to obtain and disseminate lake information, conduct education projects, and develop management goals. These grants are ideal for lake groups just beginning the planning process or for activities that supplement an existing plan. More information

Large-Scale Lake Planning Grants

Large-scale lake planning grants of up to $10,000 per project are available for bigger projects. Multiple grants, up to a cumulative total of $100,000 per lake, can be used in phases to complete large projects but sponsors are limited to two grants per funding cycle. The intent of the large-scale program is to conduct technical studies to help develop elements of or complete comprehensive management plans. Depending on the condition and needs of the lake (which the planning process will help determine), the plan will specify activities, for example, improving water quality, managing user conflicts, or improving fishing. More information

Lake Protection Grants

Lake protection grants provide funding for implementing projects to protect or improve a lake. As one progresses from planning to implementation, the costs and the time involved increase. Because implementation is more expensive, protection grants are available for up to $200,000 per project. More information

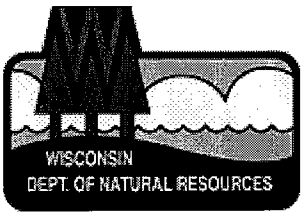
Aquatic invasive species (AIS) control grants

Aquatic invasive species (AIS) control grants provide funding to prevent and control the spread of AIS in the waters of the state. Grant awards may fund up to 50% of the cost of a project up to a maximum grant amount of $75,000, except for Early Detection and Rapid Response projects which are eligible for a maximum grant of 50% of project costs up to a maximum of $10,000. Eligible projects include:

- Education, prevention and planning projects
- Established infestation control projects
- Early detection and rapid response projects

More information

Last Revised: Wednesday June 25 2008



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101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

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Employment | Feedback | RSS | Site Map

Recreational Boating Facilities

(s. 30.92, Wis. Stats.; ch. NR 7, Wis. Adm.. Code)

Counties, towns, cities, villages, tribes, sanitary districts, public inland lake protection and rehabilitation districts, and qualified lake associations are eligible to apply for funds to:

- Construct capital improvements that will provide safe recreational boating facilities.
- Conduct feasibility studies related to the development of safe recreational boating facilities.
- Purchase aquatic weed harvesting equipment.
- Purchase navigation aids.
- Dredge channels of waterways.
- Chemically treat Eurasian water milfoil.

DNR provides cost sharing of up to 50 percent for eligible costs. Eligible projects include:

- Facilities such as ramps and service docks required to gain access to the water.
- Structures necessary to provide safe water conditions for boaters such as bulkheads and breakwaters.
- Dredging to provide safe water depths for recreational boating.
- Dredging of inland water channels for recreational boating (not more than once in ten years).
    - dredging is an eligible project only when it is associated with project development at the project site. Maintenance dredging is not eligible
- Support facilities (limited to parking lots, sanitary facilities and security lighting).
- Acquisition of equipment to cut and remove aquatic plants.
- Application of chemicals to remove Eurasian water milfoil (EWM).
- Acquisition of equipment to collect and remove floating trash and debris from a waterway.
- Acquisition of navigation and regulatory marker aids.
- Feasibility studies for safe boating facilities.

An additional 10 percent may be available if a municipality conducts a boating safety enforcement and education program approved by the DNR. An additional

30 percent may be available if the project meets statewide and regional requirements, as established by the Waterways Commission. A five-member Waterways Commission, appointed by the Governor, reviews and recommends projects for funding.

The following factors are considered in establishing priorities for projects:

- Distance of proposed project from other recreational boating facilities.
- Demand for safe boating facilities.
- Existing facilities.
- Projects underway.
- Commitment of funds.
- Location of proposed project within the region identified in s. 25.29(7), Wis. Stats.

Deadlines are established quarterly. Contact your DNR Regional Community Service Specialist for current application information.

Caution to Project Sponsors - Protect Confidential Data

The Wisconsin Department of Natural Resources (DNR) takes seriously its responsibility to protect all confidential data that are collected as the DNR administers its programs. For DNR grant programs, "confidential data" typically includes:

- Personal -- Social Security number, date of birth, driver's license number, signature
- Financial -- Bank account numbers on cancelled checks and statements. Credit card numbers on submitted receipts. Account and credit balances or limits. Federal or Wisconsin tax returns.

  If a grant is being issued to an individual, we need most of the personal data listed above before we can issue payments or reimbursements. This needed data comes to the DNR on completed W-9 forms. The DNR has a process to restrict access to and secure W-9 forms.

  The DNR, however is often sent unnecessary confidential data that are attached to proofs of payment, receipts, or other documents in support of a reimbursement request. Please protect confidential data by blackening out – also called "redacting" – bank account numbers, credit card account numbers, and other confidential data before proofs of payment are sent to the DNR. Please do not redact check numbers from bank statements.

  With each of us doing our part, we can protect confidential data and minimize identity theft.

  Thank you for your assistance and cooperation.

