

# M I C H I G A N



## CLEAN MARINA GUIDEBOOK





## Michigan Clean Marina Guidebook

A product of the Michigan Clean Marina Program

Prepared by  
Michigan Department of Environmental Quality  
Michigan Boating Industries Association  
Michigan Sea Grant College Program

2004



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# Best Management Practices for Marinas

Dear Friends,

Michigan prides itself on its strong sense of community and its love of the great outdoors. Recreational boating is a large part of this outdoor enjoyment; however, we must all continue to be diligent in the protection of our natural resources. The greatest natural resource that Michigan has to offer is our extensive network of lakes, rivers, and streams. It is with these bodies of water in mind that the Michigan Clean Marina Program was initiated. The Michigan Clean Marina Program is a public-private partnership between the Michigan Boating Industries Association, Michigan Sea Grant College Program, and the Michigan Department of Environmental Quality. The Clean Marina Program fosters these objectives by disseminating information that will assist marina and boatyard operators in managing profitable businesses, while protecting and enhancing the quality of Michigan's waterways. This guidebook contains practical, common sense tips for controlling pollutants associated with recreational boating operation, maintenance and storage, as well as an overview of relevant environmental laws and regulations.

Through the Clean Marina Program, marina operators have an opportunity, even an obligation, to educate their customers (boaters) about proper management practices and environmental stewardship. At the same time, these marinas will be rewarded for their voluntary stewardship of clean water and fresh air through designation as a Michigan Clean Marina. By working together, I am confident that the marina industry, recreational boaters, and the State of Michigan will be able to preserve and enhance the healthy, functioning natural resources upon which our very livelihood depends.

Thank you for exploring this guide to pollution prevention practices for marinas, and for doing your part to help ensure that our environment is safe, clean, and preserved for future generations of Michigan residents.

Sincerely,

A handwritten signature in black ink that reads "Van W. Snider, Jr." with a stylized, cursive script.

Van Snider, Jr., President  
Michigan Boating Industries Association

## Foreword

The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 requires all coastal states to develop Coastal Nonpoint Source Programs to address polluted runoff within the coastal zone. Nonpoint source pollution is the grease from our cars, fertilizers from our fields, and exhaust from our lawn mowers. It also includes storm water runoff from boatyards, drips from fuel docks, discharges from marine sewage, and fish waste from recreational boaters.

In response to the CZARA requirement, the State of Michigan, along with industry and academic institutions, has developed this comprehensive guide to best management practices. This guidebook outlines Michigan's relevant laws, regulations, and programs that address nonpoint source pollution. The goal is to distribute this guide to all marinas in Michigan and to designate all marinas that choose to participate in the Michigan Clean Marina program.

By developing and utilizing this guide, Michigan marinas have been given an opportunity to avoid regulation by voluntarily adopting pollution prevention practices. We urge all marina operators to embrace the challenge: to work with the Michigan Clean Marina Program and continue to protect our recreational treasures.

## Acknowledgments

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## Acronyms

AST	Aboveground Storage Tank
BMP	Best Management Practice
CFR	Code of Federal Regulations
CZARA	Coastal Zone Act Reauthorization Amendments of 1990
DNR	Michigan Department of Natural Resources
EPA	Environmental Protection Agency
GLMD	Geological & Land Management Division
IDA	Intensely Developed Area
JPA	Joint Permit Application
LDA	Limited Development Area
MBIA	Michigan Boating Industries Association
MDA	Michigan Department of Agriculture
MDEQ	Michigan Department of Environmental Quality
MOP	Marina Operating Permit
MPPRCA	Marine Plastic Pollution Research and Control Act
MSD	Marine Sanitation Device
MSG	Michigan Sea Grant College Program
NDA	No Discharge Area
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NREPA	Natural Resources and Environmental Protection Act
PCU	Permit Consolidation Unit
PWC	Personal Water Craft
QAC	Quaternary Ammonium Compounds
RCRA	Resource Conservation and Recovery Act
SPCC	Spill Prevention Control and Countermeasure Program
TCLP	Toxicity Characteristic Leaching Procedure
UL	Underwriters' Laboratories
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank

# **Introduction**

## **Emphasis on the Impact of Boaters**

### **Guidebook Topics**

- Siting considerations for new or expanding marinas
- Marina design and maintenance
- Storm water management
- Boat maintenance and repair
- Petroleum control
- Sewage handling
- Waste containment and disposal
- Marina management
- Laws and regulations
- Environmentally Preferable Purchasing

### **How to Use This Guidebook**





*Sailing in the Great Lakes*



*View of the Grand Haven lighthouse, Lake Michigan*

## **Introduction – Emphasis on the Impact of Boaters**

The Michigan Clean Marina Program is an effort to assist marina and boatyard operators to protect the resources that provide their livelihood: clean water and fresh air. These natural assets are essential features of the boating industry. After all, many boaters are drawn to the water by nature's glory. Boaters want to feel the lake rolling beneath them and the crisp air against their skin. They want to see birds diving and fish swimming. They want to be able to swim and enjoy other water sports without fear of disease. Ironically, it is the enjoyment of these natural wonders that may lead to their decline.

The Michigan Clean Marina Program seeks to promote clean water and fresh air by providing best management practices, compliance/technical information and educational material to marina operators and boaters. The goal of the program is to encourage informed decision making that leads to a reduction in boating-related environmental impacts of pollution.

The maintenance, operation, and storage of recreational boats have the potential to pollute waters of the state and to impair air quality. Contaminants include dust from hull maintenance operations, solvents from engine repair shops, petroleum from careless fueling practices,

sewage discharges from boats, and heavy metals from antifouling paints. These pollutants may be deposited directly into waterways or they may be carried in by storm water runoff. Marina design and location may also contribute to environmental degradation by disturbing sensitive habitat areas.

This is not to say that marinas and boaters are the only contributors to environmental degradation. Quite the contrary is true. Water quality is impacted by fertilizers and pesticides applied by land owners (residential, commercial, and agricultural), by industrial discharges, and by our choices of home cleaning products. Natural resources are impacted by sediment washed from cleared land and by storm water runoff that collects oil and heavy metals from automobiles. Environmental degradation is not the result of any particular industry or user group. It is the consequence of many activities. As such, we all have an obligation to do what we can to minimize the environmental impacts of our actions. If we each take responsibility for our actions – the cumulative result will be a cleaner, healthier environment.



*Marina in Grand Haven, Michigan*

By adopting the best management practices recommended throughout this Guidebook, you will demonstrate your commitment to environmental stewardship. You can be proud that you are doing your share to protect the environmental quality upon which we all depend. Additionally, your marina or boatyard will be a safer, healthier place to work. Participating marinas will be able to save money by reducing costs for materials, waste cleanup and disposal. Participating marinas, may increase profits by renting equipment, such as vacuum sanders and by offering recycling collections. Similarly, cleaner, more efficient equipment will increase the productivity of your marine staff. The liability associated with waste handling may also be reduced and the salability of property enhanced. Moreover, Clean Marina Program facilities will be more attractive to those who care about the health of our water, land, and air. Clean Marinas will be in a better position to attract boaters who demand facilities that protect the environment. "Green" consumers are one of the fastest growing market segments today.

The Michigan Clean Marina Guidebook provides an overview of actions that marine industry professionals can take to protect water and air quality. It is written primarily for the owner/operators of full service marinas but is equally applicable to the common boater, marine retailer, and those facilities that offer less than full service.

## **The Guidebook provides advice on the following topics:**

- Siting considerations for new or expanding marinas
- Marina design and maintenance
- Storm water management
- Boat maintenance and repair
- Petroleum control
- Sewage handling
- Waste containment and disposal
- Marina management
- Laws and regulations
- Environmentally Preferable Purchasing

Those marinas that adopt a significant proportion of the best management practices suggested within the Guidebook will be recognized as a Michigan Clean Marina. They will receive a certificate acknowledging their environmentally responsible actions, the ability to use the Michigan Clean Marina logo on their letterhead and advertising, a flag to fly from their property, and promotion by the Michigan Clean Marina Program in publications, on the web, and at public events.

Now is the time to take a leadership role in protecting and enhancing the quality of Michigan's shoreline and inland waters. Do your part, participate in the Michigan Clean Marina Program.

## **How to Use this Guidebook**

The Michigan Clean Marina Guidebook is intended to be used as a reference document. Refer to selected chapters as needed. For example, as you prepare for spring commissioning, review the recommendations in the Boat Maintenance and Repair chapter.

There is additional information available regarding boat cleaning and maintenance, petroleum control, vessel sewage, and waste containment and disposal. This information is meant to be shared and distributed to your boaters.

Throughout the book you will find references to additional sources of information. Contact information and brief descriptions of services offered by each authority are listed with subsequent appendices containing information about products and services that will help you reach your goals.

# **Siting Considerations for New and Expanding Marinas**

## **Best Management Considerations**

- Characterize Project Site
- Identify Rare and Endangered Species
- Minimize Disturbance to Wetlands
- Consider Bottom Configuration
- Environmental Protections

# Siting Considerations for New and Expanding Marinas

## Best Management Considerations.

- Redevelop Existing Sites. Rather than disturbing pristine areas, place new facilities in previously-developed waterfront sites or brownfields.
- State regulations favor expansion of existing marinas over development of new facilities.
- Proper shoreline planning encourages placement of boating facilities in developed areas.
- Brownfield redevelopment restores property to productive uses; increases property value; reduces pressure to develop greenfields; increases local tax base; uses existing infrastructure; mitigates public health and safety concerns; and improves community image.

## Characterize Project Site.

- Identify habitat types and seasonal use of the site by fish, waterfowl, and other organisms.
- If necessary, hire a private consulting firm to perform a site assessment.

## Identify Rare and Endangered Species.

- Rare and endangered species may not be disturbed (Federal Endangered Species Act and Natural Resources and Environmental Protection Act (NREPA) - Part 365). A complete listing for Michigan can be found in the Appendices.
- All proposed development sites must be assessed by the U.S. Fish and Wildlife Service (USFWS) and the Michigan Department of Natural Resources for endangered and threatened species and habitat protection areas.
- For more precise information concerning sensitive habitat areas, submit a project description and a photocopy of a United States Geological Survey topographic quadrangle map – with the site identified – to the USFWS ([www.fws.gov](http://www.fws.gov)).
- If protected species are identified, you must implement an approved protection plan prior to project approval.
- Contact Michigan Natural Features Inventory for examples of wildlife protection plans. The Michigan Natural Features Inventory can be accessed through Michigan State University Extension offices, (<http://web4.msue.msu.edu/mnfi>).

## Minimize Disturbance to Wetlands.

- Minimize disturbance to wetlands and avoid vegetation disturbances in riparian areas.

- The goal is to preserve – and when possible, increase wetland acreage and function.
- Guidance criteria specifies that disturbance to wetlands must be minimized (NREPA – Part 303).
- Any construction that extends into wetland areas requires authorizations, licenses, or permits from the Michigan Department of Environmental Quality (MDEQ), U.S. Army Corps of Engineers (USACE), and other local authorities.
- Mitigation is required in cases where loss of wetlands is unavoidable. To minimize impacts, new or expanding marinas should locate in water that is equal to or more than 4.5 feet deep at mean low water or in areas where their presence would not adversely affect:
  - Aquatic plants;
  - Productive macro invertebrate communities;
  - Fish spawning or nursery areas;
  - Rare, threatened, or endangered species, or species in need of conservation; or
  - Historic waterfowl staging areas.
- Avoid Critical Migration, Nesting, and Spawning Periods.
- Schedule construction to avoid critical migration, nesting, and spawning periods of important species of fish and wildlife.
- Consult with the MDEQ Water Division for site-specific determinations of the potential effects of activities on wildlife populations.
- Avoid Waterfowl Nesting and Staging Areas. Regional waterfowl populations converge in certain areas to breed and feed during specific times of year. The preservation of traditional nesting and staging areas is vital to the continued existence of many water bird species. Marinas must be located such that the increased boating activities associated with new or expanded marinas do not deter waterfowl from using these traditional areas.
- State regulations and siting criteria require new or expanding marinas to avoid areas that will adversely affect historic waterfowl staging areas (NREPA – Part 301 & Part 325).
- Avoid Geographic Impediments. Flushing is essential for maintaining water quality within your marina. Any new or expanding marinas should be constructed to enhance or maintain proper water movement.
- Although not required under Parts 303, 325, or 301 regulations, marinas should be located on well-flushed waterways.

## Consider Bottom Configuration.

- A continuous, gradual downward slope from the berthing area into deeper water is ideal.
- Avoid canals, irregular pockets, and sumps that are deeper than adjacent channels.
- Avoid square corners in marina basins and dead end channels to the greatest extent possible.
- Follow Natural Channels.
- Align entrance channels with natural channels to increase flushing.
- Avoid locating the entrance channel perpendicular to the natural channel as shoaling and dredging, is a potential problem.
- Avoid long winding channels connecting marinas to open water.
- Where possible, establish two openings at opposite ends of the marina to promote flow through currents.
- Marinas should be located on waterways with strong flushing characterized by:
  - A bottom that slopes from headwaters to mouth without sumps or other features which inhibit complete water exchange;
  - An unstricted entrance; and
  - Few branches, coves, and other features, which inhibit complete mixing.

Marina protection must be carefully designed. Incorrectly designed structures may amplify wave action exacerbating erosion, create excessive shoaling and interrupt, or restrict circulation increasing unfavorable environments. Coastal engineering analysis may be required to determine the size, configuration, location, and proper materials for protection structures such as rubble mound breakwaters/wave attenuators and seawalls.

Marinas are also discouraged from extending past the present line of facilities or from “sticking out.” Additionally, facilities have been encouraged to develop by cutting into the upland areas rather than building out into the bottomland. This avoids the loss of access to public trust waters and bottomland.

Damage from ice can potentially cause oil and gas spills, the deposition of debris and other substances. Areas prone to ice flows need to be identified and construction or management processes identified.

## Environmental Protections.

The natural plant and animal communities of coastal areas serve multiple functions. Wetlands, for example, provide habitat for fish and fowl. They form a natural buffer against incoming storms and act as a filter to purify storm water runoff from the land. Wetlands also minimize erosion and support tourism through bird watching, hunting, and fishing. Because of the ecological, economic, recreational, and aesthetic values inherent in coastal resources, it is important that shoreline development not diminish these features.

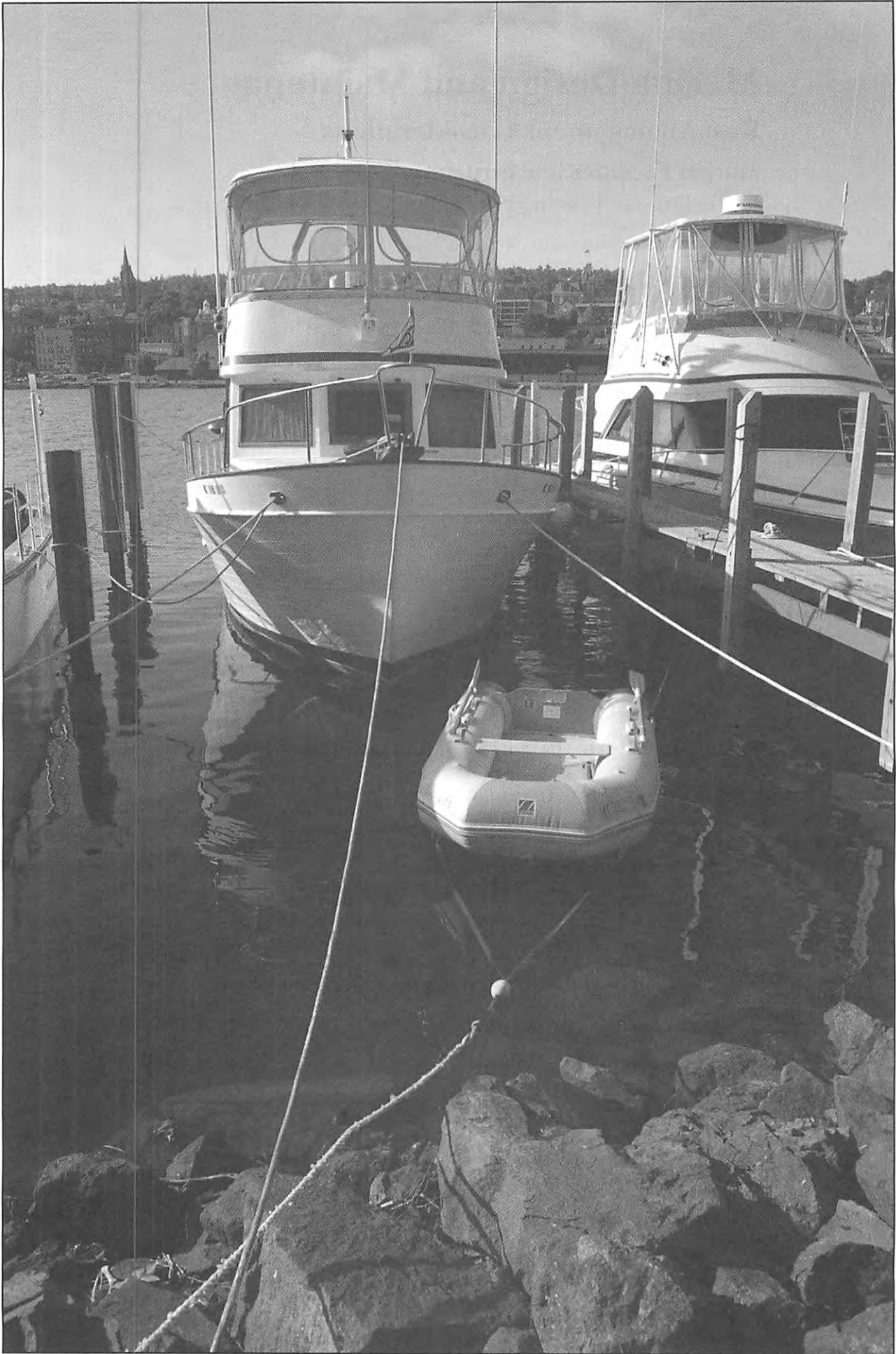
These programs are meant to:

- Minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have runoff from surrounding lands;
- Conserve fish, wildlife, and plant habitat; and
- Establish best management practices for development, which accommodate growth.

Many counties and municipalities along the Great Lakes and communities along inland lakes and streams have developed local land use programs. The programs vary slightly from county to county. Therefore, local programs and ordinances should always be consulted. Local planning offices are the first point of review for most development projects.