Forms

- Application Guidelines (PDF, 134KB)
- 8700-14 - Recreation Grant Project Cost Estimate Worksheet (PDF, 90KB)
- 8700-001 Grant Payment Request (PDF Fillable Form, 62KB)
- 8700-002 Grant Payment Worksheet (PDF Fillable Form 53KB)
- 8700-121 Waterways Commission Financial Assistance Application (PDF, 20KB)
- 8700-226 Lake Association Organizational Application (PDF, 157KB)
- Financial Administration (PDF, 34KB)

Additional Information:

Procurement Guide for Local Governments Receiving DNR Grants (PDF, 113KB)

Contacts

DNR Regional Community Service Specialist

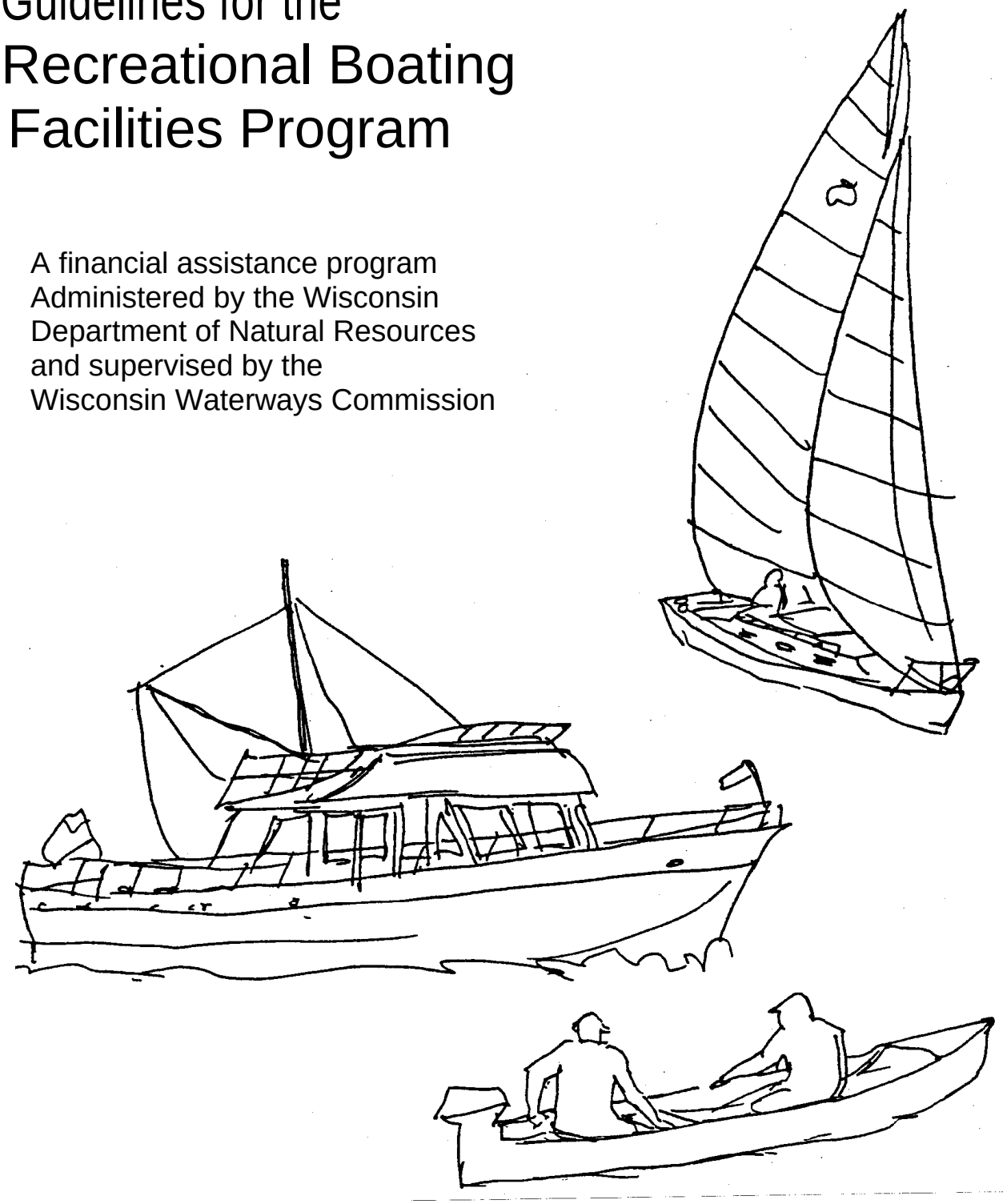
or

Diane Conklin
Department of Natural Resources
PO Box 397
1341 2nd Avenue
Cumberland, WI 54829
Phone: (715) 822-8583
Fax: (715) 822-3592

Last Revised: Wednesday July 30 2008

Guidelines for the Recreational Boating Facilities Program

A financial assistance program
Administered by the Wisconsin
Department of Natural Resources
and supervised by the
Wisconsin Waterways Commission



WISCONSIN
DEPT. OF NATURAL RESOURCES

PUB-CA-004 2006

Keys to a Successful Project
Plan, Plan, Plan
Communication, Communication, Communication!