When selecting a site for a new marina or when expanding a marina, avoid or minimize impact upon these natural resources:

- Aquatic plants
- Wetlands
- Rare, threatened, or endangered species
- Spawning, nursery, or propagation areas
- Shallow water habitat
- Colonial waterfowl nesting sites
- Existing riparian forests
- Forests with interior dwelling bird species
- Natural heritage areas
- Tributary streams
- Waterfowl staging areas



*Marina in Houghton, Michigan*

# **Marina Design and Maintenance**

## **Best Management Considerations**

### **Marina Facilities and Structures**

- Use Fixed or Floating Piers to Enhance Water Circulation
- Use Environmentally Neutral Materials
- Limit Shaded Areas Over the Water
- Minimize Environmental Impacts of Dredging
- Employ Nonstructural Shore Erosion Control Measures
- Conserve Water
- Maintain Structures Using Clean Marina Practices

### **Protecting Sensitive Areas**

- Minimize Impervious Areas
- Use Upland and Inland Areas
- Expand Upward
- Conserve Sensitive Land
- Practice Water Conservation in Landscaping
- Adopt Integrated Pest Management Practices
- Help to Control the Spread of Aquatic Invasive Species

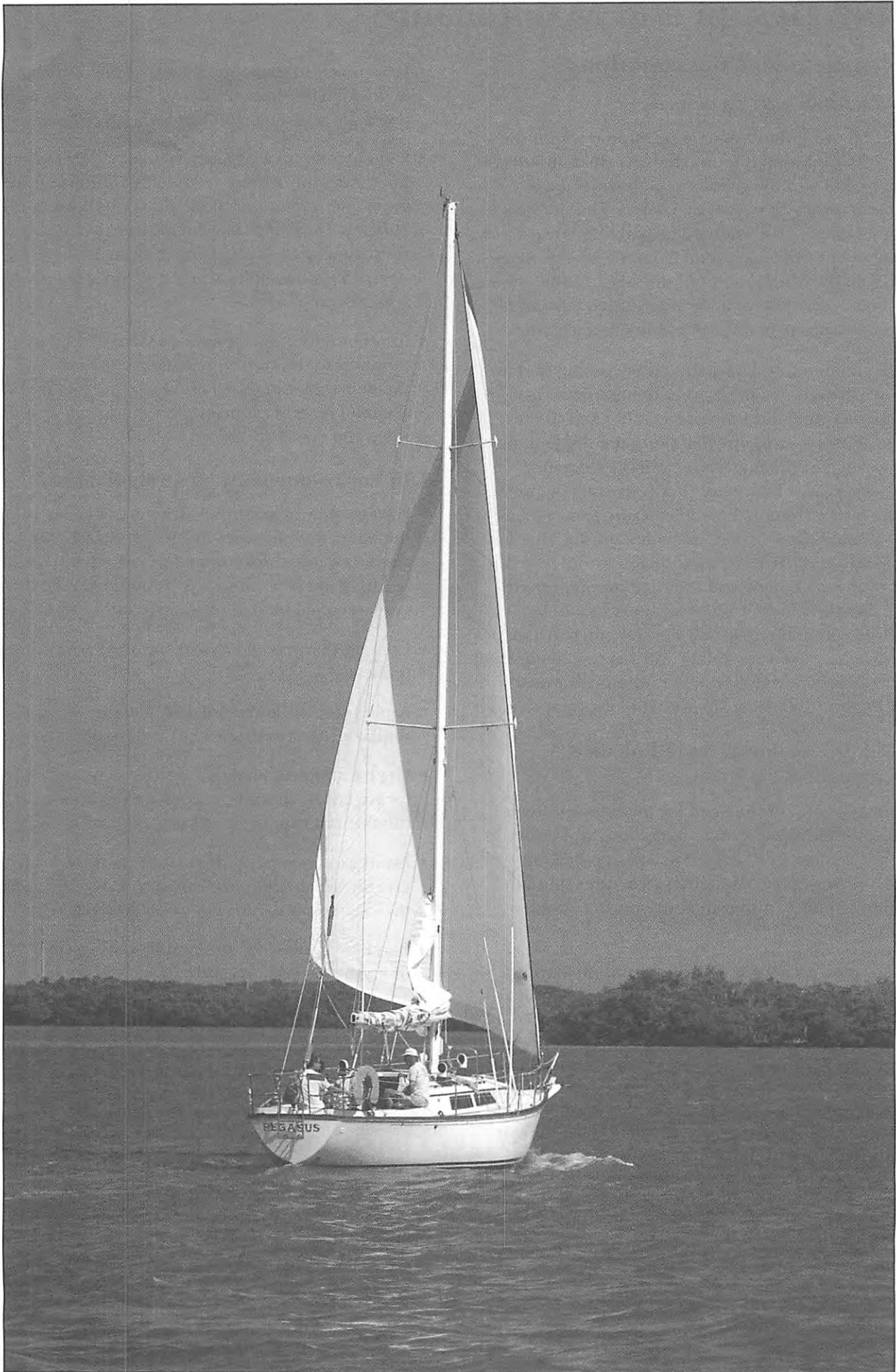
### **Creating Habitat Areas**

- Maintain and/or Develop Vegetated Areas
- Environmental Protections

### **Regulatory Issues**

- Environmental Review
- Inland Lakes and Streams – Marina Operating Permits
- Great Lakes – Bottomland Conveyances
- State Wetlands Regulations





*Sailing on the Great Lakes*

# Marina Design and Maintenance

## Best Management Considerations

### Marina Facilities and Structures

Docks and Mooring Buoys should be located within the marina owner's riparian interest area. A "riparian interest area" is a section of bottomlands in an inland lake or stream that is owned by a riparian owner. The simplest case is for a circular lake where the riparian interest areas are pie-shaped pieces that extend from the lake frontage corners out to the central point of the lake. In the simplest case of a linear river, the riparian interest starts from the river frontage corners to the centerline of the channel.

The docks and mooring buoys should be located so that ingress and egress to/from is within the marina's riparian interest area. A rule of thumb that can be used to site docks is to allow one and one-half times the slip length between the end of the finger pier and the estimated riparian interest area boundary. For broadside dockage, the marina owner should allow at least one and one-half times the beam width between the boats and the riparian interest area line. If there is not sufficient room between the dock or mooring buoy and the riparian interest area line, then the dock and/or mooring buoy should be reconfigured within the marina's riparian interest area or the marina owner needs to obtain a written easement from the affected adjacent riparian owner allowing ingress/egress through the adjacent riparian interest area.

### Use Fixed or Floating Piers to Enhance Water Circulation.

While being mindful of the need for pier/dock systems to provide access during routine operations and under emergency circumstances (e.g., evacuation preceding or during a storm), piers, and other structures should be placed to enhance, rather than to obstruct, water circulation.

- Select an open design for new or expanding marinas. Open marina designs have no fabricated or natural barriers to restrict the exchange of ambient water and water within the marina area.
- Install wave attenuators (if permitted) to reduce the force of incoming water, if protection is necessary. Wave attenuators do not restrict water exchange, nor do they interfere with bottom ecology or aesthetic view. Furthermore, they are easily removed and do not significantly interfere with fish migration and shoreline processes.

- Design new or expanding marinas with as few segments as possible to promote circulation within the basin. The fewer the segments, the better the circulation.
- Use water circulating systems to aerate areas with poor flow. Aeration systems need to be routinely inspected to avoid encrustation of zebra mussels and other organisms. Submersible pumps may be protected with materials that resist attachment (e.g., copper, brass, and galvanized steel). This also holds true for air lines if a bubbling system is employed.
- Another advantage of floaters is that they can be removed in the winter to avoid ice damage and the debris that may result. Floating structures also accumulate zebra mussels, this encrustation will fall off when the docks are stored on land.

### Use Environmentally Neutral Materials.

- For new pilings and other structures that are in or above the water, use materials that will not leach hazardous chemicals into the water and which will not degrade in less than ten years time, e.g., reinforced concrete, coated steel, recycled plastic, plastic reinforced with fiberglass.
- Contain shavings when field cutting plastic pilings and timbers.
- Avoid using wood treated with creosote for pilings and similar structures that are in or above the water.
- Use naturally durable timbers conservatively. Black locust, cedar, chestnut, and white oak are naturally durable but expensive and may be hard to find.
- Avoid exotic timbers. Some tropical trees, such as greenheart and bongossi, are also naturally durable, but their harvest is harmful to tropical forests.
- Purchase floatable foams that have been coated or encapsulated in plastic or wood. As these floats age, degraded foam is contained by the covering. Unprotected float may become inhabited by muskrats and other mammals seriously affecting the flotation capability of the dockage.

### Limit shaded areas over the water.

- Near-shore, bottom-dwelling organisms require sunlight. In order to provide them with as much sunlight as possible, limit the number of covered slips.

## Minimize Environmental Impacts of Dredging.

The majority of marina development and expansion projects along the Great Lakes, including dredging, will require a joint permit from the U.S. Army Corps (USACE) of Engineers and the Michigan Department of Environmental Quality (MDEQ). Section 10 of the Rivers and Harbors Act of 1899 gives the USACE authority to regulate all work and structures in navigable waters of the United States. Section 404 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act) regulates discharges of dredged or fill materials into navigable waters, including wetlands.

The MDEQ/USACE Joint Permit Application (JPA) package covers permit requirements pursuant to state and federal rules and regulations for construction activities where the land meets the water and including wetlands, often referred to as the land/water interface. It is intended to prevent duplication of state and federal regulations. The application covers activities on or for; wetlands, inland lakes and streams, floodplains, Great Lakes bottomlands, marinas, critical dunes, dams, and high risk erosion areas.

Dredging has the potential to impact fish spawning and juvenile fish survival. Direct impacts to the area dredged include destruction of spawning habitat, destruction of fish eggs, and mortality of fish within the dredging area due to removal of bottom substrates and resulting high levels of suspended silt. Currents can move silt particles suspended during dredging away from the site and deposit them in spawning or juvenile fish habitats some distance away.

Sediment testing is not required for every dredging permit application. In some cases, dredge material characterization is required by the MDEQ. Sediment testing data needs to be submitted with a permit application to be evaluated as part of the proposed project. The testing data will determine the appropriate disposal site and may impose conditions on the site such as clean soil cap, fencing, etc.

The dredging permit will require actions to minimize the subsequent impacts.

- Federal and State fisheries and wildlife officials have recommended, for over two decades, the implementation of timing restrictions on dredging projects to prevent these impacts during critical periods. These dredging windows allow the necessary dredging to be accomplished without severely affecting valuable fish and wildlife resources of the Great Lakes and inland waters.
- Avoid water bird nesting areas and historic waterfowl staging and concentration areas.

- Be certain that your dredging contractor selects an appropriate disposal site and containment design based upon the sediment characterization data. The disposal site must have minimal impact on public safety, adjacent properties, and the environment. The beneficial usage of dredge materials at the subject marina should be evaluated. Dredge material must be disposed in accordance with the guidelines specified in NREPA – Parts 301 & 325.
- Use dredging methods, like hydraulic dredging, that minimize environmental impacts.
- Use silt curtains to contain suspended sediments.

## Employ Nonstructural Shore Erosion Control Measures.

- Nonstructural measures, such as beach nourishment, wetlands creation, and other methods that encourage the preservation of the natural environment are the preferred methods of shore erosion control.
- If nonstructural measures alone are not sufficient to control erosion, use revetments, breakwaters, or groins to stabilize and ensure the long-term viability of the nonstructural controls.
- As a last resort, use structural controls in this order of preference: shoreline revetments, breakwaters, groins, and bulkheads.
- Minimize the adverse effects of erosion control projects on adjacent properties, navigation, threatened or endangered species, and significant historic or archaeological resources.

## Conserve Water.

- Equip all freshwater hoses with automatic shutoff nozzles.
- Fix leaks and drips.
- Install “low-flow” faucets, toilets, and shower heads.
- Install automatic faucets and toilet fixtures.

## Maintain Structures using Clean Marina Practices.

- Scrape, sand, and paint land-side structures according to the same management principles as for vessels (refer to the Boat Maintenance and Repair chapter).
- If feasible, move floating structures to shore for scraping, painting, and major repairs.

Other marina construction concerns include safety and navigation in the marina basin and adequate parking. Information on these issues and others with regard to designing marinas can be found in the American Society of Civil Engineers’ (ASCE) Manuals and Reports on Engineering Practice No. 50, Planning and Design Guidelines for Small Craft Harbors, Revised Edition.

## Protecting Sensitive Areas

### Minimize Impervious Areas.

- Keep paved areas to an absolute minimum, e.g., designated work areas and roadways for heavy equipment. Use green belts between any paved areas and the lake in order to filter runoff water.
- Check with local authorities to insure compliance with local zoning ordinances.

### Use Upland and Inland Areas.

- Excavation of an upland area for a marina with a channel to navigable water is an acceptable alternative to locating the facility in the water body itself. The upland would need to be reviewed for threatened and endangered species, wetlands, contaminated soils and other regulated resources. An upland location accomplishes the following:
  - Minimizes impacts to navigation and bottomland habitats.
  - Provides protection for boats from wind and wave action.
  - Along the Great Lakes, allows for the development of condominium slips, as the developer owns the upland.
  - May reduce development costs as land-based equipment can be used for the majority of the work versus marine equipment.
- Locate buildings, workshops, and waste storage facilities in upland areas, away from fragile shoreside ecosystems, to the greatest extent possible. Upland areas also provide a measure of protection against floods.
- Locate parking and boat storage areas away from the water where feasible.
- Consider inland areas for boat repair activities and winter storage. Use hydraulic lifts or hoists to quickly and easily move boats to inland storage locations.

### Expand Upward.

The decision to add dry stack storage should be made based on market conditions, including existing market segments serviced.

- Rather than adding wet slips, consider expanding storage capacity by adding dry-stack storage. Dry-stack storage provides the following environmental benefits:
  - Dry-stacked boats do not accumulate marine growth. Consequently, antifouling coatings are not necessary and the associated need to wash, scrape, and paint is minimized.
  - Dry-stacked boats are less likely to accumulate water in their bilges. Therefore, they are less likely to discharge oily bilge water.



*Dry-stacked storage*

- Control storm water runoff from dry-stack areas, as well as from any expanded parking areas.
- Keep forklifts well-tuned to prevent grease or oil from dripping onto staging areas or into the water.
- Since dry stack storage concentrates boats in a relatively small area, provisions need to be in place to handle accidental spills. Fire protection systems must also be in place.
- Use absorbent booms to collect any grease or oil in the launching and retrieval area for the dry-stack building.

### Conserve Sensitive Land.

- Provide a serene setting for your marina by placing adjacent, sensitive land in a conservation trust. Income, estate, and property tax benefits are available.
- Participate in programs that preserve farmland, forestland, waterfront, wetlands, rare or unique areas, scenic areas, endangered species habitat, historic properties, and open space.
- Sell or donate the land (or the development rights to the land) to a local land trust or a non-profit organization.

### Practice Water Conservation and Landscaping.

Save on water bills, reduce your maintenance activities, and protect water quality by minimizing your water use.

- Water only when plants indicate that they are thirsty: shrubs will wilt and grass will lie flat and show footprints. Water in the early morning or early evening, as temperatures generally are cooler. Plants will not be shocked and water loss to evaporation will be minimized.
- Select plants that are suited to the existing conditions (e.g., soil, moisture, and sunlight) these types of plants will require minimal water, fertilizer, and pesticides.

- Water deeply and infrequently rather than lightly and often. Deep watering promotes stronger root systems, which enable plants to draw on subsurface water during hot spells and droughts.
- Select equipment that delivers water prudently. Sprinklers work well for lawns. Soaker hoses or drip irrigation systems deliver water directly to the roots of shrubs, flowers, and vegetables with minimal loss to evaporation.
- Place mulch (wood chips, bark, grass clippings, nut shells, etc.) to a depth of 3-4" around plants to keep water in the soil, prevent weeds, and reduce the amount of sediment picked up by storm water. Planting groundcovers at the base of trees serves the same function.
- Group plants with similar water needs together. This practice will ease your maintenance burden, conserve water, and benefit the plants.
- Replace lawn areas with wildflowers, groundcover, shrubs, and trees.
- Recycle "gray water." Gray water is water that has been used once – for dishwashing or in a washing machine – but is not overly contaminated. It can be filtered and used to water landscaped areas. Because regulations vary, be sure to check local ordinances for permit requirements and written approval before pursuing this option.
- Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.
- Mow lawn areas properly to suppress weeds. Set your mower to cut at 2-2.5 inches. Mow each time grass reaches 3-4 inches. Avoid cutting more than 1/3 of the height.
- Pull weeds by hand to reduce reliance on herbicides.
- Boost your own tolerance for weeds and other pests. If it is not actually harming anything, leave it alone.
- Foster natural predators such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and certain snakes and toads.
- Use natural microbial agents like *Bacillus thuringiensis* or inorganic insecticides (e.g., some oils & soaps) that kill pests on contact and pose little threat to the environment.
- Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesticides, apply them directly to problem areas. Select pesticides that are "pest specific" and are designed to kill only the insect, weed, or disease organism that is causing the problem.
- Treat only serious or threatening intolerable pest infestations.
- Purchase the least toxic chemical in the smallest amount practical.
- Do not use pesticides just before a rainfall or on a windy day.
- Apply insecticides during the evening when honeybees and other beneficial insects are less active.
- Do not apply pesticides near water, e.g., shore, wells, streams, ponds, bird baths and swimming pools.
- Use mulches to reduce weed problems, conserve moisture, and prevent soil erosion.

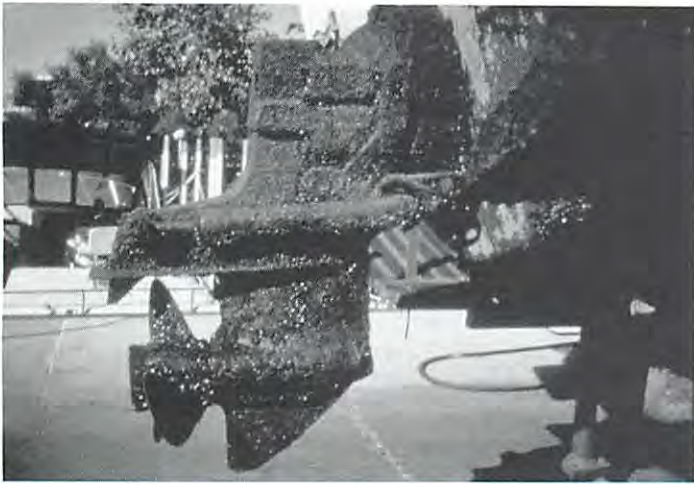
### **Adopt Practice Integrated Pest Management.**

Because of your proximity to the water, it is important to avoid toxic lawn and garden chemicals to the greatest extent possible. Instead, deter unwanted plants or animals with Integrated Pest Management practices. Integrated Pest Management is an ecological approach to pest management. It integrates cultural, mechanical, biological, and as a last resort, chemical control methods, while minimizing impacts to non-target species, wildlife, and water quality.

- Select native plants that are disease and insect resistant, that will out compete common weeds, and that are adapted to your geography and soil conditions. Consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations, and other environmental factors. Periodically rotate plants to disrupt the life cycle of pests.