- Start ***planning*** your project early and communicate with your regional community services specialist often about your project goals.

  Before rushing out and applying for a grant, spend some time discussing needs, goals and expectations with the boating and lake community. A little pre-planning will pay dividends down the road.

- If a consultant fills out your application, be sure to check the completeness and accuracy of the information. Remember, as the grant applicant, you are responsible for the accuracy of the information provided on the application and fulfilling necessary requirements. If you are fortunate to have your project approved, make sure your consultant agrees with the project scope indicated on the grant before signing your grant award agreement.

- The ***financial responsibility*** for a grant can't be passed on to an ineligible sponsor by a resolution. Payments for activities approved in your grant award can only be made by the sponsor of the project. The sponsor indicated on the grant agreement can only make all eligible payments for the grant.

- All ***changes*** or amendments ***to your grant contract*** must be approved by your regional community services specialist. Your regional community services specialist needs to be notified if the person listed as the contact or the authorized representative for the grant changes.

- Finish your project before the expiration date. If you need an extension to this date, contact your regional community services specialist.

- **AND MOST IMPORTANT**, feel free to ask questions if you don't know how to proceed or need clarification on such topics as eligible costs or grant administration procedures.

TABLE OF CONTENTS

Introduction

The recreational boating facilities program, authorized under section 30.92, Wisconsin Statutes, encourages the development of recreational boating facilities and related activities by providing state cost sharing assistance to governmental units and qualified lake associations. The source of the funds for this purpose is a portion of a formula driven transfer of excise tax on gasoline consumed for marine purposes.

The program is administered by the Department of Natural Resources and supervised by the Wisconsin Waterways Commission. The commission is composed of five members representing Lake Michigan, Lake Superior, the Mississippi River, the Lake Winnebago watershed and Wisconsin's inland waters. The Commission reviews the project applications, establishes project feasibility, determines the priority of projects, and determines the rate of cost sharing for projects.

Grants for financial assistance for recreational boating facilities are consistent with the Department's access code found in sections NR 1.90 and 1.91 and chapter NR 7, Wis. Adm. Code.

How to Use This Guide

This guide is arranged into 5 major sections and is color-coded for easier use.

Printed on White Paper
- ☐ General information on the recreational boating facilities program and who to contact

Printed on Blue Paper
- ☐ Information on eligibility of sponsors and projects

Printed on White Paper
- ☐ Important points on projects

Printed on Blue Paper
- ☐ Information of financial responsibility of sponsor

Printed on White Paper
- ☐ Information on applications

DNR CONTACTS

For recreational boating information, contact the appropriate community services specialist:

Northeast Region Christine Halbur 2984 Shawano Avenue PO Box 10448 Green Bay WI 54307-0448 (920) 662-5121	Southeast Region Tom Blotz 2300 N. Dr. Martin Luther King Jr.Dr. Milwaukee WI 53212 (414) 263-8610
West Central Region Bruce Neeb 1300 W. Clairemont Ave. Eau Claire, WI 54701 (715) 839-3713	South Central Region Pat Sheahan 3911 Fish Hatchery Road Fitchburg, WI 53711 (608) 275-3315
Northern Region Ed Slaminski 810 West Maple Street Spooner, WI 54801 (715) 635-4130	or Pat Zatopa 107 Sutliff Avenue Rhinelander, WI 54501 (715) 365-8928

ELIGIBILITY

Who is Eligible to Apply?

Governmental units and qualified lake associations are eligible to participate in the recreational boating facilities program. Chapter 30.92, Wisconsin Statutes, defines governmental units as; cities, towns, counties, a town sanitary district, a public inland lake protection and rehabilitation district organized under ch. 33. The Milwaukee River Revitalization Council, the Lower Wisconsin State Riverway Board, the Fox River Management Commission, or any other local governmental unit, as defined in s. 66.299(1), that is established for the purpose of lake management. Chapter 30.92 also sets up criteria for lake associations to be considered a qualified lake association. These criteria are found in the Appendix.

What are the Levels of Assistance?

Eligible sponsors may receive a grant for up to 50% of the total eligible cost for a recreational boating facility project. Sponsors are encouraged to match recreational boating facilities funds with other state, federal and local funds.

The Commission may increase the cost share rate from 50% to 80% if it determines that the project is of statewide or regional significance and the project meets all of the following criteria:

For projects on lakes and flowages:

- The project is located on an inland lake at least 1,000 surface acres in size or is located on Lake Superior or Lake Michigan
- The project site has, or will have as a result of the project, a boat launching facility protected by a breakwater structure
- The project is located on a lake or flowage that has the minimum number of car-trailer unit parking spaces required under s. NR 1.91, Wis. Adm. Code, or the project will bring the number of car-trailer unit parking spaces on a lake or flowage into compliance with the standards in NR 1.91.