### **Help to Control the Spread of Aquatic Invasive Species.**

Aquatic Invasive Species (AIS) are invading Michigan waterways. It is estimated that almost 180 non-native species now inhabit the Great Lakes region, some causing billions of dollars of economic disruption as well as significant ecological change. In their own native range, some species may be harmless but when transplanted to a new area they compete with native species for food and habitat. Species such as zebra mussels, sea lamprey, round goby, Eurasian Ruffe, Purple Loosestrife and Eurasian Water Milfoil have been introduced into the Great Lakes region. Since their establishment, they have displaced native species, drastically altered aquatic ecosystems and interfered with business and recreational activity.



*Zebra mussels attached to a boat motor*

Once established invasive species prove impossible to eliminate. Control is extremely expensive and usually too late because ecosystems have already been seriously disturbed or disrupted. Therefore, prevention of new introductions is essential. Most invasives are the result of introduction by human activities, although ballast water from commercial shipping is an important vector. Recreational boating and the dumping of unwanted bait by sport anglers are important contributors to the spread of aquatic invasive species. More than 180 inland lakes are now infested with zebra mussels; this spread to inland waters cannot be attributed to ballast water.

Since marinas congregate boaters and anglers, they can play a significant role in further spreading or conversely preventing the spread of invasive species to other bodies of water. Boaters should be encouraged to practice behaviors that prevent the spread of invasive species. In this regard, marinas should make available services that help boaters prevent the spread.

- When launching or retrieving boats make sure that mud, plants and animals are removed from boats, propellers, trailers and accessory equipment.
- To protect the engine and cooling system flush with hot water or if hot water is unavailable use tap water. Sanitizing solutions of bleach should be avoided in that they may be harmful to beneficial organisms.
  - Boats, trailers and fishing equipment should be washed with HOT (110F) water and allowed to dry in a sunny location for at least 48 hours.
- Anglers should be required to dispose of unused bait on land in proper collection receptacles. Unused bait should never be dumped in the water.
- Train marina personnel and your boaters to learn to identify aquatic invasive species. If you suspect a new infestation, report it to the MDNR, MDEQ or Michigan Sea Grant College Program.

- Special attention should be given to boats originating from infested areas that will be utilized within 48 hours on an uninfested body of water. All parts of the boat that have the potential to harbor invasive species should be carefully inspected. Live wells, bilge water and transom wells should be drained. Anchors, anchor ropes, downrigger cables, fishing tackle and scuba gear can harbor invasive species. If possible, boats should be left to air dry for five full days.
- In all situations, discard any invasive species in the trash. Do not discard where the potential exists for reintroduction into the water.

## Creating Habitat Areas

### Maintain and/or Develop Vegetated Areas.

Vegetation can filter and retard the flow of surface water runoff, stabilize shorelines, and provide wildlife habitat, flood protection, and visual diversity.

- Maintain vegetated buffers – grassy or wooded – between all impervious areas (e.g., parking lots and boat storage areas) and the water.
- Plant vegetated areas with “beneficial” plants: those plants that require minimal care in terms of trimming, watering, and applications of fertilizer and pesticides. Native, or indigenous, plants demand little care since they are adapted to the local climate and soil types. In addition, many horticultural varieties and imported plants may be considered beneficial if they have few maintenance requirements and if they do not displace naturally occurring vegetation (that is, if they are not invasive).
- Select perennial plants instead of annuals. Perennial plants need only be planted once, tend to shade out most weeds, and few require additional water or maintenance.
- Choose plants that bear flowers, fruit, nuts, and seeds to attract birds, small mammals, and other wildlife.
- Maintain proper soil pH and fertility levels. Fertility describes the presence of nutrients and minerals in the soil. Acidity and alkalinity levels are indicated by pH. These two measures together tell you which plants your soil can support. Soil pH may be adjusted by adding lime (base) or gypsum (acid). Add organic matter such as compost, leaf mold, manure, grass clippings, bark, or peat moss to improve fertility.
- Periodically, submit a soil sample to your county Michigan State University Extension office or Soil Conservation District office to determine fertility, pH, and application rates for soil amendments.
- Foster beneficial critters. For example, earthworms move through the soil feeding on microorganisms. In the process, they aerate the soil, improving the flow of water and air to plant roots.

- Compost leaves, branches, grass trimmings, and other organic matter. Use the mature compost to nourish your soil. Alternatively, chip branches and leaves, and use this material as mulch to discourage weeds and to conserve moisture. Organic material should never be deposited into any water body.

**Environmental Protections.**

Land management decisions, operating procedures, and structural improvements may all contribute to – or detract from – the quality of the land and water surrounding your marina. Roads and parking areas may convey storm water directly into adjacent waterways. Dredging may re-suspend toxic compounds in sediment such as heavy metals, hydrocarbons, and synthetic chemicals. Hazardous chemicals may be leached into the water from piers and other similar structures. Broken or degraded floats may release buoyant debris, which birds and fish mistake for food. Finally, the location and installation of lakeside and in-water structures may lead to accelerated coastal erosion and sedimentation. Sedimentation is the settling of soil particles through the water column. It may bury bottom dwelling organisms, block sunlight, reduce the feeding efficiency of visual feeders, clog fish gills, cause shoaling, and lead to additional dredging costs.

**Regulatory Issues**

**Environmental Review.**

Regulatory agencies typically evaluate marina projects for impacts on:

- Stream buffers;
- Wildlife corridors;
- Wild and scenic rivers;
- Navigational safety; and
- Fisheries habitat, including barriers to migration.

**Inland Lakes and Streams – Marina Operating Permits.**

A marina located on an inland lake or river will likely require a marina operating permit (MOP) under Part 301 Inland Lakes and Streams of the NREPA, depending on the nature of the use.

**Great Lakes – Bottomland Conveyances.**

A marina located on Great Lakes public trust bottomlands will require authorization from the MDEQ in the form of a lease under Part 325, Great Lakes Submerged Lands of the NREPA. The lease requires an annual fee be paid to the MDEQ and will contain conditions for the use and occupancy of the subject bottomlands.

**State Wetlands Regulations.**

The State’s wetland regulations (NREPA Part 303) provide for the preservation, management, protection, and use of wetlands. A wetland is defined as land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh. This definition applies to public and private lands regardless of zoning or ownership. The main requirements included in the regulation state that a person should not –

1. Deposit or permit the placing of fill in a wetland;
2. Dredge, remove or permit the removal of soil or minerals from a wetland;
3. Construct, operate or maintain any use or development in a wetland; and
4. Drain surface water from a wetland.



*Coastal wetland*

# **Storm Water Management**

## **Best Management Considerations**

- Practice Low Impact Development
- Cultivate Vegetated Areas
- Minimize the Amount of Impervious Area
- Use Structural Controls as Necessary
- Control Sediment from Construction Sites
- Stencil Storm Drains

## **Environmental Protections**

### **Regulatory Issues**

- NPDES Permits
- Soil Erosion and Sedimentation Control



# Storm Water Management

## Best Management Considerations

Storm water runoff is precipitation that has not been absorbed by the ground. Rather, it washes over the surface of the land picking up pollutants as it travels. Storm water runoff may collect soil particles, petroleum products, residues from industrial activities, litter, and pet waste. All of these pollutants are carried with the runoff into surface waters where they adversely affect water quality.

The volume of storm water runoff increases as natural forests and fields are replaced with hard surfaces such as buildings, parking lots, driveways, and roads. In addition, without any plants to disrupt the flow, storm water moves across the land more quickly than under predevelopment conditions. This greater, faster flow of storm water can severely degrade receiving water bodies by accelerating erosion, which leads to flooding, the destruction of plant and animal life, and the loss of habitat. In addition, pollutants carried by storm water impair water quality by increasing levels of nitrogen, phosphorous, suspended solids, biological oxygen demand, and chemical oxygen demand. Temperatures and levels of toxic metals and hydrocarbons tend to increase, dissolved oxygen decreases, and the acidity-alkalinity of the water typically changes. The result is that near shore areas are less able to support wildlife like young fish. In addition, using the water for human recreation becomes less desirable.

## Practice Low Impact Development.

The goal of low impact development is to develop a site without altering the existing hydrologic cycle. The approach maximizes a site's natural features – including vegetation – minimizing the need for expensive storm water control devices. It differs from traditional storm water management, which uses structures like curbs, gutters, and storm drains to move water off-site as efficiently as possible. Traditional structures cause unnatural volumes of runoff to move into receiving waters at high velocity.

- Capture and treat storm water on-site. For example, direct the runoff from your parking lot to a bio-retention area rather than toward a storm sewer pipe. A “rain garden” or constructed wetlands are examples of bio-retention areas, a water quality practice in which plants and soils remove pollutants from stormwater naturally. Rain gardens are created in low-lying areas, with specific layers of soil, sand, and organic mulch. These layers naturally filter the rain as it enters. After a storm, the soil absorbs and stores the rainwater and nourishes the surrounding grasses, trees, and flowers. Rain gardens have the added advantage of being attractive areas that can provide shade and wildlife habitat, act as wind breaks and reduce noise from surrounding areas.

## Cultivate Vegetated Areas.

Healthy soil and vegetation capture, treat, and slowly release storm water. The water is cleaned through a combination of microbial action in the soil, vegetative uptake, evaporation, and transpiration.

- Plant environmentally sensitive landscapes at the edge of parking lots and within islands in parking lots.
- Plant vegetated buffers between your upland property and the water's edge.
- Position downspouts so that they drain to vegetated areas:
  - Avoid draining to concrete or asphalt. Keep in mind the necessity for crushed stone or some other restrictor to slow the water's pace at discharge. This will minimize erosion and allow water to drain into vegetated areas at a manageable pace.
- Construct wetlands to remove pollutants, shelter the coast from storms, and provide habitat for fish and birds.
- Use grassed swales to direct storm water on your property. Grassed swales are low gradient conveyance channels planted with erosion-resistant vegetation. They improve water quality by filtering out particulates, taking up nutrients, and promoting infiltration. In addition, water generally moves more slowly over a grassed swale than it would in a pipe. Grassed swales are not practical on very flat land, on steep slopes, or in wet, poorly drained soils.

## Minimize the Amount of Impervious Area.

The fewer impervious areas there are on site, the less runoff you will have to manage. Facilities are advised to check with local authorities about local requirements for road and parking lot surfaces. Many communities still have “aesthetic” requirements that are consistent with traditional concrete and asphalt paving. A marina facility may have to request a variance to utilize porous surfaces.

- Only pave necessary areas.
- Minimize the length of new roadway required to serve new or expanding marinas.
- Plan roads so they do not cross sensitive areas, such as wetlands.
- Consider alternatives to asphalt for parking lots and boat storage areas, such as gravel, engineered porous pavement.

## Use Structural Controls as Necessary.

Because of space limitations or other constraints, it may be necessary to adopt more traditional practices such as pond systems, wetland systems, infiltration systems, and filter systems.

- Storm water pond systems capture and slowly release storm flows. Ponds may be permanent (retention ponds) or may hold water only temporarily (detention ponds). Dry Extended Detention Ponds (also known as dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain the storm water runoff from a water quality designed storm drain for a minimum amount of time (e.g., 24 hours). This time period allows particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool. However, they are often designed with small pools at the inlet and outlet of the basin. They can also be used to provide flood control by including additional flood detention storage. This type of structure is effective for sites that are 10 acres or greater in size.
- Storm water wetland systems are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows. A Pocket Wetland is created by excavating to the high water table elevation. Pocket wetlands can serve drainage areas of 5 to 10 acres.
- Infiltration systems are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics. A Dry Well is an infiltration system designed to treat roof top runoff. Water is collected in downspouts and directed into a filter composed of crushed stone and fabric. Rain gardens and porous pavement are other examples of infiltration systems.
- Filter systems "strain" runoff to remove pollutants. Conventional Sand Filter Systems are constructed of layers of sand, from most coarse on top to most fine below. The sand overlies either a gravel bed, for infiltration or perforated underdrains, for discharge of treated water. Oil Grit Separators are another form of filter system. Water from parking lots and other areas likely to have hydrocarbons should be directed through Oil Grit Separators (or oil absorbent fabric) before entering any other management structure.
- ALL storm water management structures must be maintained in order to be effective.
- Refer to Table 1 for assistance selecting a structure that is appropriate for your property.
- Contact the MDEQ for information about grant funding to local governments for the installation of storm water management structures in existing developed areas.

## Control Sediment from Construction Sites.

- Use devices such as hay bales, silt fences, storm drain filters, sediment traps, and earth dikes to prevent sediments from leaving construction areas.

## Stencil Storm Drains.

- Stencil storm drains with the words "Don't Dump" and "No Fish Waste" (if appropriate). Stencils and instructions are available from local watershed groups and councils. Be sure to get permission from the county or city department that maintains storm drains in your community prior to applying any stencils. Generally, the appropriate municipal authority would be the Department of Public Works.

## Environmental Protections

### Regulatory Issues

#### National Pollutant Discharge Elimination System (NPDES)

This system contains four important principles:

1. The discharge of pollutants to navigable waters is not a right.
2. A discharge permit is required to use public resources for waste disposal and limits the amount of pollutants that may be discharged.
3. Wastewater must be treated with the best treatment technology economically achievable - regardless of the condition of the receiving water.
4. Effluent limits must be based on treatment technology performance, but limits that are more stringent may be imposed if the technology based limits do not prevent violations of water quality standards in the receiving water.

Permit applications for discharges to surface water must be submitted to the appropriate MDEQ - Water Division office at least 180 days before the permit is needed. The application then proceeds through the standard permit review and development process. The NPDES application form and instructions can be obtained from the district office in your area. In addition, these documents can be downloaded in Microsoft Word format.

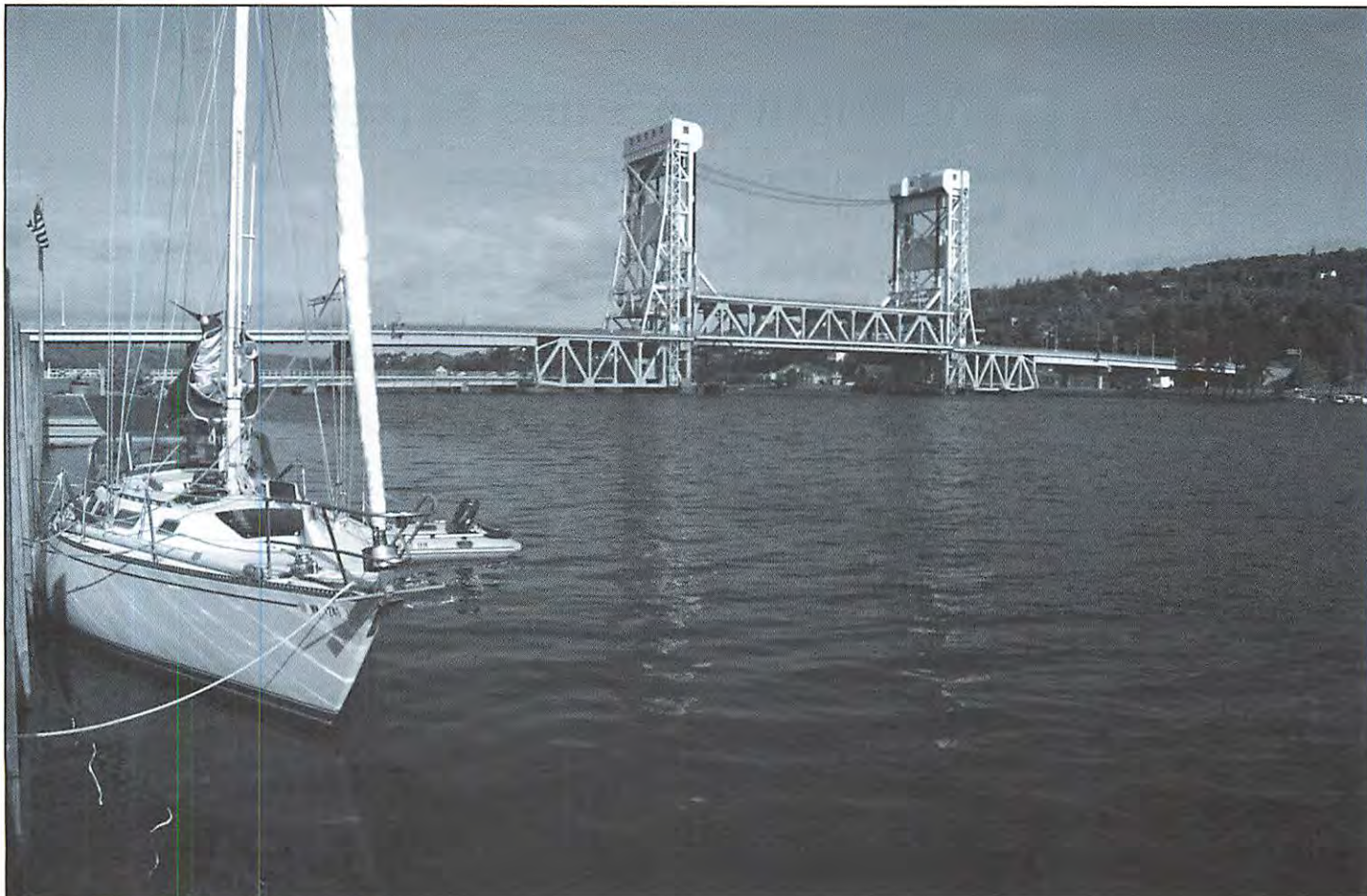
### Downloadable Forms:

#### Permit Application

[www.deq.state.mi.us/documents/deq-swq-npdes-permitapp.doc](http://www.deq.state.mi.us/documents/deq-swq-npdes-permitapp.doc)

#### Permit Application Appendix

[www.deq.state.mi.us/documents/deq-swq-npdes-ApAppendix.doc](http://www.deq.state.mi.us/documents/deq-swq-npdes-ApAppendix.doc)



*Portage Canal in Houghton, Michigan*

### **Who Needs an NPDES Permit?**

All marinas or other facilities that discharge waste water into the waters of the state are required to obtain an NPDES permit from the Michigan Department of Environmental Quality. This includes the wastewater generated from boat washing. The permit may cover both the storm water and non storm wastewater discharges from:

- Areas involved in boat maintenance (rehabilitation, mechanical repairs, painting, and fueling) and cleaning operations;
- Wastewater discharges to surface water from boat and equipment washing areas; and
- Non contact cooling water and condensate discharges to surface waters from ice machines, refrigeration units, and other machinery.

The control of pollutants that may be carried by storm water runoff from boat maintenance areas is addressed in Boat Maintenance. Please refer to *Laws and Regulations* for more information about the Permit for Discharges from Marinas.

### **Soil Erosion and Sedimentation Control**

NREPA Act 451, Part 91 is intended to protect the waters of the state by minimizing erosion and controlling sediment. A permit is required for any earth change that disturbs one or more acres, or is within 500 feet of a lake or stream.