For projects located on rivers:

- The project is located on the Mississippi River
- The project provides motorized boating access to a river at a site that is more than 10 miles from another motorized boating access site.
- The project provides or will provide a minimum of 30 car-trailer unit parking spaces at the site.

Please Note for Construction and Dredging Projects

The Commission may approve an additional 10% cost sharing for a construction or dredging project if:

- the sponsor is a municipality and it conducts a boating safety enforcement and education program approved by the department; or

- the sponsor provides financial support by written agreement to a municipality which conducts a boating safety enforcement and education program approved by the department on the waters in the immediate area of the proposed project.

The substantiated value of in-kind contributions or of donated money, materials, equipment use, services or labor may be used as all or part of a sponsor's share of the project cost subject to all of the following:

- all sources of sponsor match must be indicated when the application for a project is submitted.
- the maximum value of donated labor shall be $6.00 per hour.
- the value of in-kind contributions is what the sponsor would have to pay for similar services, materials, equipment or labor based on existing contracts, schedules on the open market.
- the value of donated equipment use shall conform to the Wisconsin department of transportation county highway rates for equipment.
- The value of donated materials and services shall conform to market rates and be established by invoice.

If requested by the sponsor, 50% of the financial assistance grant may be advanced to the sponsor at the time of project approval.

What Type of Projects are Eligible?

- Feasibility Studies

  Feasibility studies are an investigation of the environmental, economic, and engineering aspects of a recreational boating facility project to determine if the project may be successfully carried out. The desired product of this study is to learn if any physical or economic barriers exist which would prevent the project from being built.

  Studies covering items such as the anticipated use of a facility, benefits to be derived from its operation, costs of development and maintenance, and investigation of other funding sources will aid in the assessment of the economics of a potential project.

  Engineering studies may be conducted to select a site for a recreational boating facility project, to determine appropriate structures to provide safe water conditions, and to learn if The site is physically suited for development.

- Construction Projects

  1. Facilities such as ramps and boarding docks required to gain access to water.
  2. Structures such as bulkheads and breakwaters necessary to provide safe water conditions.

3. Activities such as dredging to provide safe water depths. Dredging of basins is an eligible activity only when it is associated with project development.
4. Support facilities include parking lots and signage, sanitary facilities, fencing and security lighting for the convenience of boaters.

Items eligible for construction funding include; site surveys, site planning, preparation of cost estimates, engineering studies, preparation of working drawings, construction plans and specifications, supervision and inspections. Expenditures for engineering or planning costs necessary to develop a proposal for Commission review made prior to entering a project agreement may be reimbursed by the department. Also eligible are the costs of site preparation, construction materials, construction equipment rental and demolition.

- Improvement and Repair of Locks

  Funding is available for the cost of improvement and repair of locks and facilities that provide access between waterways for operators of recreational watercrafts.

- Rehabilitation

  Funding is available for the rehabilitation of capital improvements that are related to recreational boating facilities.

- Navigation Aids

  The cost of aids to navigation and regulatory markers, including the cost of appropriate ground tackle is eligible for cost sharing assistance.

Please Note Because of the relationship of navigation aids to the health, safety and welfare of the boating public, expenditures for navigation aids and regulatory markers made prior to entering a project agreement may be reimbursed by the department.

- Weed Harvesting Equipment

  Acquisition of capital equipment that is necessary to cut and remove aquatic plants that are aquatic nuisances or that are detrimental to fish habitat. Eligible capital equipment will be limited to cutting devices, barges with propelling motors, conveyors and trailering devices.

- Trash Skimming Equipment

  Acquisition for capital equipment to collect and remove floating trash and debris from a waterway. Eligible capital equipment will be limited to collecting devices, barges with propelling motors, conveyors and trailering devices.

ELIGIBILITY

Please Note

Acquisition is eligible only when the sponsor has a Department approved management plan to cut and remove aquatic plants.

- Channel Dredging - Inland Sponsors Only

  Dredging of a channel of a waterway to the degree necessary to accommodate recreational watercraft. Eligible costs of dredging a channel in a waterway include: engineering, including soil borings; dredging and mobilization; construction of a temporary holding area; and transportation of dredge spoils. The cost of constructing revetments to permanently contain spoils is eligible if the sponsor can demonstrate that the cost of creating a land mass is less than the cost of transportation of spoils to a disposal site or if a substantial benefit to the recreational boating public will accrue.

- Chemical Treatment for the Removal of Eurasion Water Milfoil.

  The cost of chemicals and the application to chemically remove Eurasian Water Milfoil (EWM).

Please Note!

The Commission cannot consider a request for chemical treatment for the removal of EWM until the sponsor has obtained the necessary permit under s.281.17(2) Stats.

Are There Ineligible Costs?

Recreational boating facilities funds may **not** be used for any of the following:

- With the exception of expenditures for engineering or planning costs necessary to develop a construction project for Commission review or the acquisition of navigation aids, costs incurred prior to the signed contract approval by the department.
- Maintenance dredging of basins
- The costs of repairing, moving or removing aids to navigation or regulatory markers.
- The cost of acquiring land associated with the project and construction of facilities commonly used to berth boats, e.g., finger piers for seasonal dockage.
- Any costs related to planning, engineering, dredging, handling, processing, transporting or depositing of contaminated dredge spoils; the purchase of land rights for a spoils deposition area or the cost of landfill storage of spoils; costs of land treatment to cover up a spoils deposit; and the cost of testing or monitoring as a condition of a state or federal permit.
- The cost of operation and maintenance of a lock, launch ramp or harbor of refuge.
- Ceremonial and publicity expenses, bonus payments, charges in excess of the lowest bid, interest expense, charges incurred contrary to the policies and practices of the applicant, damage judgments arising out of the construction of a facility, costs of discounts not taken, and fees paid to legal counsel.

Pre-and post-treatment monitoring, information and education materials, preparation of aquatic plant management plans, spraying equipment or protection equipment.

Important Points About…

The Program in General

Facilities developed with assistance from the program must be operated and maintained in such a manner as to provide a safe and attractive environment for the user and open to the general public on a full and equal basis.

Fees charged to users of recreational boating facilities are to be reasonable and consistent with the provisions of Chapter NR 1.91, Wisconsin Administrative Code.

Sites to be developed with recreational boating facilities funds must be owned in fee simple by the sponsor or the sponsor must hold a lease or easement for the site. The length of lease or easement can not be less than 20 years and must include the right to construct, operate and maintain a recreational boating facility. The amount of assistance given to develop property under easement or lease must be commensurate with the control and tenure of the property.

Sites receiving assistance with recreational boating funds must have public access that is accessible or will become accessible as a result of the proposed project, i.e. launch ramp will be supported by an accessible boarding dock not less than 5 feet in width.

Facilities developed with assistance from the program are not to be converted to any other use without prior approval by the Department.

The total amount of assistance from the recreational boating facilities program and other state or federal funds for projects on lands owned by the department or for which the department has entered an agreement or lease with a governmental unit or qualified lake association to develop and maintain a recreational boating facility may not exceed 90% of the total eligible project costs.

Prior to project review by the Waterways Commission, the governmental unit or qualified lake association must have obtained all necessary Chapter 30 or 281, Wisconsin Statutes, or NR 5, Wis. Adm. Code, permits required by the department.

Proper bidding of construction projects is extremely important. A general bidding guide for both municipalities and non-profit organizations is available from your regional community services specialist. Detailed questions should be directed to a sponsor's legal counsel for reply.

IMPORTANT POINTS

Feasibility Studies

No more than one percent of the funds available through the recreational boating facilities program may be approved for any one feasibility study in one year.

Weed Harvesting Equipment

The waterbody for which the weed harvesting equipment is being purchase must have a minimum acreage of harvestable aquatic plants of at least 30 acres. For several small waterbodies for which the equipment is being purchased, the cumulative average shall be at least 50 but no more than 100 acres of harvestable aquatic plants for all lakes combined and the waterbodies need to be in close proximity to one another.

If the capital equipment acquired for weed harvesting is to be used on more than one lake, each lake must be covered by a department approved aquatic plant management plan.

If a sponsor purchases new equipment, the department may not provide funds for the purchase of individual pieces of weed harvesting equipment more than once every 10 years. If a sponsor purchases used equipment, the 10 year limitation may be shortened to match the remaining years of utility of the equipment. If a sponsor sells any or all of the equipment funded under the program prior to the end of the 10 year or adjusted period, the sponsor is required to repay the department 50% of the sale price.

Rehabilitation

The eligibility of costs for rehabilitation are subject to the following:

- The repair or renovation is the result of damage from natural events of faulty design but is not a result of inadequate maintenance or lack of care

- The total cost of the rehabilitation is greater than $10,000

- The total amount of costs eligible for cost sharing assistance that a sponsor receives for rehabilitation will be reduced or refunded by any amount of damages recovered by the sponsor through either litigation or insurance settlement

Channel Dredging

A governmental unit or qualified lake association may not receive funds for dredging a channel of a waterway more than once every 10 years.

A channel that is dredged with cost sharing assistance must be defined by aids to navigation.

Cost sharing for dredging of a channel may be provided only for dredging the width of a channel to a distance of 25 feet on either side of the centerline of a river or 25 feet on either side of a center channel marker in a lake. The dredging of backslopes necessary to maintain a channel width of 50 feet for a minimum of 10 years is eligible and the design slope ration of the backslope dredging shall be commensurate with the nature of the lakebed materials

The depth of the channel dredging will be limited to the depth necessary to accommodate recreational watercraft commonly utilizing the water body. A project having greater design goals may be assisted, but the cost sharing assistance will be limited to that portion of the project related to recreational boating. This will apply to necessary survey and engineering expenses as well.