# **Boat Maintenance and Repair**

## **Best Management Considerations**

- Designate Work Areas
- Contain Dust from Sanding
- Contain Debris from Blasting
- Minimize Impacts of Pressure Washing
- Minimize Impacts of Paints
- Minimize Impacts of Painting Operations
- Reduce Overspray
- Handle Solvents Carefully
- Repair and Maintain Engines with Care
- Winterize Safely
- Conduct In-water Maintenance Wisely
- Educate Boaters About Their Responsibilities

## **Environmental Protections**

# Boat Maintenance and Repair

## Best Management Considerations

### Designate Work Areas.

One of the easiest ways to contain waste is to restrict the area where maintenance activities may be performed.

- Perform all major repairs – such as stripping, fiberglassing, and spray painting – in designated areas, as far away from the water as possible.
- Collect all maintenance debris. Clean work areas after completing each operation or at the end of the day, whichever comes first. Remove sandings, paint chips, fiberglass and trash.
- Locate the maintenance area as far from shore as possible.
- Boat maintenance areas for new marinas should be located outside of a 100-foot buffer zone.
- Boat maintenance areas should have an impervious surface (e.g., asphalt or cement) and, where practical, a roof. Sheltering the area from rain will prevent storm water from carrying debris into surface waters.
- If asphalt or cement is not practical, perform work over filter fabric or over canvas or plastic tarps. Filter fabric will retain paint chips and other debris yet – unlike plastic, or to a lesser extent, canvas – filter fabric will allow water to pass through. Tarps may potentially be reused.
- Surround the maintenance area with a berm or retaining wall.
- Use vegetative or structural controls cited “to treat storm water runoff”.
- Establish a schedule for inspecting and cleaning storm water systems. Remove paint chips, dust, sediment, and other debris. Clean oil/water grit separators.
- Prohibit extensive maintenance or repair work outside of the designated maintenance areas.
- Clearly mark the work area with signs, such as: “Maintenance Area for Stripping, Fiberglassing, and Spray Painting.”
- Post signs throughout the boatyard describing best management practices that boat owners and contractors must follow, such as: “Use Tarps to Collect Debris.”
- Develop procedures for managing requests to use the work space, to move boats to and from the site, and to ensure the use of best management practices.

### Contain Dust from Sanding.

- Do not let dust fall onto the ground, into the water or become airborne.
- Invest in vacuum sanders and grinders. These tools collect dust as soon as it is removed from the hull. Vacuum sanders allow workers to sand a hull more quickly than with conventional sanders. Additionally, because paint is collected as it is removed from the hull, health risks to workers are reduced.
- Require tenants and contractors to use vacuum sanders. Rent or loan the equipment to tenants and contractors.
- Establish a marina policy to prohibit sanding without vacuum equipment.
- Conduct lakeside sanding in the hull maintenance area or over a drop cloth.
- Restrict or prohibit sanding on the water to the greatest extent possible.
- When sanding on the water is unavoidable, use a vacuum sander and keep dust out of the water.
- Use a damp cloth to wipe off small amounts of sanding dust.
- Collect debris. Determine if the debris is hazardous or non hazardous waste. If it is non hazardous, or the marina is a Conditionally Exempt Small Quantity Generator of hazardous waste, take it to a municipal solid waste landfill – if it doesn’t contain free liquids.

### Contain Debris from Blasting.

- Prohibit uncontained abrasive (sand) blasting at your facility.
- Perform abrasive blasting in the boat maintenance area within a structure or under a plastic tarp enclosure. Do not allow debris to escape from the enclosure.
- Investigate alternatives to traditional media blasting. However, debris must still be collected – consider using a filter cloth ground cover.
- Invest in a closed, plastic medium blast system. These systems blast with small plastic bits. Once the blasting is completed, the spent material and the paint chips are vacuumed into a machine that separates the plastic from the paint dust. The plastic is cleaned and may be reused. The paint dust is collected for disposal. A 50-foot boat will produce about a gallon of paint dust; substantially less than the many barrels full of sand and paint that must be disposed of with traditional media blasting methods.
- Collect debris and provide for proper disposal.



*Minimize Impacts of Pressure Washing*

### **Minimize Impacts of Pressure Washing.**

- It should be noted that any discharge to surface water from a point source discharge would require authorization by an NPDES permit and a discharge onto the ground or into groundwater or septic system would require a groundwater discharge permit or would need to meet exemption conditions.
- Visible solids must be removed from wash water before it may be discharged. At a minimum, allow large particles to settle out. More thorough treatments involve filtration or chemical/physical techniques to treat the wash water:
  - Filtration uses devices such as screens, filter fabrics, oil/water separators, sand filters, and hay bales to remove particles;
  - Chemical treatment relies upon the addition of some type of catalyst to cause the heavy metals and paint solids to settle out of the water; and
  - Swirl concentrators are examples of physical structures that can be used to concentrate pollutants. They are small, compact soil separation devices with no moving parts. Water flowing into a concentrator creates a vortex that centralizes the pollutants. However, this process will only remove large particulate material; it does not address the dissolved concentrations present.
- Alternatively, reuse the wash water. For example, recycle it through the power washing system (a closed water recycling operation) or use it to irrigate landscaped portions of the marina. The recycled water may be treated with an ozone generator to reduce odors.
- Pressure wash over a bermed, impermeable surface that allows the wastewater to be contained and filtered to remove sediments.
- When pressure washing ablative paint, use the least amount of pressure necessary to remove the growth but leave the paint intact. Where practical, use a regular garden type hose and a soft cloth, but remember if wastewater is directed toward the surface water, a permit is still required.
- Collect debris and washwater that is not permitted to be discharged. Determine if the debris is hazardous or non hazardous waste. Wastes that are solids if it is non hazardous, or the marina is a Conditionally Exempt Small Quantity Generator of hazardous waste, can be taken to a municipal solid waste landfill. Liquid waste would need to be hauled by permitted and registered transporter to appropriate disposal site.
- Antifouling bottom paints protect hulls from zebra mussels, algae and other fouling organisms that can interfere with vessel performance. Pesticides and heavy metals within them also harm fish and other nontarget species. Most paints work by slowly releasing a biocide, generally cuprous oxide (Cu<sub>2</sub>O).
- Copper based paints are not used on aluminum hulls; the interaction of copper and aluminum leads to corrosion. Instead, copper thiocyanates are often used on aluminum hulled vessels since tributyl tin is no longer a viable option due to regulatory changes.

## Antifouling paints can be separated into three general categories:

- **Leaching Paints.** Water soluble portions of leaching antifouling paints dissolve slowly in water, releasing the pesticide. The insoluble portion of the paint film remains on the hull. The depleted paint film must be removed before the boat is repainted. Consequently, most leaching paints are solvent based making fumes a concern.
- **Ablative Paints.** Ablative antifouling paints also leach some toxics into the water. The major difference is that as the active ingredient is leached out, the underlying film weakens and is polished off as the boat moves through the water. As the depleted film is removed, fresh antifouling paint is exposed. There are several water based ablative paints on the market that are up to 97 percent solvent free. As a result, levels of volatile organic compounds are substantially reduced as compared to solvent based paints. Ease of cleanup is another advantage of water based paints.
- **Nontoxic Coatings.** Teflon, polyurethane, and silicone paints are nontoxic options. All deter fouling with hard, slick surfaces.

## Minimize Impacts of Paints.

- Recommend antifouling paints that contain a minimal amount of toxic ingredient, which is necessary for the expected conditions, to your customers.
- Avoid soft ablative paints.
- Use water based paints whenever practical.
- Stay informed about antifouling products like Teflon, silicone, polyurethane, and wax that have limited negative impacts. Inform your customers about paints.
- Store boats out of the water, where feasible, to eliminate the need for antifouling paints.

## Minimize Impacts of Painting Operations.

- Use brushes and rollers whenever possible.
- Consider establishing a marina policy that prohibits customer paint spraying.
- Reduce paint overspray and solvent emissions by minimizing the use of spray equipment.
- Prohibit spray painting on the water.
- Limit in water painting to small jobs. Any substantial painting should be done on land, in the boat maintenance area, and/or over a ground cloth.

- If painting with brush or roller on the water, transfer the paint to the boat in a small (less than one gallon), tightly covered container. Small containers mean small spills.
- Mix only as much paint as is needed for a given job.
- Mix paints, solvents, and reducers in a designated area indoors or under a shed and far from the shore.
- Keep records of paint use to show when excess paint was mixed for a job. Use the information to prevent over mixing in the future.

## Reduce Overspray.

In some cases, spray painting is the only practical choice of paint/solvent application. Minimize the impact of spray painting by following these recommendations:

- Conduct all spray painting on land, in a spray booth, or under a tarp.
- Use equipment with high transfer efficiency. Tools such as high-volume, low-pressure spray guns direct more paint onto the work surface than conventional spray guns. As a result, less paint is in the air, less volatile organic compounds are released, less paint is used, and cleanup costs are reduced. Air atomizer spray guns and gravity feed guns are other types of highly efficient spray equipment.
- Educate personnel on how to properly operate spray equipment to reduce overspray and minimize the amount of paint per job.

## Handle Solvents Carefully.

Refer to Waste Containment and Disposal for further information about requirements for handling, storing, and transporting hazardous wastes.

- Store open containers of usable solvents, as well as waste solvents, rags, and paints in covered, UL listed approved containers.
- Hire a permitted and registered hazardous waste hauler to recycle or dispose of used solvents.
- Direct solvent used to clean spray equipment into containers to prevent evaporation of volatile organic compounds. A closed gun cleaning system will reduce cleaning material costs.
- Use only one cleaning solvent to simplify disposal.
- Use only the minimal amount of solvent (e.g., stripper, thinner) needed for a given job.
- For small jobs, pour the needed solvent into a small container reducing the contamination of a large amount of solvent.

- Use soy based solvents and other similar products with no or low volatility.
- Order your spray painting jobs to minimize coating changes. Fewer changes mean less frequent purging of the spray system. Order your work light to dark.
- Allow solids to settle out of used strippers and thinners. Making solvents reusable.
- Record solvent and paint usage to determine the amount of hazardous waste generated on site. You are required to maintain these types of records if you have a permanent, MDEQ – permitted spray booth.
- Use propylene glycol antifreeze for all systems. It is substantially less toxic than ethylene glycol antifreeze.
- Use the minimum amount of antifreeze necessary for the job.
- For health reasons, ethylene glycol should never be used in potable water systems; it is highly toxic and cannot be reliably purged come springtime.
- Add stabilizers to fuel to prevent degradation. Stabilizers are available for gasoline and diesel fuels and for crankcase oil. These products protect engines by preventing corrosion and the formation of sludge, gum, and varnish. Also, the problem of disposing of stale fuel in spring is eliminated.

### **Repair and Maintain Engines with Care.**

- Store engines and engine parts under cover on surfaces such as asphalt or concrete.
- Do not wash engine parts over the bare ground or water.
- Use dry precleaning methods, such as wire brushing.
- Avoid unnecessary parts cleaning.
- Adopt alternatives to solvent based parts washers such as bioremediation systems that take advantage of microbes to digest petroleum. Bioremediation systems are self-contained with no effluent discharge. The cleaning fluid is a mixture of detergent and hot water. Microbes such as hydrocarbon degrading are added periodically to digest the accumulated wastes.
- If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of volatile organic compounds. Keep the container lid closed when not in use. Continue to reuse the solvent until it is totally spent, then recycle it.
- Use drip pans when handling any type of liquid. Use separate drip pans for each fluid to avoid mixing. Recycle the collected fluid.
- Use funnels to transfer fluids.
- Drain all fluids from parts prior to disposal.
- Clean engine repair areas regularly using dry cleanup methods, e.g., capture petroleum spills with oil absorbent pads.
- Prohibit the practice of hosing down the shop floor.
- Be sure fuel tanks are 85-90 percent full to prevent flammable fumes from accumulating and to minimize the possibility of condensation leading to corrosion. Do not fill the tank more than 90 percent full. The fuel will expand as it warms in the springtime; fuel will spill out the vent line of a full inboard tank.
- Use the highest rated octane recommended by the engine manufacturer; premium fuels are more stable than regular.
- Be sure the gas cap seals tightly.
- Promote reusable canvas or recyclable plastic covers. Some manufacturers will clean and store canvas covers during the boating season.
- Recycle used plastic and shrink wrap covers.

### **Conduct In-water Maintenance Wisely.**

- If the impacts of cleaning or maintenance activities (regardless of area involved) cannot be contained or mitigated against, remove the boat from the water. No debris should be allowed to fall into the water.
- Keep containers of cleaning and maintenance products closed.
- Restrict or prohibit sanding on the water. When it is absolutely necessary to sand on the water, use vacuum sanders to prevent dust from falling into the water. Do not sand in a heavy breeze.
- Plug scuppers to contain dust and debris.
- Restrict or prohibit spray painting on the water.
- Offer incentives, like reduced midseason haul-out rates for boaters. Contaminants from hull maintenance are more easily contained on land.

### **Winterize Safely.**

- Do not allow boaters to “blow out” antifreeze from the boat when it is put in the water for the first time after being winterized.





*Boaters in the Great Lakes*

### **Educate Boaters About Their Responsibilities.**

- Copy Boating Tip Sheets and distribute them to your boaters. There is room to add the name and logo of your marina to these tip sheets. Boater tip sheets on boat maintenance, petroleum control, boat sewage, and waste disposal can be found at the back of this guidebook.
- Inform your boaters/clients when and where they can take their recycled materials as well as any household hazardous waste.

### **Environmental Protections**

Boats require a great deal of attention. They must be scraped, painted, and cleaned. Their engines need to be lubricated for proper preventative maintenance. They need to be prepared to withstand the cold of winter – each of these activities has the potential to introduce pollutants into the environment.

Sanding, blasting, and pressure washing are meant to remove paint and marine growth. In the process, toxic heavy metals such as copper and tin may be released. If heavy metals find their way into the water, they may be consumed by bottom dwelling creatures and passed up the

food chain to fish, birds, and humans. Heavy metals that are not incorporated into living tissue will remain in the sediments where they will substantially increase the cost of contaminated dredge spoil disposal.

Paints, solvents, thinners, and brush cleaners generally are toxic and may cause cancer. If spilled, they may harm aquatic life and water quality. Additionally, the fumes – known as volatile organic compounds – released by some paints and solvents contribute to air pollution. Likewise, oil and grease from maintenance areas threaten aquatic life.

Many of the cleaning products meant to be used in boat shops are also toxic and many contain caustic or corrosive elements. They may also contain chlorine, phosphates, inorganic salts, and metals. Even nontoxic products are harmful to wildlife. For example, detergents found in many boat cleaning products will destroy the natural oils on the gills, reducing their ability to breathe.

# **Petroleum Control**

## **Best Management Considerations**

- Avoid Waves and Wakes
- Maintain Fuel Transfer Equipment
- Install Environmental Controls at the Pumps
- Supervise Fueling: Environmental Recommendations
- Supervise Fueling: Safety Recommendations
- Use Oil Absorbent Materials
- Turn Down the Pressure
- Provide an Oil/Water Separator
- Offer Spill-proof Oil Changes
- Minimize Spills and Leaks from Machinery

## **Emergency Planning and Response**

- Prepare a Spill Prevention, Control, and Countermeasure Plan
- Facility Response Plan Considerations
- Assess Hazards
- Develop Emergency Response Plans
- Make Plans Accessible
- Train Employees
- Share Your Emergency Response Plans
- Maintain Oil Spill Response Equipment
- Store Oil Response Equipment Smartly
- Be Prepared for a Fire
- Maintain Material Safety Data Sheets

## **Environmental Protections**

### **Regulatory Issues**

- Federal Water Pollution Control Act

# Petroleum Control

## Best Management Considerations

### Avoid Waves and Wakes.

- Locate fuel docks in areas protected from wave action and boat wakes when constructing new or upgrading existing facilities. For safety reasons, all fueling stations should be accessible by boat without entering or passing through the main berthing area.
- Provide a stable platform for fueling personal watercraft. You may purchase prefabricated drive-on docks or modify an existing dock by cutting a v-shaped berth and covering it with outdoor carpeting. Consider placing the personal watercraft fueling area at the end of the fuel pier to reduce conflict with larger boats.

### Maintain Fuel Transfer Equipment.

- Inspect transfer equipment regularly and fix all leaks immediately.
- Maintain transfer equipment and hoses to ensure it is in good working order. Replace hoses, pipes, and tanks before they leak.
- Hard connect delivery nozzles.
- Hang nozzles vertically when not in use, preventing drain out of fuel remaining in hoses.

### Install Environmental Controls at the Pumps.

- Do NOT install fuel nozzle holding clips. The use of holding clips to keep fuel nozzles open is illegal at marina fuel docks.
- Install automatic back pressure shutoff nozzles on fuel pump discharge hoses to automatically stop the flow of fuel into a boat's fuel tank when sufficient reverse pressure is created.
- Consider installing fuel nozzles that redirect blow back into the vessel's fuel tanks or vapor control nozzles to capture fumes.
- Maintain a supply of oil absorbent pads and pillows at the fuel dock to mop up spills on the dock and on the water.
- Place plastic or nonferrous drip trays lined with oil absorbent material beneath fuel connections at the dock to prevent fuel leakage from reaching the water.
- Post instructions at the fuel dock directing staff and patrons to immediately remove spilled fuel from the dock and water with oil absorbent material. Indicate the location of the absorbent materials.

- Place small gas cans in oil absorbent lined drip pans when filling.
- Secure oil absorbent material at the waterline of fuel docks to quickly capture small spills. Look for oil absorbent booms that are sturdy enough to stand up to regular contact with the dock and boats.
- Offer your services to install fuel/air separators on boats.
- Make available to boaters bilge "pillows" to remove oil from the bilge water.

### Supervise Fueling: Environmental Recommendations.

- Always have a trained employee at the fuel dock to oversee or assist with fueling.
- Train employees to clarify what the boater is asking. For example, as your employee passes the fuel nozzle to the boater, have him or her say: "This is gasoline. You asked for gasoline."
- Train employees to hand boaters oil absorbent pads with the fuel nozzle. Request that the boaters use them to capture backsplash and vent line overflow.
- Make nontoxic fuels, such as biodiesel available. Biodiesel, made from soybeans, requires no retrofitting or engine modification. It is biodegradable, nontoxic and has very low sulfur.
- Attach a container to the external vent fitting to collect overflow – some products attach to the hull with suction cups. A rubber seal on the container fits over the fuel vent allowing the overflow to enter the container. Fuel captured in this manner can be added to other boats to be fueled.
- Instruct fuel dock personnel and boaters to listen to filler pipes to anticipate when tanks are nearly full.
- Encourage boaters to fill their fuel tanks just before leaving on a trip to reduce spillage due to thermal expansion and rocking. If the fuel is used before it warms up, it cannot spill overboard.
- If boaters prefer to refuel upon their return to port, encourage them to fill their tanks to no more than 90 percent of capacity.
- Instruct boaters to slow down at the beginning and end of fueling.
- Require boaters to stay with their craft during fueling.
- Encourage boaters to keep their engines well-tuned. Properly maintained engines use fuel and oil more efficiently and are less likely to leak and/or emit oil and



vapor emissions into the environment.

### Supervise Fueling: Safety Recommendations.

- Remind boaters that gasoline vapors are heavier than air; they will settle in a boat's lower areas.
- Require all passengers to get off gasoline powered boats before fueling.
- Instruct boaters to follow the following safety precautions:
  - Stop all engines and auxiliaries;
  - Shut off all electricity, open flames, and heat sources;
  - Extinguish all cigarettes, cigars, and pipes;
  - Close all doors, hatches, and ports;
  - Maintain nozzle contact with the fill pipe to prevent static spark;
  - Inspect bilge after fueling for leakage or fuel odors; and
  - Ventilate all compartments after fueling until fumes are gone.
- Train dock staff to carefully observe fueling practices; make sure fuel is not accidentally put into the holding or water tank.

### Use Oil Absorbent Materials.

- Distribute pads, pillows, or booms to your tenants.
- Require tenants to use oil absorbent materials as part of your lease agreement.
- Oil absorbent pads, booms, and pillows absorb hydrocarbons and repel water. Depending upon the type, they may hold up to 25 times their weight in oil. These types of products are useful for capturing spurts at

the fuel dock, cleansing bilge water, and wiping up spills in engine maintenance areas.

- There are a number of new types of basic oil absorbent materials. One new variety of oil absorbent boom captures oil from the bilge and solidifies into a hard rubber bumper. Other types contain microbes that digest the petroleum, converting to carbon dioxide and water. Because the microbes take two to three weeks to digest a given input of oil, it is not appropriate to use these types of products for a spill of any significant size. Rather, they are designed to control the minor drips associated with routine operations. Care must still be taken that free floating oil is not discharged overboard.
- Another oil absorbent product is a boom constructed out of oil absorbent polypropylene fabric and filled with dehydrated microbes. These booms hold the petroleum in the fabric until it is digested by microbes, minimizing threats associated with free floating petroleum.

How you dispose of used oil absorbent material depends on what type of product it is and how it was used. Examples include:

- Standard absorbents that are saturated with gasoline may be air dried and reused.
- Standard absorbents saturated with oil or diesel may be wrung out over oil recycling bins (only if saturated with oil or diesel!) and reused. Alternatively, oil absorbents should be double bagged – one plastic bag sealed inside of another – and disposed in your regular trash.
- Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.

### Turn Down the Pressure.

Problems with backsplash and vent line overflow are often due to the high pressure flow of fuel from the pump.

- Ask your fuel company representative to set the delivery rate to 10 gallons per minute, especially if your marina caters to smaller boats.

### Provide an Oil/Water Separator.

- Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter, and discharge clean water.
- Subcontract bilge cleaning services at your facility.

# Fuel Spill

## What do you do?

1. Stop the flow.
2. Contain the spill.
3. Call the Coast Guard's National Response Center (800) 424-8802, the MDEQ (800) 292-4706, and local fire department.

## Offer Spill-proof Oil Changes.

- Purchase a nonspill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop and rent it to boaters who perform their own oil changes.
- Purchase or rent an oil filter crusher. This device will crush the filter to approximately 1/5 its original size and will also remove the majority of excess oil for recycling. If you currently pay to dispose of your filters per drum, you will reduce disposal costs by placing five times more filters in each drum.
- Slip a plastic bag over used oil filters prior to their removal to capture any drips. Hot drain the filter by punching a hole in the dome end and draining for 24 hours. Recycle the collected oil and the metal canister. If not practical, then dispose the filter in your regular trash.
- Encourage the use of spill proof oil change equipment as a condition of your slip rental agreement.

## Minimize Spills and Leaks from Machinery.

- Use nonwater soluble grease on Travelifts, forklifts, cranes, and winches.
- Place containment berms with containment volumes equal to 1.1 times the capacity of the fuel tank around fixed pieces of machinery that use oil and gas. The machinery should be placed on an impervious pad. Design containment areas with spigots to drain collected materials. Dispose of all collected material appropriately. Refer to the Waste Containment and Disposal section of this guidebook (page 37). If possible, cover the machinery with a roof to prevent rainwater from filling the containment area.
- Place leak-proof drip pans beneath machinery. Empty the pans regularly, being conscientious to dispose of the material properly. Uncontaminated oil and antifreeze may be recycled.
- Place oil absorbent pads under machinery.

# Emergency Planning and Response

## Prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The U.S. Environmental Protection Agency's (EPA) Oil Pollution Prevention Regulation requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has an aggregate above ground oil storage capacity greater than 1,320 gallons.

Oil is defined in the SPCC regulations (40 CFR 112) as "oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil and oily mixtures." It also includes gasoline, diesel fuel, mineral solvents, and other products.

## Some highlighted changes from the previous rules include:

1. Exemptions for completely buried storage tanks subject to all of the technical requirements of the UST regulations (40 CFR Parts 280 or 281);
2. Exemptions for portions of certain facilities or any facility used exclusively for wastewater treatment;
3. Establishes a minimum container size of 55 gallons;
4. Revises the trigger for submitting information on spills at SPCC regulated facilities to EPA. Facilities are now required to submit information after having 2 discharges (over 42 gallons) in any 12-month period or a single discharge of more than 1,000 gallons;
5. Changed the 3 year review period to 5 years; and,
6. Allows a professional subordinate to conduct site visit in place of a professional engineer. The engineer must review their work and certify the SPCC Plan.

## Facility Response Plan Considerations.

The revisions to the SPCC rule may affect whether you need to prepare and maintain a Facility Response Plan or how you calculate worst case discharge planning levels. According to the new rule, the regulation no longer applies to the following:

1. Completely buried tanks that are subject to all Underground Storage Tank technical requirements in 40 CFR Parts 280 & 281;
2. Containers with a storage capacity of less than 55 gallons; and
3. Portions of certain facilities or any facility used exclusively for wastewater treatment.



*All spills must be reported immediately to the Michigan Department of Environmental Quality: (800) 292-4706.*

**The SPCC Plan Must Address:**

- Operating procedures implemented by the facility to prevent oil spills;
- Control measures to prevent a spill from entering navigable waters or adjoining shorelines; and
- Countermeasures to contain, cleanup, and mitigate the effects of an oil spill that impacts navigable waters or adjoining shorelines.

The SPCC plan must be certified by a professional engineer and kept on-site for EPA review. If a single spill of greater than 1,000 gallons occurs or two discharges (over 42 gallons) of harmful quantity occur within one year, a copy of the SPCC plan must be submitted to EPA Region Five. Marinas subject to SPCC regulations must include release reporting requirements per the “Part 5 rules” in their SPCC Plan. Any amount of spill into water that causes a sheen or abnormal appearance must be reported. Spills must be reported to MDEQ under the Part 5 rules if it is onto the ground, is 40 pounds or more, and doesn’t meet any of the rule exemptions.

To report an oil or chemical spill, call the National Response Center at (800) 424-8802 and Pollution Emergency Alerting System (PEAS) at (800) 292-4706.

**Assess Hazards.**

Consider and plan for likely threats indicating:

- Fuel spill
- Holding or water tank filled with gas
- Spill at the storage area, such as used oil, antifreeze, or solvents
- Fire
- Health emergency
- Tornado
- Vehicular collision

## Develop Emergency Response Plans.

- Develop written procedures describing actions to be taken under given circumstances. The plans should be clear, concise, and easy to read during an emergency, use a large font size for the plan.
- Sample plans are available from your Local Emergency Planning Committee or from the Michigan State Police.
- Each emergency response plan should contain the following information:
  - **Where:**
    - In the very front of the plan, insert a laminated 11x17" site plan of the facility showing valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations, and telephones.
    - Describe where response material is located.
  - **Who:**
    - Identify who is responsible for taking what action, including deploying equipment, contacting emergency agencies.
    - Designate one marina staff person as the official spokesperson for the facility.
    - Include a list of emergency phone numbers: U.S. Coast Guard's National Response Center, (800) 424-8802; MDEQ's Pollution Emergency Alerting System (PEAS), (800) 292-4706; local fire and police departments; owner; neighboring marinas that have emergency response equipment; and spill response contractors.
    - Include a brief description of each agency's jurisdiction and information about what type of equipment and services are available from neighboring marinas and spill response firms.
  - **What:**
    - State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on-site and what its characteristics and capabilities are.
    - Characterize the facility's waterfront and vessels.
    - Describe the type, amount, and location of materials stored on-site, e.g., petroleum and hazardous materials.
  - **How:**
    - Explain how the equipment should be used and disposed.

- **When:**

- Indicate when additional resources should be called for assistance.
- Update the plans annually to include any new technology or equipment and to confirm phone numbers.

## Make Emergency Plans Accessible.

- Keep copies of all emergency plans in a readily accessible location.
- Place a second copy of the oil spill response plan (SPCC) in the oil spill response kit.

## Train Employees.

- Review plans and response procedures with staff at the beginning of each boating season.
- Train employees in the use of containment measures.
- Run emergency response drills at least twice annually.
- Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

## Share Your Emergency Response Plans.

- Inform your local fire department and harbor master, if applicable, about your Emergency Response Plans and equipment.
- Let neighboring marinas know what resources are available at your marina.

## Maintain Oil Spill Response Equipment.

- Maintain enough oil spill response equipment to contain the greatest potential spill at your facility.
- Store enough boom to encircle the largest boat in your facility. Vessel length x 3 = required length of boom.

## Store Oil Spill Response Equipment Smartly.

- Store the equipment where the greatest threat of an oil spill exists: fuel receiving and fuel dispensing areas.
- Store the equipment in an enclosed container or bin that is accessible to all staff – especially those who handle the fueling operations.
- Mark the storage site with a sign labeled "Oil Spill Response Kit." Include instructions for deploying pads and booms and notification that all spills must be reported to the USCG at (800) 424-8802 and the MDEQ at (800) 292-4706.

- Consider leaving the storage container unlocked so that it is available to patrons, as well as to staff. If leaving the bin unlocked at all times is not feasible, try leaving it unlocked just on weekends and holidays when both activity and risk are greatest.
- If the bin is left unlocked, check the inventory regularly.

Failure to report spills to the Coast Guard may result in civil penalties.

If less than a gallon is spilled and you clean it up immediately, the Coast Guard will likely not send personnel to your facility. However the spill is still considered a violation.

Call the Coast Guard if a slick floats into your marina from an unknown source. The Coast Guard will cleanup the spill with their own resources. They will also investigate and attempt to identify and eliminate the source of the spill. Marinas are not held liable for a slick that did not originate at their facility.

### Be Prepared for a Fire.

- Meet the National Fire Protection Association's standards for marinas; NFPA 303, Fire Protection Standards for Marinas and Boatyards; NFPA 302, Fire Protection Standards for Pleasure and Commercial Motor Craft; NFPA 30A, Automotive and Marine Service Station Code; NFPA 307, Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves; and NFPA 33, Standard for Spray Application Using Flammable and Combustible Materials.
- Be sure hydrants are available to allow for fighting fires throughout your facility.
- Install smoke detectors.
- Provide and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near the fueling stations.
- Inspect and test all fire fighting equipment and systems regularly. Test fire extinguishers annually.
- Train personnel on fire safety and response including who to call, location of hydrants and use of portable extinguisher.
- Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.
- Invite the local fire marshal to visit your marina annually to train employees. Regular visits will also help the fire department to become familiar with your facility.

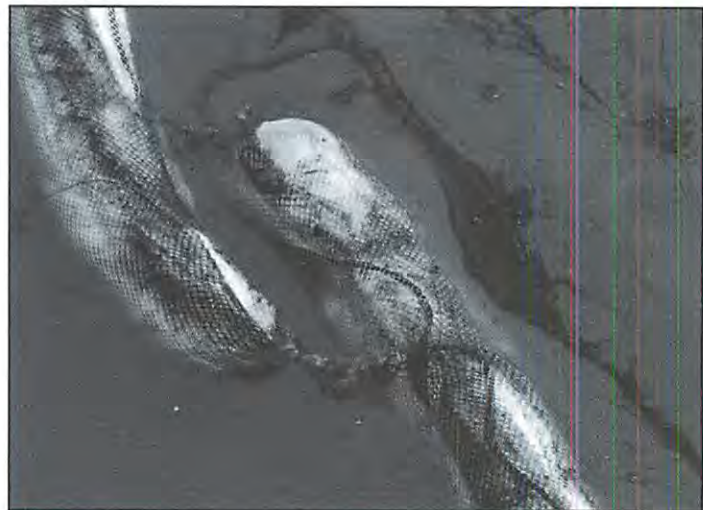
### Maintain Material Safety Data Sheets.

- Keep a file of Material Safety Data Sheets (MSDS) for all products used at your facility, as required by the Occupational Safety and Health Act of 1970 (29 USC Sec. 657). Store the file in an office away from material storage areas. Keep in mind during an emergency that this file will not tell you what quantity is on site or even whether all the materials listed are present.
- Inform the Local Emergency Planning Committee (LEPC) about the materials and quantities you store and what is potentially released when they burn.

### Environmental Protections

Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Benzene, a carcinogen, is in gasoline. Oil contains zinc, sulfur, and phosphorous.

Once petroleum is introduced into the water, it may float at the surface, evaporate into the air, become suspended in the water column, or settle to the lake bottom. Floating petroleum is particularly noxious because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the microlayer. The microlayer is the uppermost portion of the water column and contains thousands of species of plants, animals, and microbes.



*Oil spill contained sorbent booms.*





*Floating oil also contaminates the microlayer, this uppermost portion of the water column contains thousands of species of plants, animals, and microbes.*

## Regulatory Issues

### Federal Water Pollution Control Act (Clean Water Act)

Because of the harm associated with petroleum, the discharge of oil is absolutely prohibited. The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States including all Great Lakes water if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water.

The United States Coast Guard must be notified any time a spill produces a sheen on the water. Call the National Response Center at (800) 424-8802. Report the location, source, size, color, substance, and time of the spill. Failure to report a spill may result in fines.

The Clean Water Act (33 CFR 153.305) also prohibits the use of soaps or other dispersing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard. Soaps, emulsifiers, and dispersants cause the petroleum to sink in the water column and mix with sediments where they will remain for years. Also, the soaps themselves are pollutants. You may be fined up to \$25,000 per incident for the unauthorized use of soap or other dispersing agents on the water or in the bilge.

**All spills must be reported immediately to the Michigan Department of Environmental Quality:**

**Contact the MDEQ at (800) 292-4706. Storage Tank Regulations (Part 3, Chapter 11 of NFPA 30A) addresses the storage and handling of flammable and combustible liquids (FL/CL) at marine fueling locations.**

# **Sewage Handling**

## **Best Management Considerations**

- Install a Pumpout System
- Provide Shoreside Restrooms
- Design and Maintain Septic Systems to Protect Water Quality and Public Health
- Provide Facilities for “Live-aboards”
- Encourage Marine Sanitation Device Compliance
- Educate Boaters

## **Environmental Protections**

### **Protect Public Health**

### **Regulatory Issues**

- Marine Sanitation Devices
- Pumpout Stations

# Sewage Handling

## Best Management Considerations

### Install a Pumpout System.

Help boaters to meet the requirements of the law by providing a convenient, reliable marine sewage disposal facility – a pumpout station. Marina operators, may benefit from the installation of a pumpout in several ways. The presence of the pumpout facility promotes a public perception that you are environmentally responsible. More tangibly, the need for holding tanks to be pumped out regularly will draw a steady stream of customers to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware and repair services.

Any public or private marina in Michigan is eligible to apply for up to \$12,500 in grant funds to install a pumpout station. To apply for a Pumpout Station Grant, contact the Michigan Department of Natural Resources (MDNR) for an application. Please be aware that the grants are strictly reimbursable. You must pay for the equipment and installation up front. The MDNR will then reimburse you for approved expenses.

In exchange for grant funding, marina owners agree to maintain pumpout systems in operating condition for a minimum of 10 years and agree not to charge more than \$5 per pumpout. The pumpout system must be able to accept waste from portable toilets, as well as from holding tanks, and must be available to the public during reasonable business hours. Although most marinas choose to use grant funding, there is no requirement to do so.

For information related to funding opportunities - Grants, Contracts, and Customer Systems, MDEQ (517) 241-4934, [butlersc@michigan.gov](mailto:butlersc@michigan.gov).

Once you have decided to invest in a pumpout system, consider the following recommendations:

- Select a system that best meets the needs of your clients and that can move the expected volume of sewage over the required distance. Ask the manufacturer for a written assurance that their system will operate effectively given the specific conditions at your marina. There are several types of pumpout systems available, including:

1. Systems permanently fixed to a dock;
2. Mobile systems mounted on a golf cart or hand truck;
3. Direct slipside connections; and
4. Pumpout boats.

- Consider where the pumpout will be placed if you select a fixed system. It should easily accommodate the types of boats that frequent your marina. Fuel docks are often good locations. Try to locate the pumpout system such that a boat being pumped out does not prevent another boat from fueling.
- The best option for disposing of the collected waste is to connect directly to a public sewer line. If sewer is not available in your area, a holding tank is required. The contents of the tank must be pumped periodically and trucked to a treatment plant. Holding tank size and location is generally determined by the local health department.
- It is a good idea to have an attendant operate the pumpout. Consider installing a buzzer or paging system so that boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.
- If a fee is charged, how much will it be? Will tenants and “live aboards” be charged? Or just transients? Remember, no more than \$5 may be charged if grant funds were accepted for the purchase and/or installation of the system. If the pumpout system is not regularly staffed, you will have to arrange to collect the fee. Token systems have been used with success in many locations in Michigan.
- Provide information about use and cost of the pumpout station, hours of operation, and where to call for service if the system is out of order. Also, post signs that are visible from the channel so that passing boaters are aware of the facility. If you do not have a pumpout system, post directions to the closest public pumpout.
- You should inspect the system regularly and keep a log of your observations. Contact the pumpout manufacturer for specific maintenance and winterization recommendations. During the boating season, test the efficiency of the pump weekly by noting the length of time required for the system to empty a five gallon bucket of water. In order to quickly address any malfunctions, establish a maintenance agreement with a contractor qualified to service and repair pumpout facilities. Some funding for maintenance and repair of pumpout systems may be available through the DNR. Contact the DNR for more information.
- Do not allow rinse water or residual waste in the hoses to drain into receiving waters. Keep the pump running until it has been rinsed with clean water.
- If boaters are going to use the pumpout systems, the experience must be as pleasant and convenient as possible. As the manager of a marina with a pumpout, you are demonstrating your commitment to clean water. It is imperative that marina staff exhibit this same level of care.