Chemical Treatment for Eurasian Water Milfoil

Currently there is a $75,000 cap per year on cost sharing for **all** chemical treatment of EWM projects.

Financial Administration

Project Grant Awards

Upon approval of your project, you will receive a signed contract from the Department outlining the approved project scope, project period and project amount. **Read your contract carefully. It contains conditions that govern your project**. The individual authorized by resolution should sign one copy of this contract and return it to the appropriate Regional community services specialist. The remaining copy should be maintained in your project files.

Caution!

Costs incurred prior to the date of the signed contract approval by the Department will not be eligible for reimbursement.

Changes to the Project Contract

Amendments

Requests for changes in the project contract in either the scope of the work, project period, or approved project amount must be submitted in writing to the regional CSS before the project end date expires.

Requests for additional time must indicate why the project cannot be completed by the end date and be accompanied by a status report.

Requests for the addition or deletion of scope items to a project must justify the need for more or less scope and be accompanied by a revised cost estimate worksheet. Requests for changes in scope must be made prior to undertaking any changes in project activity.

Bidding

For activities that encompass public construction, local government sponsors must comply with state bidding and contracts. Examples of public construction could be the construction of a launching facility or a toilet building. Local governmental sponsors should check with their corporation counsel on current bidding thresholds and notice standards involving public construction activities.

Financial Administration During the Project

Grantee's Responsibilities

The fiscal controls and accounting procedures used to record project costs and state grant receipts are based on generally accepted accounting standards and principles. You must:

- Establish a separate account for project expenditures.
- Itemize all project expenditures in sufficient detail to the exact nature of the expenditure and provide evidence of that expenditure (e.g., a copy of a canceled check. If your bank does not return canceled checks, a copy of the bank statement will do).

- Maintain payroll vouchers for force account salaries and wages. Payroll vouchers are not used, a statement must be prepared at the end of each pay period showing the names of employees, the hours spent on the project, project item involved and the gross amount of salary earned by each. The statement must be verified by the official responsible for the project and approved by appropriate authority. Actual fringe benefits paid as part of direct labor costs are eligible expenses for all governmental sponsors.

- Cross-reference each expenditure with the supporting purchase order, contract, voucher, invoice, receipt, cash register slip, etc.

- Maintain daily records of force account equipment actually used on the project. These daily records must show the type of equipment used, actual hours of use and type of work for which the equipment was used. The time equipment at the job site but not in use (idle time) is not eligible.

- For equipment such as trailers, trucks, etc., allowable rates are established annually in the county's agreement on equipment rates with the Wisconsin Department of Transportation.

- For equipment not included above, the actual rate should be computed. The rate should include hourly depreciation and hourly operational costs. Any generally accepted method of computing depreciation which reflects acquisition costs, useful life and usage factors is acceptable.

Claims for Reimbursement - Required Documentation for all Claims

Except for project advances and navigation aid projects, claims for payment will be on a reimbursement basis. To be eligible for reimbursement, all costs must be incurred within:

- the project time period shown on the contract
- the scope of activity defined in the contract
- the state aid project amount shown in the contract

Claims must be submitted within six months of the project termination date.

For county sponsors, the financial audit of claims will take place as a part of each county's year-end single audit. Counties are not required to submit financial documentation (invoices, cancelled checks, equipment or labor records) with their payment claim. After the single audit is completed, the Department may perform additional financial audits of these claims to supplement work done in the single audit.

For all non-county sponsored projects, the following documentation is required to process a claim for reimbursement of project expenditures:

1. Copies of all contracts or agreements with contractors or service providers.
2. Copy of the summary of bids, if applicable
3. Completed Department Reimbursement forms. Completion instructions are included on the forms.
   Form 8700 - 001 *Reimbursement Claim*
   Form 8700 - 002 *Reimbursement Claim Worksheet*
4. Copies of cancelled checks (front and back) which support the cost claimed. If the bank does not return cancelled checks, a copy of the bank statement is acceptable.
5. Invoices from the vendor which support eligible costs being claimed.
6. Machine usage records that substantiate the use of each equipment item for which costs were claimed. These records should be kept on a daily basis and show the hours, dates, and project function for which the equipment was used.
7. Labor records supporting the hours worked by individuals working on the project. These records should be kept on a daily basis and show the dates, hours, hourly rate and work activity of each individual claimed.

All claims for reimbursement should be sent to your regional community services specialist. A source of additional information titled the Financial Handbook is available from your community services specialist to further assist you in the reimbursement process.

How are Reimbursement Claims Processed?