## Provide Shoreside Restrooms.

- Provide clean, functional restrooms to encourage people not to use their heads while in port.
- Make restrooms available 24 hours a day.
- Install a security system on restroom doors so people will feel safe, particularly late at night.
- Provide air conditioning and heating.

## Design and Maintain Septic Systems to Protect Water Quality and Public Health.

If you have a septic system, be alert for signs of trouble, such as wet areas or standing water above the absorption field, toilets that run slowly or back up, and odor. Septic failures can contaminate drinking water. The following tips will help you to avoid the health risks and nuisance associated with an overburdened system (Miller and Eubanks 1992).

- Post signs in the restrooms informing patrons not to place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins, or tampons in the toilets. These items can clog the septic system.
- Post signs in the laundry room encouraging patrons to use minimal amounts of detergents and bleaches.
- Do not dump solvents such as paint thinner or pesticides down the drain and post signs prohibiting customers from doing the same.
- Do not pour fats and oils down drains.
- Do not use a garbage disposal. Disposals increase the amount of solids entering the system. Capacity is reached more quickly. As a result, more frequent pumping is necessary.
- Use small amounts of drain cleaners, household cleaners, and other similar products.
- Do not use “starter enzyme” or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.
- Direct downspouts and runoff away from the septic field in order to avoid saturating the area with excess water. For storm water management reasons, do not direct the flow or run off toward paved areas.
- Do not compact the soil by driving or parking over the infiltration area.
- Hire a licensed professional to pump the tank every two-to-five years.

## Provide Facilities for “Live-aboards”.

Boaters who make their homes aboard vessels pose a tricky problem. It is not reasonable to expect that they will regularly untie in order to use a fixed pumpout facility. It is also unwise to assume that people living on their boats will always use shoreside restrooms. Furthermore, it is unlawful/illegal to allow a resident population to discharge their Type I or II systems. Your obligation as marina owner/manager is to provide a convenient sewage disposal system for live-aboards, while maintaining good water quality. Consider the following options to meet this challenge. Keep in mind that most live-aboards expect and are willing to pay a premium for extra service and more convenient slips.

- Provide a portable pumpout system or require that live-aboards contract with a mobile pumpout service.
- Reserve slips closest to shoreside restrooms for live-aboards. Be sure that the dock and route to the bathhouse are well lit at night.
- Stipulate in the lease agreement that boats used as homes may not discharge any sewage.
- Offer to board their vessels and demonstrate the proper way to secure the “Y” valve.
- As a condition of the lease agreement, require that liveaboards place dye tablets in holding tanks to make any discharge clearly visible.
- Install direct sewer hookups for live-aboards.

## Encourage Marine Sanitation Device (MSD) Compliance.

- Include information about MSD requirements and sewage laws in contracts for slip rentals, transients, and live-aboards.
- State that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.
- If a customer fails to observe the law or honor your contract: 1) discuss the matter with him or her; 2) mail a written notice asking that the offending practice stop immediately, and keep a copy for your records; and 3) evict the boater.
- If a tenant is discharging raw sewage, report him or her to the MDEQ. Provide as much information as possible including: name of owner, boat and location.



*Boaters are encouraged to properly maintain their marine sanitation devices.*

### **Educate Boaters.**

As the generators and conveyors of sewage, boaters need to be educated about the impacts of sewage and its proper disposal. They must also be encouraged to properly maintain their MSDs and to purchase environmentally friendly treatment products for their heads and holding tanks.

## **Environmental Protections**

### **Protect Public Health**

Raw or poorly treated sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters.

Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die, they are decomposed by bacteria that further reduce levels of dissolved oxygen.

## **Regulatory Issues**

### **Marine Sanitation Devices**

Michigan is a “No Discharge” state (effective on all freshwater bodies). It is illegal to discharge raw and/or treated sewage from a watercraft within the waters of the state. Michigan regulation (NREPA Act 451, Part 95) require that any vessel with an MSD not be allowed to operate unless one or more of the following pollution control devices are used:

An approved holding tank that will retain all sewage produced on the watercraft for subsequent disposal at approved dockside or onshore collection and treatment facilities:

- An incinerating device that will reduce to ash all sewage produced on the watercraft. The ash shall be disposed of onshore in a manner that will preclude pollution.

### **Pumpout Stations**

Michigan law, NREPA Act 451, Part 95, requires that all docking facilities provide pumpout stations. Exceptions are included within the regulatory section of this guide.

# **Waste Containment and Disposal**

## **Best Management Considerations**

- Reduce Waste
- Fish Waste Management
- Manage Pet Waste
- Manage Trash
- Recycle Whenever Possible
- Recycle Solid Waste
- Recycle Liquid Waste
- Minimize Use of Hazardous Products
- Store Solvents and Hazardous Materials with Care
- Follow Recommended Disposal Methods
- Track Pollution Incidents
- Educate Boaters About Waste Issues

## **Environmental Protections**

### **Regulatory Issues**

- Natural Resources and Environmental Protection Act
- Resource Conservation and Recovery Act and State Hazardous Waste Laws

# Waste Containment and Disposal

## Best Management Considerations

### Reduce Waste.

In addition to the suggestions offered in this Guidebook, consider the following recommendations to further reduce waste. Keep in mind that less waste means lower disposal costs.

- Avoid having leftover materials by sizing up a job, evaluating what your actual needs are, and buying just enough product for the job. Encourage boaters to do the same.
- Minimize office waste by making double-sided copies, use scrap paper for notes and messages, reusing polystyrene peanuts or give them to small scale packing and shipping companies that will reuse them.
- Purchase recycled office paper.
- Request alternative packing material from vendors, such as, paper, potato starch peanuts and popcorn.
- Discourage the use of plastic and Styrofoam cups, food containers, utensils, and other nonbiodegradable products.
- Encourage boaters to exchange excess paints, thinners and varnishes. To facilitate this type of activity, provide a bulletin board where boaters can post notices that they are seeking particular materials or have an excess of materials.
- Post the names of local organizations (schools or theater groups) that are willing to accept excess, nontoxic paints.

### Fish Waste Management.

If marinas service sport anglers they must make provisions to properly dispose of fish waste. It is illegal to dispose of fish waste in waters of the State. Improperly handled fish waste can deteriorate water quality, create odors, attract of vermin and produce undesirable insects. Marinas should develop management plans to properly handle fish waste at their facilities. Elements of a plan should include:

1. Designation of an area within the marina where fish can be cleaned. To avoid fish waste entering the marina waters, boaters should not be allowed to clean fish at their slip.
2. Fish cleaning stations should be supplied with potable water, be screened and sheltered, contain sanitary cleaning surfaces-preferably stainless steel, be equipped with properly connected floor drains and sized to accommodate the volume of fish waste that it is generated at the marina.



*Fish cleaning station*

Fish cleaning stations can be equipped with mechanical grinders that macerate fish carcasses. If so equipped, the station can be connected with sanitary sewer for further treatment of fish waste and/or wash water. Since not all municipal sewage treatment plants are capable of handling the Biological Oxygen Demand (BOD) associated with fish waste, it is imperative that local officials be included in the planning process.

Where no municipal connection is available, wash water and ground fish waste can be stored in properly sized below ground septic tanks for periodic removal and proper disposal by a licensed liquid industrial waste hauler. Liquefied fish waste will not be accepted by a landfill. Tanks storing fish waste should be equipped with proper venting that disperses fish odors away from the marina facility and adjacent properties.

When a fish cleaning station is NOT equipped with mechanical grinding, a solid waste receptacle should be placed close to the station to handle and store properly bagged fish waste. Consider providing or stock your ship's store with heavy duty biodegradable garbage bags to accommodate fish waste. Solid fish waste can be disposed of in a Type II Municipal Landfill. Work with your waste hauler to arrange a pick up schedule that ensures fish waste does not accumulate and breakdown, attracting insects and vermin.

If fish waste volumes are manageable, carcasses could be frozen and properly disposed of when feasible. Freezing allows for less frequent waste hauling and minimize the associated odor.

Fish waste can contain valuable nutrients that can naturally supply some of the fertilizer needs and enhance soil water retention. As a result, some landowners may be willing to work with you to accept fish waste.

The MDEQ allows fish waste to be land applied, buried, or composted, pursuant to a set of established criteria and conditions. Contact the MDEQ for more information.

### **Manage Pet Waste.**

- Because many people bring their pets along on boating trips, there should be proper facilities to manage this waste. Many individuals simply throw their pet wastes overboard and this should not be allowed. Marinas can address this issue by providing "dog walks" and receptacles for the disposal of pet wastes.

### **Manage Trash.**

- Develop your waste management strategy based on the number of patrons, the types of waste generated, the layout of your marina, and the amount of staff time you can devote. Ask boaters what their needs are and inform them of yours needs.
- Promote your image as a responsible business by providing adequate and reasonably attractive trash receptacles such as cans, bins, and dumpsters.
- Locate trash receptacles in convenient locations. Select high traffic areas, such as at the landside foot of the dock, near bathrooms and showers, alongside vending machines, adjacent to the marina office, or on the path to the parking lot.
- Do not place trash containers on docks, as waste may inadvertently be tossed or blown into the water.
- Select containers that are large enough to hold the expected volume of trash. On average, four to six gallons of reception capacity is needed per person, per vessel, per day. A cubic yard of dumpster space holds approximately 216 gallons of trash.

- Provide lids or some other means to trap the waste inside and to prevent animals and rainwater from entering receptacles.
- Post signs indicating what may not be placed in the dumpster, such as engine oil, antifreeze, paints, solvents, varnishes, pesticides, lead batteries, transmission fluid, distress flares, and polystyrene peanuts (loose peanuts tend to blow away).
- Require all employees to be involved in policing the facility for trash and boat maintenance wastes. Do not allow litter on your grounds or near shore areas.
- Use a pool skimmer to collect floating debris that collects along bulkheads or elsewhere within your marina.
- Post signs directing people to trash receptacles if they are not in plain view.
- Provide lights around trash receptacles so that they are easy to find and safe.
- Plant or construct a windscreen around the dumpster to make the area more attractive and to prevent trash from blowing away. Utilize native plantings to develop natural windbreaks.

### **Recycle Whenever Possible.**

Divert reusable materials out of the waste stream. A recycling program is an easy, highly visible means to demonstrate environmental stewardship. Recycling programs are also a good way to introduce patrons to pollution prevention practices. In fact, many are likely to already be in the habit of recycling at home and may expect to see recycling bins. The added cost of providing recycling facilities may be offset by income derived from the sale of certain high-quality recyclable items, such as lead batteries, office paper, aluminum, and cardboard. Also, you may realize cost savings due to less frequent tipping of your dumpster(s) because of the reduced volume of trash.

- Contact a waste hauler or your local solid waste recycling coordinator to learn what recyclable materials are collected in your area. The following is a list of commonly recycled materials: antifreeze, used oil, oil filter canisters, solvents, glass, shrink wrap, type 1 and 2 plastics, aluminum, steel, tin, lead batteries, newspaper, corrugated cardboard, mixed paper, scrap metal, tires, and white goods (appliances).
- Post information about local recycling services if you are not able to provide all of the desired services at your facility.



## Recycle Solid Waste.

- Provide containers to collect, at a minimum, plastic, glass, aluminum, and newspaper.
- Clearly mark each container so people know what may and may not be put in it.
- Provide lids or some type of restricted opening to prevent the collected material from being lifted out by the wind and to prevent rainwater from collecting inside.
- Place the collection bins for solid recyclables in convenient locations. High traffic areas, near trash receptacles, are best.
- Use a different color or material for recycling bins to distinguish from the standard trash cans.

## Recycle Liquid Waste.

- Provide containers to collect oil and antifreeze. Also, collect solvents from your boatyard according to hazardous waste regulations.
- Provide separate containers for oil, antifreeze, and solvents.
- Surround tanks with impervious, secondary containment that is capable of holding 110 percent of the volume of each tank.
- Try to shelter tanks from the elements.
- Attach funnels to tanks to reduce chances of spills. Funnels should be large enough to drain portable containers and oil filters.
- Check with your recycler to learn what materials may be mixed. Engine oil, transmission fluid, hydraulic fluid, and gear oil may all be placed in a waste oil container. Some haulers will also take diesel and kerosene. Ethylene glycol and propylene glycol antifreeze are often collected in the same used antifreeze tank. As a precaution though, **CHECK WITH YOUR RECYCLER BEFORE MIXING ANY MATERIALS.**
- Post signs indicating what may and may not be placed in each tank.
- Do NOT allow patrons to pour gasoline, solvents, paint, varnishes, or pesticides into oil or antifreeze recycling containers. The introduction of these materials creates a “hazardous waste.” The entire tank must be disposed of as hazardous waste: a very expensive undertaking.

- Consider locking the intake to oil and antifreeze recycling containers to prevent contamination. Instruct your patrons to get the key from the marina staff person or to leave their oil or antifreeze next to the collection tank. Assign a member of your staff to inspect the collection site daily for any material that may have been dropped off.
- Be aware that recycling liquid materials is a long-term obligation. Investigate waste haulers to ensure that they actually recycle the collected material. Maintain shipping manifests for solvents and other hazardous wastes for a minimum of three years. Manifests are not required for used oil and antifreeze that is being recycled.

## Minimize Use of Hazardous Products.

By minimizing the use of hazardous products, you can reduce health and safety risks to your staff, tenants, and contractors; lower disposal costs; decrease liability; and limit chances that you will be responsible for a costly cleanup of inappropriately disposed material.

- Avoid using products that are corrosive, reactive, toxic, or ignitable, to the greatest extent possible. The use of these materials is likely to generate hazardous waste.
- Adopt an inventory control plan to minimize the amount of hazardous material you purchase, store, and dispose.
- Do not store large amounts of hazardous materials. Purchase hazardous materials in quantities that you will use quickly.
- Establish a “first-in first-out” policy to reduce storage time. Dispose of excess material every six months.

All waste generators must determine whether or not their refuse is hazardous.

“**Hazardous waste**” is defined as waste or a combination of waste and other discarded material including solid, liquid, semisolid, or contained gaseous material that because of its quantity, quality, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality. It may also lead to an increase in serious irreversible illness or serious incapacitating but reversible illness, or may pose a substantial present or potential hazard to human health or the environment if improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous waste does NOT include material that is solid or dissolved material in domestic sewage discharge, solid or dissolved material in an irrigation return flow discharge, industrial discharge that is a point source subject to permits under Federal law.

Use the following steps to help determine if you have hazardous waste present:

1. It is a listed hazardous waste.
2. The waste exhibits one or more of the characteristics of hazardous materials, such as ignitability, corrosivity, reactivity, or toxicity. A generator may test the waste to determine if it exhibits a hazardous characteristic or use knowledge of the waste, e.g., either firsthand experience or information gathered from a Material Safety Data Sheet. The test for toxicity is called the Toxicity Characteristic Leaching Procedure (TCLP) and is performed by industrial laboratories.

### Store Solvents and Hazardous Materials with Care.

- Store solvents and other hazardous materials in fire safe containers that are UL listed or Factory Mutual approved. Containers must meet U.S. Department of Transportation standards for protecting against the risks to life and property inherent in the transportation of hazardous materials. Approved containers will carry specification markings (e.g., DOT 4B240ET) in an unobstructed area. Refer to 49 CFR 178 for additional packaging specifications.
- Plainly label all stored and containerized material. For hazardous waste, mark the date accumulation begins and ends on each container.
- Store containers on pallets in a protected, secure location, away from drains and sources of ignition. Routinely inspect the storage area for leaks.
- To minimize air pollution, cap solvents and paint thinners when not in use. Store rags or paper saturated with solvents in tightly closed, clearly labeled containers.
- Separate hazardous chemicals by hazardous class. Call the MDEQ at (800) 662-9278 to determine which classes of chemicals apply to you.
- Assign control over hazardous supplies to a limited number of people trained to handle hazardous materials and who understand the “first-in first-out” policy.
- Routinely check the date of materials to prevent them from exceeding their expected shelf life.

### Follow Recommended Disposal Methods.

The following table contains information about recommendations for the proper disposal of wastes typically found at marinas. See page 42.

### Track Pollution Incidents.

- Copy and use the Pollution Report and Action Log included at the back of this guidebook to track pollution incidents and actions taken.
- Post the Log on a clipboard in the maintenance area or another easily accessible location.
- Consult the Pollution Report and Action Log daily.

### Educate Boaters About Waste Issues.

- Photocopy and distribute the following Clean Boating Tip Sheets included at the back of this guidebook to your tenants. There is room to add your marina’s name and logo.
- Contact the Center for Marine Conservation for marine debris educational materials at minimal cost.
- Post information about county household hazardous waste collection events and recycling centers.

### Environmental Protections

All marinas generate some waste; waste that could threaten human health, be hazardous to wildlife, and be costly to coastal and lake communities.

Solid waste, particularly plastics, must be contained. There are many well-documented instances of marine mammals, fish, turtles, and seabirds that have become entangled in or choked on plastic marine debris. Plastics also represent a hazard to navigation as they can snare propellers and clog engine intake systems. Divers are, likewise, susceptible to entanglement. Furthermore, solid waste that washes up on shore is unattractive and may be costly to remove.

In addition to solid waste, marina operators must be concerned about the proper collection and disposal of liquid wastes and corrosive, reactive, toxic, and/or ignitable materials, e.g., hazardous wastes.

**Table 1. Recommended Disposal Methods**

Waste	Disposal Options - the first option (P) is preferable
<p><b>Antifreeze</b></p> <ul style="list-style-type: none"> <li>• Propylene glycol</li> <li>• Ethylene glycol</li> </ul> <p>Contact your waste hauler to confirm that they will accept mixed antifreeze.</p>	<p>(P) Recycle</p> <ul style="list-style-type: none"> <li>• Hire a waste hauler to collect and dispose.</li> <li>• Purchase an on-site recovery unit. Distillation systems are more expensive than filtration systems but are more efficient at renewing used antifreeze.</li> </ul>
<p><b>Waste Oil</b></p> <ul style="list-style-type: none"> <li>• Engine oil</li> <li>• Hydraulic oil</li> <li>• #2 Diesel</li> </ul> <p>Contact your waste hauler to confirm that they will accept mixed oil.</p>	<p>(P) Recycle.</p> <ul style="list-style-type: none"> <li>• Use waste oil for space heating (subject to regulations under Part 167).</li> <li>• Take small quantities to a household hazardous waste collection day.</li> </ul>
<p><b>Quart Oil Cans</b></p>	<p>(P) Drain completely and dispose cans in regular trash. They cannot be recycled.</p>
<p><b>Nonterneplate Oil Filters</b></p>	<p>(P) Puncture and completely hot drain for at least 12 hours. Recycle the oil and the metal canister.</p> <ul style="list-style-type: none"> <li>• Use an oil filter crusher.</li> <li>• If you do not recycle the canister, double-bag it in plastic and place it in your regular trash.</li> </ul>
<p><b>Terneplate Oil Filters (used in heavy equipment and heavy-duty trucks)</b></p>	<p>(P) Dispose of as hazardous waste (contain lead).</p>
<p><b>Stale Gasoline</b></p>	<p>(P) Add stabilizer in the winter to prevent it from becoming stale or an octane booster in the spring to rejuvenate it. Use the fuel.</p> <ul style="list-style-type: none"> <li>• Mix with fresh fuel and use.</li> <li>• Hire a hazardous waste hauler to collect and dispose of it. A hazardous waste manifest is required.</li> <li>• Take small quantities to a household hazardous waste collection day.</li> </ul>
<p><b>Kerosene</b></p>	<p>(P) Filter and reuse for as long as possible, then recycle.</p>
<p><b>Mineral Spirits</b></p>	<p>(P) Filter and reuse.</p>
<p><b>Solvents</b></p> <ul style="list-style-type: none"> <li>• Paint and engine cleaners, such as acetone and methylene chloride</li> </ul>	<p>(P) Reuse as long as possible and then recycle.</p> <ul style="list-style-type: none"> <li>• Dispose of as hazardous waste.</li> </ul>
<p><b>Sludge recovered from a solvent listed as a Hazardous Waste</b></p>	<p>(P) Dispose of as hazardous waste.</p>
<p><b>Sludge recovered from a solvent not listed as a hazardous waste that does not exhibit hazardous characteristics</b></p>	<p>(P) Let sludge dry in a well ventilated area, wrap in newspaper, and dispose in garbage.</p>

<p><b>Paints and Varnishes:</b></p> <ul style="list-style-type: none"> <li>• Latex</li> <li>• Water based</li> <li>• Oil based</li> </ul>	<p>(P) Allow to dry completely. Dispose in regular trash.</p> <ul style="list-style-type: none"> <li>• Use leftover material for other projects, such as an undercoat for the next boat.</li> <li>• Encourage tenants to exchange unused material.</li> </ul>
<p><b>Paint Brushes</b></p>	<p>(P) Allow to dry completely. Discard in regular trash.</p>
<p><b>Paint Filters</b></p>	<p>(P) Allow to dry completely prior to disposal. Treat as hazardous waste if paint contains heavy metals above regulatory levels.</p>
<p><b>Rags soaked with hazardous substances</b></p>	<p>(P) Keep in covered container until ready for disposal. Dispose of the solvent that collects in the bottom of the container as hazardous waste.</p> <p>(P) Wring rags out over a collection receptacle and have laundered by an industrial laundry.</p> <ul style="list-style-type: none"> <li>• If rags fail TCLP test, dispose of as hazardous waste.</li> </ul>
<p><b>Used oil absorbent material</b></p>	<p>(P) If it is saturated with oil or diesel, double bag it in plastic and discard in trash (as long as no petroleum is leaking).</p> <p>(P) If it is saturated with gasoline, allow it to air dry and reuse.</p>
<p><b>Used bioremediating bilge booms</b></p>	<p>(P) Dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.</p>
<p><b>Epoxy and polyester resins</b></p>	<p>(P) Catalyze and dispose of as solid waste.</p>
<p><b>Glue and liquid adhesives</b></p>	<p>(P) Catalyze and dispose of as solid waste.</p>
<p><b>Containers</b></p> <ul style="list-style-type: none"> <li>• Paint cans</li> <li>• Buckets</li> <li>• Spent caulking tubes</li> <li>• Aerosol cans</li> </ul>	<p>(P) May be put in trash can as long as:</p> <ul style="list-style-type: none"> <li>• All material that can be removed has been removed. Be sure no more than 1" of residue is on the bottom or inner liner.</li> <li>• Containers that held compressed gas are at atmospheric pressure.</li> <li>• Containers that held acute hazardous waste have been triple-rinsed with solvent. Properly dispose of the solvent.</li> </ul>
<p><b>Residue from sanding, scraping, and blasting</b></p>	<p>(P) Dispose of as solid waste.</p>
<p><b>Residue from pressure washing</b></p>	<p>(P) Dispose of as solid waste.</p>
<p><b>Lead batteries</b></p>	<p>(P) Recycle or sell to scrap dealers. Store on an impervious surface, under cover. Protect from freezing. Check frequently for leakage.</p> <ul style="list-style-type: none"> <li>• Inform boaters that if they bring their used battery to a dealer, they may receive a refund on a new battery.</li> </ul>

<p><b>Expired distress signal flares</b></p>	<p>(P) Encourage boaters to keep on board as extras.</p> <p>(P) Store in well-marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Conduct the demonstration over water.</p> <ul style="list-style-type: none"> <li>• Encourage boaters to bring to local fire department or household hazardous waste collection day.</li> </ul>
<p><b>Scrap metal</b></p>	<p>(P) Recycle.</p>
<p><b>Light Bulbs</b></p> <ul style="list-style-type: none"> <li>• Fluorescent bulbs</li> <li>• High-pressure sodium</li> <li>• Metal halide lamps</li> <li>• Mercury vapor lamps</li> <li>• Low-pressure sodium</li> </ul>	<p>(P) Recycle if you have more than 10 to dispose.</p> <ul style="list-style-type: none"> <li>• If fewer than 10, treat as solid waste.</li> </ul>
<p><b>Refrigerants</b></p>	<p>(P) Recycle. If you deal with AC, you must be certified with EPA and use CFC recovery/recycling equipment.</p> <ul style="list-style-type: none"> <li>• Use alternative refrigerants</li> </ul>
<p><b>Monofilament Fishing Line</b></p>	<p>(P) Recycle through a manufacturer or tackle shop.</p>
<p><b>Scrap Tires (Part 169 of NREPA)</b></p>	<p>(P) Recycle. Need to register with the MDEQ if you will be collecting more than 500 tires. Store according to National Fire Protection Association Standards.</p>
<p><b>Pesticides</b></p>	<p>(P) Dispose of as hazardous waste.</p>
<p><b>Plastic Shrink Wrap</b></p>	<p>(P) Recycle.</p>
<p><b>Pet Waste</b></p>	<p>(P) Prohibit disposal of pet waste into water. Establish pet walk area along with one of the following disposal methods:</p> <ul style="list-style-type: none"> <li>• Flush pet waste to treatment facility</li> <li>• Bag waste and properly dispose</li> </ul>
<p><b>Fish Waste</b></p>	<p>(P) Prohibit disposal of fish waste into confined marina waters. Establish a fish cleaning station and adopt one of the following disposal methods:</p> <ul style="list-style-type: none"> <li>• Equip the cleaning station with a garbage disposal connected to municipal sewer.</li> <li>• Compost the scraps.</li> <li>• Instruct boaters to bag scraps in plastic and place in a dumpster or bring home.</li> </ul>

# Regulatory Issues

## Natural Resources and Environmental Protection Act

The Natural Resources and Environmental Protection Act (NREPA, Act 451 of 1994, Part 95), states that “a person shall not place, throw, deposit, discharge, or cause to be discharged into or onto the waters of this state, any litter, sewage, oil, or other liquid or solid materials that render the water unsightly, noxious, or otherwise unwholesome so as to be detrimental to the public health or welfare or to the enjoyment of the water for recreational purposes.”

Also stated in the Act is “a person shall not discharge, dump, throw, or deposit garbage, litter, sewage, or oil from a recreational, domestic, or foreign watercraft used for pleasure or for the purpose of carrying passengers, cargo, or otherwise engaged in commerce on the waters of this state.” It is illegal to discharge any garbage or waste into the waters of the Great Lakes, along rivers, and into inland lakes. The law also requires that marinas be able to accept garbage from boats that normally do business with them.

## Resource Conservation and Recovery Act and State Hazardous Waste Laws

The Federal Resource Conservation and Recovery Act (RCRA) of 1976 was established to improve the collection, transportation, separation, recovery, and disposal of solid and hazardous waste. Both RCRA and the State hazardous waste law (NREPA, Act 451 of 1994, Part 111) govern the management of hazardous waste in the State of Michigan. Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. A list of controlled hazardous wastes can be found in the...

Hazardous waste “generators” are those individuals or companies that produce greater than 100 kilograms (about 220 pounds or 30 gallons) of hazardous waste during one calendar month, or who store more than 100 kg at any one time. The following requirements apply to all hazardous waste generators.

- All generators and transporters of hazardous waste must apply to the Michigan Department of Environmental Quality (MDEQ) for an Environmental Protection Agency (EPA) identification number.
- Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations. Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion and in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.

- Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to the MDEQ and local agencies.
- Document all hazardous waste training in each employee’s personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
- Anybody who sends hazardous waste off-site for treatment, storage, or disposal must prepare a manifest. It is your responsibility to ensure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest, as should the owner or operator of the treatment, storage, or disposal facility. Once the waste has been properly treated, stored, or disposed of, a final copy must be returned to the generator, .
- Submit a biannual report to the MDEQ that summarizes hazardous waste activities during odd numbered years. It is recommended, not mandatory, to report figures for even numbered years too.
- Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by the MDEQ.

Facilities that generate less than 100 kg of hazardous waste per month and which do not accumulate more than 100 kg of waste at any one time are considered “small quantity generators.” Small quantity generators are not required to register with the EPA. Hazardous waste from small quantity generators should be sent to a disposal facility that is permitted, licensed, or registered to manage municipal or industrial solid waste.



*Establish a fish cleaning station and adopt a practical disposal method.*

# **Marina Management**

## **Properly Train Staff**

- Stormwater Pollution Prevention Plan
- Emergency Response Plans
- Be Watchful
- Approach Polluters
- Investigate Community College Offerings
- Maintain Training Records

## **Inform Patrons and Independent Contractors**

- Incorporate Best Management Practices into Contracts
- Post Signs Detailing Best Management Practices
- Distribute Literature to Your Boaters
- Host a Workshop
- Make Use of Informal Communication Mechanisms
- Recognize Boaters

## **Public Relations**

- Publicize your Good Deeds
- News Release Tips
- Become a Michigan Clean Marina

## **Business Practices**

- Offer Environmental Audits for Boaters
- Avoid Environmental Surcharges
- Be Diligent



# Marina Management

Once you have adopted some of the best management practices outlined in this Guidebook, tell people about it! Train your staff to routinely minimize pollution. Inform boaters about how their actions can affect water quality. And let the public know that you are doing your part to protect the environment.

## Properly Train Staff

### Storm Water Pollution Prevention Plan.

The plan requires that you teach your employees about the components and goals of the storm water pollution prevention. The training should be conducted to allow for continual improvement and should address the following topics as applicable:

- Used oil management;
- Spent solvent management;
- Proper disposal of spent abrasives;
- Disposal of boat wastewater;
- Proper bilge water handling;
- Spill prevention and control;
- Fueling procedures;
- General good housekeeping;
- Painting and blasting procedures and;
- Used battery management.

Also, provide training on the proper use of equipment, such as dustless sanders and high-volume low-pressure spray guns.

### Emergency Response Plans.

During an emergency – when time is of the essence – you will want people to know what to do and how to do it.

- Review plans and response procedures with staff at the beginning of each boating season.
- Train employees in the use of spill containment measures.
- Run emergency response drills at least twice annually.
- Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

## Be Watchful.

Involve all employees in policing your marina for waste. Encourage your staff to look for and immediately halt the following activities:

- Colored plumes in the water where a hull is being cleaned.
- Bilge water discharge with a sheen.
- Uncontained sanding, painting, varnishing, or cleaning.
- Maintenance debris being washed into the water.
- Sewage discharges within the marina.
- Use of environmentally harmful cleaning products.

## Approach Polluters.

- Determine who will address boaters and contractors who are polluting. Generally speaking, this is a job for the manager. Let your staff know whether they should handle polluters themselves or report pollution incidents to the manager.
- Politely inform boaters and contractors why their actions are harmful. Describe a more environmentally sensitive method and ask that the work stop until it can be done with less environmental impact. It may be easier to get cooperation if you require boaters and contractors to practice pollution prevention as a condition of their contracts.
- If the problem persists, take these additional steps:
  - Talk to the boater or contractor again;
  - Mail a written notice asking that the harmful practice stop. Keep a record of the mailing;
  - Remove the problem from the dock. Charge the boater or contractor for the cost of removal and cleanup;
  - Ask the tenant or contractor to leave your marina.

## Investigate Community College Offerings.

- Look for college courses related to environmental protection.

## Maintain Training Records.

- Record training dates, topics, and names of employees and instructors.
- Keep copies of instructional material.

## **Inform Patrons & Independent Contractors.**

### **Incorporate Best Management Practices Into Contracts.**

In addition to being a legal document, contracts are very effective educational tools. Use the contract to inform boaters and contractors how to minimize their environmental impacts.

- Include language requiring the use of best management practices in all of your contracts: slip holders, live-aboards, transients, charters, workers, contractors, and tenants.
- Include language specifying the consequences of not using best management practices, for example, failure to use best management practices will result in expulsion from the marina and forfeiture of rental fees.
- Include information about requirements for Marine Sanitation Devices.

### **Post Signs Detailing Best Management Practices.**

- Post signs at fuel docks and pumpout stations, along piers, in boat maintenance areas, and at dumpsters and recycling stations.
- Be sure the signs are visible, durable, eye-catching, and appropriately sized.
- Post your facility's environmental policy for public viewing.

### **Distribute Literature to Your Boaters.**

- Copy and distribute the Clean Boating Tip Sheets included in this Guidebook or create your own. Boater tip sheets on boat maintenance, petroleum control, boat sewage, and waste disposal can be found at the back of this guidebook.
- Send the tip sheets with monthly mailings, include articles about best management practices in your newsletter.
- Place tip sheets in dock boxes or on vessels. Be cautious that they do not end up in the water.
- Free copies of clean boating materials are available from organizations such as the Center for Marine Conservation, Boat/U.S. Clean Water Trust, and your local watershed group.
- Contact the U.S. Coast Guard for publications summarizing federal boating requirements.

### **Host a Workshop.**

- Include a walking tour of the facility to demonstrate best management practices.
- Try to schedule the workshop to coincide with an existing marina function that is traditionally well attended.
- Offer incentives to attendees such as door prizes, discounts, product samples and food.

## **Suggested Signs Detailing Best Management Practices**

### **Keep Fuel Out of the Water**

- Do Not Top Off Tank.
- Listen to Anticipate When Tank is 90% Full.
- Wipe up Spills Immediately.

### **Oil Spill Resonse Kit**

Include name and number of person to contact at the marina in case of a spill.

Be sure that a copy of the Oil Spill Response Plan is clearly visible inside the Oil Spill Response Kit.

### **Boat Maintenance Area**

- All major repairs (e.g., stripping, fiberglassing) must be performed in the Boat Maintenance Area.
- All blasting and spray painting must be performed within the enclosed booth or under tarps.
- Use tarps or filter fabric to collect paint chips and other debris.
- Use vacuum sander (include rental information if appropriate).
- Use high-volume low-pressure spray guns (include rental information if appropriate).
- Use drip pans with all liquids.
- Reuse solvents.
- Store waste solvents, rags, and paints in covered containers.

### **Do Not Discharge Sewage**

- Sewage discharges are illegal.
- Use the facility's restrooms while you are in port.
- Nutrients and pathogens in sewage impair water quality.

## Suggested Signs Detailing Best Management Practices

### Recycle Antifreeze

This container is for:

- Ethylene glycol antifreeze
- Propylene glycol antifreeze

Gasoline, diesel, kerosene, and all other materials are **STRICTLY PROHIBITED**

If container is locked, include information about where to find the key or leave the antifreeze

### NOTICE: The Discharge of Oil is Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface water. *Violators are subject to a penalty of \$5,000.*

*The use of soaps to disperse oil is illegal.* Violators may be fined up to \$25,000 per incident.

#### Report Oil Spills to:

USCG at (800) 424-8802 and  
MDEQ at (800) 292-4706

### Recycle Items

Oil	Mixed paper
Antifreeze	Newspaper
Lead batteries	Solvents
Glass	Steel
Plastic	Scrap metal
Aluminum	Tin
Corrugated cardboard	Tires
Metal oil filter canisters	

Indicate which items you recycle and where the collection sites are, and include information about local recycling services for materials that you do not collect

### Pumpout Station

- Instructions for use:
- Hours of operation:
- Fee:
- Name and number of person to call in case of malfunction:

### Think Before You Throw

The following items may not be placed in this dumpster:

- Oil
- Antifreeze
- Paint or varnish
- Solvents
- Pesticides
- Lead batteries
- Transmission fluid
- Distress flares
- Loose polystyrene peanuts
- Hazardous waste

### Marine Sanctuary

This marina provides food and shelter for young fish:

- Prevent oil spills!
- Keep bilge clean!
- Use oil sorb pads!

Help by recycling or properly disposing of used oil, antifreeze, solvents, cleaners, plastics, and other wastes.

## Make Use of Informal Communication Mechanisms.

- Convey pollution prevention information in conversations with patrons and contractors.
- Post information about best management practices on a marina bulletin board.

## Recognize Boaters.

- Publicly recognize boaters who are making an effort to control pollution.
- Include a feature in your newsletter, post a flyer with the boater's picture on a public bulletin board, or give an award.

## Public Relations

### Publicize Your Good Deeds.

- Seek free publicity with local press, magazines, television, and radio outlets.
- Prepare news releases to highlight your innovative practices, new equipment or services, available literature, or a workshop you are sponsoring.
- Plan news releases to coincide with seasonal activities, such as, helpful tips for winterization.

### News Release Tips

Start news releases with a contact person's name and phone number, the date, and a headline. The first paragraph should contain vital information: who, what, when, and where.

- Fill in with secondary information and support data. Conclude with a "call to action" (e.g., visit the marina for a demonstration of the new plastic media blasting system).
- Double-space the text. One page is best. It should be no longer than two pages. Refer to the Associated Press Style Book for additional formatting information.
- Send releases in time to meet media deadlines.
- When submitting a news release, be sure you have the name and accurate spelling of the editor.
- Ask for press kits from manufacturers of environmentally sensitive products and use their photographs and product information.

## Suggested Signs Detailing Best Management Practices

### Recycle Oil

This container is for:

- Engine oil
- Transmission fluid
- Hydraulic fluid
- Gear oil
- #2 Diesel
- Kerosene

### Gasoline is Strickly Prohibited

Tailor to fit your hauler's requirements.

If container is locked, include information about where to find the key or leave the oil.

### Properly Dispose Fish Scraps

Please do not discard fish scraps within the marina basin

- Use our fish cleaning station.
- Bag the scraps and dispose in dumpster or at home.

### Environmental Policy

It is the policy of this marina to protect the health of our boaters, staff, and the environment by preventing the discharge of pollutants to the water, land and air.