Once received, the community services specialist reviews the reimbursement claim for completeness and compliance with the project contract. This reviews includes ensuring that the costs claimed were for items included in the scope of the project, within the grant agreement time period, and meet the eligibility requirements of the program. In addition, site inspections will be conducted on construction projects to insure that the items being claimed for reimbursement have been completed as expected from the project and application and grant agreement scope. Upon successful review of project expenditures. The payment is made.

The state has the right to audit or examine all books, papers, accounts, documents or other records of the sponsor as they relate to the project for which the program funds were granted.

COMPLIANCE WITH CONTRACT

All project records must be retained by the sponsor for a period of not less than 3 years after final payment or final disposition of audit findings.

When a Project is Not in Compliance with the Contract

If the department finds that a project has not been satisfactorily completed by the end of the grant period or the sponsor has violated a term of the grant agreement, the department may terminate the grant and seek reimbursement of the state share or a portion of the state share previously distributed to the sponsor.

Applications

The Process

Governmental units and qualified lake associations may submit applications for eligible projects at any time. The Waterways Commission meets an average of four times per year for the review of projects.

Lake associations may submit an organizational application at any time. The purpose of the organizational application is to establish that the lake association meets the qualifications under section 30.92(1)(br), Wisconsin Statutes. A copy of the *Lake Association Organizational Application*, Form 8700-226, is found in the appendix.

Application materials are available from the department Community Services Specialist in the appropriate regional office. The materials should be completed and forwarded to the CSS. Appropriate regional departmental staff will review the project and then forward it to the coordinator of the recreational boating facilities program. The application will then be presented to the Waterways Commission for consideration. In order for project requests to be brought before the Commission, completed applications must be in the hands of the Community Services Specialist 30 days prior to the meeting of the Commission.

Applicants will be expected to be present to discuss their project with Commissioners or make arrangements with the community services specialist to make the project presentation to the Commission. Applicants will be notified of the status of their application on the project priority list after review by the Commission.

How to Prepare Your Application

The checklist below and the discussion that follows will take you through the necessary steps for preparing a successful application.

1. Contact Your Community Services Specialist
   - ☐ Discuss your eligibility and your project ideas and plans
2. Prepare Your Application
   - ☐ Complete Form 8700-121, *Waterways Commission Financial Assistance Application*. You should complete the form, provide a comprehensive statement of feasibility and project narrative, locator map, site plan, harvesting plan or construction plans as appropriate.

- ☐ Attach a copy of the officially adopted resolution
- ☐ Complete Form 8700-14, *Cost Estimate Worksheet*
- ☐ For lake districts, attach a copy of Form 8700-226, *Lake Association Organizational Application* and all required attachments.
- ☐ Contact your community services specialist if you have any questions
- ☐ Forward your completed application and supporting materials to your community services specialist

Application Requirements

Official Resolution
See the sample resolution in the Appendix

Applications from sponsoring governmental units and qualified lake associations for eligible projects must be accompanied by an adopted resolution. The resolution must:

- formally request financial assistance by the sponsor
- authorize a representative to act on behalf of the sponsor to sign documents and take necessary action to complete the proposed project
- resolve that the applicant will meet the financial obligations of the grant

Detailed Project

A Feasibility Study

- A list of the study tasks to be accomplished and the cost of each. A feasibility study will contain each of the major categories for investigation as follows:

  1) Economic analysis. The purpose of this analysis is to describe the anticipated level of use of the facility and the economic benefits of such use. At a minimum, this analysis should address:

     a) An assessment of the demand for the project including an estimate on the number of users on an annual and peak period basis.

     b) An estimate of annual revenues to be derived from any launch or associated fees.

     c) An estimate of the current number of users of other comparable safe recreational boating facilities within the general area of the proposed project.

d) Past operation and maintenance costs where the project involves the improvement of an existing facility.

e) Estimated annual operation and maintenance costs for a new project.

2) Environmental analysis.

Because each proposed recreational boating facilities site has certain unique characteristics, site specific environmental information must be collected and analyzed. The scope and detail of this information will be determined on a site by site basis in cooperating with the Department of Natural Resources. This is intended to avoid any later problems regarding the environmental acceptability of the site.

3) Engineering Analysis. The engineering analysis is to include general plans and specifications of all physical improvements including but not limited to: dredging, construction of ramps, piers and breakwaters and land alterations. The Commission may require that the engineering analysis be certified by a registered professional engineer.

A Construction, Rehabilitation or Lock Improvement Project

Construction, rehabilitation or lock improvement projects involves work associated with actual planning and construction or reconstruction of facilities such as boat launches, service piers, breakwaters, parking lots, sanitary facilities, and other structural facilities.

Important Reminder

<u>All necessary water regulatory permits required for the construction of project work items must be obtained before the project is presented before the Commission.</u>

The following information is to be made available either on or attached to the application form:

- A statement explaining the feasibility of the project. At a minimum, the statement is to include the following information: need for the project, estimated demand for the project (how much use will be made of the project), estimated annual operation and maintenance costs, completed environmental analysis (including a copy of necessary state and federal permits), and general engineering plans. This information will be used by the Commission to determine the feasibility of the project and compare the merits of the proposed project with other project proposals.

- A detailed estimate of the cost of the project indicating the local share, the requested amount of state funding, and the extent of all other sources of funding. Specific work items and their cost are to be itemized on a recreation aid project cost estimate worksheet, Form 8700-14.

- Preliminary or final site plans of facilities or structures to be constructed. Projects involving launch ramps should indicate percentage slope of the ramp and the width of the existing or proposed boarding dock.

Acquisition of Weed Harvesting Equipment

The following information is to be made available either on or attached to the application form:

- Copy of the Department approved weed harvesting management plan.

- A statement of feasibility covering such items as method and manner of storage and maintenance of the equipment, source of funds to operate harvesting program, any potential use by other lake associations or municipalities, requirements of the operators of the equipment, method of weed disposal, etc.

- An estimate of cost of each piece of capital equipment itemized on a recreational cost estimate worksheet, Form 8700-14.

Acquisition of Trash Skimming Equipment

The following information is to be made available either on or attached to the application form:

- A statement supported by appropriate documents that the project is feasible from economic and environmental viewpoints.

- An estimate of cost of each piece of capital equipment itemized on a recreational cost estimate worksheet, Form 8700-14. This information should also highlight the requested amount and the extent of all other sources of funds.

Acquisition of Aids to Navigation and Regulatory Markers

The following information is to be made available either on or attached to the application form:

Number, description and estimated cost of the aids to navigation or regulatory markers and appropriate ground tackle.

- If the aids to navigation or regulatory markers have been purchased prior to application, copies of vendor invoices for materials purchased.

- A schematic drawing of the location of the aids to navigation or regulatory markers. For aids and markers that will be placed for the first time, a copy of the placement permit, Form 8700-58, should accompany the application.

Channel Dredging of Waterways

Channel dredging projects involve the work associated with testing, engineering, dredging, transportation and deposition of spoils to achieve safe water depths in designated channels for recreational boating activity.

All necessary water regulatory permits required for removal and deposition of spoils materials must be obtained before the project is presented before the Commission.

a. The following information is to be made either on or attached to the application form:

1) A statement explaining the feasibility of the project from economic, environmental and engineering viewpoints. At a minimum this should include the following information: design goals, environmental analysis, including copies of necessary state or federal permits, estimated life of dredging activity, and general engineering plans. This information will be used by the Commission to determine the feasibility of the project and compare the merits of the proposed project with other comparable project proposals.

2) A detailed cost of the project indicating local share, the requested amount of state funding, and the extent of all other sources of funding. Specific work items and their cost are to be itemized on a recreation aid project cost estimate worksheet, Form 8700-14.

3) Preliminary or final site plans showing location of channels to be dredged.

Chemical Treatment of Eurasian Water Milfoil

The necessary chemical treatment permits must be obtained before the project is presented to the Commission.

a. The following information is to be made either on or attached to the application:

1) A statement supported by appropriate documents that the project is feasible from an economic and environmental viewpoint. This should include the following: number of acres of infestation and the history of occurrence and spread, what other strategies have been attempted, why is chemical control a desirable control option, is the project a stand alone or part of a larger plan or component of a like important project, how many acres are to be treated and their location, the cost per acre, anticipated duration of benefit, what water users are being precluded by EWM, what are public benefits from this project, and how will success of treatment be monitored.

2) A detailed estimate of cost indicating local share, the requested amount of state funding and the extent of all other sources of funds. Costs are to be summarized on a recreational aid project Cost Estimate Worksheet, Form 8700-14.

Project Ranking Factors

The enabling statute for the recreational boating facilities instructs the Waterways Commission to consider several factors in establishing priorities for competing projects. The factors differ for different types of projects. The factors for comparing feasibility studies are:

1) Estimated cost.

2) Available funds.

3) Support of governmental units.

4) Distance to other recreational boating facilities.

5) Work previously completed.

The factors for comparing all the other projects eligible for recreational boating facilities funds are:

1) Distance the proposed project is from other recreational boating facilities.

2) Demand for safe boating facilities.

3) Expression of municipality support.

4) Existing facilities.

5) Projects underway.

6) Commitment of funds.

7) Location of the proposed project within the region identified in sec. 25.29(7)(a), Wisconsin Statutes.

In addition to the factors listed above, the Commission will consider the following items in establishing a priority list: projects located

Where a scarcity of safe recreational boating facilities exist, basic facilities over elaborate facilities, activities of the general boating public over those of a limited group, those which meet urban needs, and to such other factors, which in the opinion of the Commission, will allow the enhancement of recreational boating.

With respect to chemical treatment projects for EWM, the Commission will also consider the following items in establishing a priority. Projects that provide public boating benefits over projects that primarily benefit riparian landowners; projects that prevent expansion of or substantially eradicate EWM over projects that provide for annual nuisance relief.