## Become a Michigan Clean Marina.

- Apply for recognition as a Michigan Clean Marina. Once you have satisfied the selection criteria, you may use the Michigan Clean Marina logo in your advertising and correspondence, fly a Clean Marina flag, and enjoy promotion by the Michigan Clean Marina program in publications, on boating websites, and at community events.
- Use your selection into the Clean Marina Program as an opportunity to prepare a press release.

## Business Practices

### Offer Environmental Audits for Boaters.

- Expand your business by offering environmental audits.
- Inspect engines, bilges, fuel systems, and holding tanks.
- Provide oil absorbent pads, bilge pillows/socks, air/fuel separators, etc.

### Avoid Environmental Surcharges.

- Charge for tangible items such as tarps, vacuum sanders, and protective clothing rather than a flat “environmental surcharge.”
- Consider donating a portion of rental fees (e.g., for vacuum sanders) to an environmental organization. The boater can feel good about controlling pollution and about the fact that a portion of his or her money is going to help preserve natural resources.

### Be Diligent.

- Be absolutely diligent in containing pollution; your own and that created by your staff. Boaters will notice and follow your example.



# Laws and Regulations

## Selected Federal Agencies

- United States Environmental Protection Agency (EPA)
- National Oceanic and Atmospheric Administration (NOAA)
- United States Army Corps of Engineers (USACE)
- United States Coast Guard (USCG)

## Selected State Agencies

- Michigan Department of Environmental Quality (MDEQ)
- Michigan Department of Natural Resources (MDNR)

## Selected Federal Laws that Impact Marinas

- Clean Air Act Amendments, 1990
- Clean Vessel Act
- Coastal Zone Act Reauthorization Amendments of 1990
- Federal Water Pollution Control Act
- Marine Plastic Pollution Research and Control Act
- Oil Pollution Act of 1990
- Refuse Act of 1899
- Resource Conservation and Recovery Act

## Selected State Laws that Impact Marinas

- Marine Sanitation Devices (MSD)
- Pumpout Stations
- Inland Lakes & Streams
- Great Lakes – Bottomland Conveyances

## Environmental Permits and Licenses

- National Pollutant Discharge Elimination System (NPDES) Permit for Discharges from Marinas
- State Law: Soil Erosion and Sedimentation Control
- Storage Tank Regulations
- Storage of Liquids
- Storm Water Pollution Prevention Plan
- Summary of Environmental Permits and Licenses

# Laws and Regulations

This chapter of laws, regulations, and permit information is by no means comprehensive. It is meant to provide the following:

- An introduction to the responsibilities of certain federal and state agencies;
- An overview of some relevant laws; and
- A synopsis of information about other pertinent permits and licenses.

## Selected Federal Agencies

**The U.S. Environmental Protection Agency (EPA)** is responsible for ensuring environmental protections are considered in U.S. policies concerning economic growth, energy, transportation, agriculture, industry, international trade, and environmental quality. The EPA ensures that national efforts to reduce environmental risk are based on the best available scientific information; and provides access to information on ways business, state, and local governments, communities, and citizens can prevent pollution and protect human health and the environment. The Office of Water is responsible for implementing, among other laws, the Clean Water Act, portions of the Coastal Zone Act Reauthorization Amendments of 1990, the Resource Conservation and Recovery Act, and the Marine Plastics Pollution Research and Control Act. Activities are targeted to prevent pollution wherever possible and to reduce risk to people and ecosystems in the most cost-effective manner.

**National Oceanic and Atmospheric Administration (NOAA)** is an agency within the U.S. Department of Commerce. NOAA's mission is to describe and predict changes in the earth's environment and to conserve and wisely manage the nation's coastal and marine resources to ensure sustainable economic opportunities. NOAA provides a wide range of observational, assessment, research, and predictive services for estuarine and coastal Great Lakes regions. NOAA has developed an array of programs to address national-scale estuarine issues and specific problems affecting individual estuarine and coastal Great Lakes systems. In partnership with the EPA, NOAA implements the Coastal Zone Act Reauthorization Amendments of 1990.

**The U. S. Army Corps of Engineers (USACE)** is responsible for ensuring adequate flood control, hydropower production, navigation, water supply storage, recreation, and fish and wildlife habitat. The USACE contracts and regulates coastal engineering projects, particularly harbor dredging, and beach renourishment projects. They also

review and permit coastal development and restoration projects. A joint permit from the MDEQ and the USACE is required for all construction dredging projects in Section 10 waterways.

**The United States Coast Guard (USCG)** is an arm of the U.S. Department of Transportation, protects the public, the environment, and U.S. economic interests. The USCG promotes maritime safety and marine environmental protection, enforces maritime law, tend all federal navigation aids; and regulates and monitors recreational and commercial vessels and waterfront facilities.

## Selected State Agencies

**Michigan Department of Environment Quality (MDEQ)** seeks to protect and restore the quality of Michigan's air, land, and water resources while fostering economic development, healthy and safe communities, and environmental education for the benefit of the environment, public health, and future generations. The MDEQ oversees the restoration and maintenance of groundwater and surface waters. The MDEQ regulates construction activities in the Great Lakes, inland lakes and streams and in wetland habitats. They provide technical and scientific analysis and data for regulatory activities, make environmental risk assessments, monitor air pollutant levels, develop strategies and regulations to control air emissions, oversee toxic and hazardous waste cleanup, and coordinate emergency response activities. Most State pollution control and land/water interface permits are issued by the MDEQ. The MDEQ is responsible for the Sewage Pumpout Program.

**Michigan Department of Natural Resources (MDNR)** coordinates all natural resource activities within the State affecting the State's bays and tributaries, fisheries, forests, parks, wildlife, and geology. The MDNR oversees State land acquisition and management and historic preservation. The MDNR serves to preserve and protect Michigan's resources and its citizens by enforcing all conservation, boating, and criminal laws and by serving as the primary search and rescue agency on Michigan waters and in remote areas of the State. The MDNR is responsible for enforcement of sewage discharge from boats.

## Selected Federal Laws that Impact Marinas

**Clean Vessel Act (CVA)** provides funds to states to construct, renovate, and operate pumpout stations and to conduct boater environmental education. Contact the MDNR for information about receiving up to \$12,500 in grant funding to install a pumpout system.

**Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)** provides the impetus for the Michigan Clean Marina Program. Section 6217 of the Amendments requires that nonpoint source pollution from marinas be contained. Through the Clean Marina Program, Michigan is promoting voluntary adoption of best management practices to minimize the impact of marinas on surrounding land and water.

**Federal Water Pollution Control Act**, (commonly known as the Clean Water Act, addresses many facets of water quality protection. It provides the authority for the National Pollutant Discharge Elimination System (NPDES) permit program for point sources of pollution. The Act prohibits the discharge of oil or hazardous substances into U.S. navigable waters. It also prohibits the use of chemical agents like soaps, detergents, surfactants, or emulsifying agents to disperse fuel, oil, or other chemicals without the permission of the U.S. Coast Guard.

All boats 26 feet in length and over are required to display a placard that is at least 5"x8", made of durable material, and fixed in a conspicuous place such as in the machinery spaces or at the bilge pump control station. The placard must read:

### **Discharge of Oil is Prohibited**

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. *Violators are subject to a penalty of \$5,000.*

**The Clean Water Act requires that the U.S. Coast Guard be notified any time a spill produces a sheen on the water.** Failure to report a spill may result in civil penalties.

The Act further requires that all recreational boats with installed toilets have an operable marine sanitation device on board (see "State Laws" below).

**Marine Plastic Pollution Research and Control Act (MPPRCA)** is the U.S. law that implements an international pollution prevention treaty known as MARPOL. The MPPRCA of 1987 (Title II of Public Law 100-220) restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to dispose of plastic materials into the water anywhere. Within U.S. lakes, rivers, and bays, it is illegal to dump plastic, paper, rags, glass, metal, crockery,

dunnage (lining and packing material, nets, lines, etc.), and food. All boats over 40 feet must also have a written waste management plan on board.

Under the national law, ports and terminals, including recreational marinas, must have adequate and convenient "reception facilities" for their regular customers. That is, marinas must be capable of receiving garbage from vessels that normally do business with them (including transients).

**Oil Pollution Act of 1990 (OPA)** was written in direct response to the Exxon Valdez oil spill. The law primarily addresses commercial oil shipping (e.g., tankers must be double-hulled, captains may lose their licenses for operating a vessel under the influence of drugs or alcohol). However, some of the requirements are applicable to recreational boating. Most notably, the responsible party for any boat or facility that discharges oil is liable for the removal costs of the oil and any damages to environmental quality; real or personal property; subsistence uses; revenues, profits, and earning capacity; and public services like the cost of providing increased or additional public services. The financial liability for all nontank vessels is \$600 per gross ton, or \$500,000, whichever is greater. In addition, substantial civil penalties may be imposed for failing to report a spill, for discharging oil, for failure to remove oil, failure to comply with regulations, and gross negligence.

**Refuse Act of 1899** prohibits throwing, discharging, or depositing any refuse matter of any kind (including trash, garbage, oil, and other liquid pollutants) into waters of the United States.

**Resource Conservation and Recovery Act (RCRA)** provides the legal authority to establish standards for handling, transporting, and disposing of hazardous wastes. Hazardous wastes are ignitable, corrosive, reactive, and/or toxic materials.

Hazardous waste "generators" are those individuals or companies that produce greater than 100 kilograms (about 220 pounds or 30 gallons) of hazardous waste during one calendar month or who store more than 100 kg at any one time. The following requirements apply to all hazardous waste generators.

- All generators and transporters of hazardous waste must apply to the MDEQ for an EPA identification number. Use EPA Form 8700-12, available from the MDEQ.
- Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations (refer to 49 CFR 178). Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion in an area able to contain any leaks.



Keep containers closed unless waste is being added or removed. Inspect containers weekly.

- Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to the MDEQ and local agencies.
- Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
- Anybody who sends hazardous waste off-site for treatment, storage, or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes "from cradle to grave." It is your responsibility to ensure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest, as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed.
- Submit a biannual report to the MDEQ that summarizes hazardous waste activities during odd numbered years. It is recommended, but not mandatory, to report figures for even numbered years.
- Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by the MDEQ.

Facilities that generate less than 100 kg of hazardous waste per month and do not accumulate more than 100 kg of waste at any one time are considered "small quantity generators." Small quantity generators are not required to register with the EPA. Hazardous waste from small quantity generators should be sent to a disposal facility that is permitted, licensed, or registered by the State to manage municipal or industrial solid waste.

## **Selected State Laws that Impact Marinas**

### **Marine Sanitation Devices.**

It is illegal to discharge raw and/or treated sewage from a watercraft within any freshwater body within the U.S. or Canada.

Michigan law (NREPA Act 451, Part 95) requires that any vessel with an installed marine sanitation device (MSD) not be allowed to operate unless it has an approved holding

tank or an incinerating device. Also, a watercraft shall not operate on the waters if it has any type of bypass connection, pump, or other means of directly or indirectly discharging sewage into the waters of this state; unless the bypass connection, pump, or other device has been rendered incapable of directly or indirectly discharging sewage into the waters of this state. This does not prohibit a properly installed discharge line, used to empty a holding tank or retention device at an onshore sewage pumpout station, or prohibit the use of a portable marine sanitation device.

### **Pumpout Stations.**

Michigan law, NREPA Act 451, Part 95, requires that all docking facilities provide pumpout stations or as noted below:

- An existing docking facility is not required to have pumpout facilities if it has a contract to use, and does use, the pumpout facilities of another docking facility in the vicinity.
- A facility constructed after May 1, 1990 or whose capacity is expanded by a cumulative amount exceeding 25%, or more than 15 slips – whichever is less – of the capacity existing on May 1, 1990, shall provide pumpout facilities.
- A facility that has a capacity of 15 watercraft or less is not required to provide pumpout facilities.
- A facility holding only small watercraft not equipped with a marine sanitation device is not required to provide pumpout facilities.

### **Inland Lakes and Streams.**

Marina Operating Permits A marina (per definition under Part 301) located on an inland lake or river will likely require a marina operating permit (MOP) under Part 301 Inland Lakes and Streams of the NREPA, depending on the nature of the use.

"Marina" means a facility that is owned or operated by a person, extends into or over an inland lake or stream and offers service to the public or members of the facility for docking, loading, or other servicing of recreational watercraft.

"Seasonal structure" includes any type of dock, boat hoist, ramp, raft, or other recreational structure that is placed into an inland lake or stream and removed at the end of the boating season.

"Riparian interest area" is the section of bottomlands in an inland lake or stream that is owned by a riparian owner. The simplest case is a circular lake where the riparian interest areas are pie shaped pieces that extend from the lake frontage corners out to the central point of the lake. In the simplest case of a linear river, the riparian interest

goes from the river frontage corners to the center line of the channel. Estimating riparian interest areas becomes a lot more complicated with lakes that aren't circular, such as bays and islands. It is important to note that only a judge has the authority to define riparian interest areas. Surveyors can estimate riparian interest areas, but any conflicts have to be resolved by a judge.

"Structure" includes a marina wharf, dock, pier, dam weir, stream deflector, breakwater, groin, jetty, sewer, pipeline, cable, and bridge.

"Person" means an individual, partnership, corporation, association, governmental entity, or other legal entity.

The law requires that: "Except as provided in this act, a person without a permit from the department shall not:

Construct, enlarge, extend, remove or place a structure on bottomland;

Erect, maintain, or operate a marina."

A permit is not required for seasonal structures placed on bottomland to facilitate private noncommercial recreational use of the water if it does not unreasonably interfere with the use of the water by others entitled to use the water or interfere with flow.

Under Section 30102(c), the MDEQ requires that both construction and marina operating permits be secured for all projects that meet the definition of a marina as expressed in Section 30101(f). A recurring argument by persons notified of the requirement to apply for the appropriate permits is they are exempt from securing a permit under Section 30103(b). This response is typical of situations where apartment complexes install dock structures or moorings off their property, backlot owners in subdivisions place dock structures or moorings off outlots, easements or parks, and condominium associations that place dock structures or moorings off association owned property. The person(s) placing the structure(s) contend that they are exempt from permit requirements because the structure(s) is seasonal and for private use.

The statutory definition of a marina does not make a distinction between commercial and private or residential docking and mooring facilities. It does not make a distinction of whether dock structures or moorings are permanent or seasonal. It only evaluates the service being provided by a person to the public or "members of the marina." While "members of the marina" is not defined in Part 301, the MDEQ has consistently interpreted this phrase to mean individuals or users of waterfront property where there is common interest in the property and docking, loading or other servicing of recreation watercraft is being provided. Likewise, the MDEQ has consistently

interpreted "private noncommercial recreational use" as reasonable exercise of legitimate riparian rights associated with waterfront property zoned and used for single family residential use.

Sections 30102(b) and 30102(c) require that two permits be secured prior to marina construction and operation. The applications associated with these permits are referred to as the Application for Permit and the Application for Marina Operating Permit (MOP). The Application for Permit requests authorization to perform construction activities. The Application for Marina Operating Permit requests authorization to operate a constructed facility. The applications are reviewed simultaneously. In waters also under the jurisdiction of the U. S. Army Corps of Engineers (USACE), a federal construction permit must also be secured. The MDEQ and the USACE have a joint permit process for such projects.

When the MDEQ determines a proposed project meets statute criteria (found in Section 30106 and Administrative Rules 9 and 4 of Part 301) and can be authorized, it issues a construction permit. However, the MOP is not issued with the construction permit. Upon completion of the permitted construction activities and prior to operation, the permittee contacts the MDEQ to schedule a compliance inspection (seasonal dock construction is not subject to inspection, only permanent docks must be inspected prior to permit issuance). Upon determining that all construction is completed in accordance with the permit terms and conditions, the MOP is granted. MOPs are issued for a three calendar year period and are required to be renewed.

### **Great Lakes – Bottomland Conveyances.**

The state of Michigan is trustee of the bottomlands and waters of the Great Lakes and has a perpetual duty to manage these resources for the benefit of its citizens. A marina located on Great Lakes public trust bottomlands will require authorization from the MDEQ in the form of a lease under Part 325 of the document, Great Lakes Submerged Lands of the NREPA. The lease requires an annual fee be paid to the MDEQ and will contain conditions for the use and occupancy of the subject bottomlands.

Similar to Part 301 with regard to commercial marinas that provide docking or mooring as part of their services, the MDEQ maintains that docking or mooring from riparian properties such as outlots, trailer parks, condominium and apartment developments, yacht clubs, and other commonly owned or controlled points of access function as and meet the definition of a marina under Part 325. Key definitions, found in Part 325 are helpful in understanding the regulatory position:

- “Marina Purposes” means an operation making use of submerged bottomlands or filled in bottomlands of the Great Lakes for the purpose of service to boat owners or operators, which operation may restrict or prevent the free public use of the affected bottomlands or filled-in lands.
- “Other Materials” means any fabricated structure or installed device or facility extending over or placed on bottomlands below the ordinary high water mark or extending over or placed into the waters of the Great Lakes, including all of the following:

- (I) Bulkheads
- (II) Groins
- (III) Riprap
- (IV) Jettys
- (V) Breakwaters
- (VI) Piers and pipelines
- (VII) Pilings
- (VIII) Sand trap walls

The term also means a fabricated structure or installed device or facility attached to or administered by a marina. The term does not include temporary docks, boat hoists, or other devices for private use, which are removed annually.

“Person” means any individual, partnership, corporation, association, political subdivision, the state, the department, an instrumentality or agency of the state, a political subdivision of an instrumentality or agency of the state, a department or other instrumentality or agency of the federal government, or other legal entity.

“Public Trust” means the perpetual duty of the state to secure to its people the prevention of pollution, impairment or destruction of its natural resources, and the rights of navigation, fishing, hunting, and use of its lands and waters for other public purposes.

A riparian owner shall obtain a permit from the department before dredging, filling, or placing spoil or other materials on bottomlands; dredging, altering, or maintaining an existing upland channel; or constructing a new upland channel.

Section 32503 provides the MDEQ the authority to issue construction permits and bottomlands leases. The applications associated with these permits are called the Application for Permit and the Application for Conveyance. The Application for Permit requests authorization to perform construction activities. The Application for Conveyance requests authorization to occupy Great Lakes bottomlands for the marina facility. The applications

are reviewed simultaneously. In waters also under the jurisdiction of the United States Army Corps of Engineers (USACE), a federal construction permit must also be secured. The MDEQ and the USACE have a joint permit process for such projects.

If an Army Corp Section 404 permit is required, the MDEQ must investigate the site prior to construction. The MDEQ will document and evaluate water quality and the potential for pollution and adverse effects to living resources caused by marina siting and construction. The purpose of the Water Quality Certification process is to certify that federally permitted activities will not violate Michigan’s water quality standards. The Water Quality Certification issued by the MDEQ is then incorporated into the federal permit.

The MDEQ/USACE “Joint Permit Application” (JPA) package covers permit requirements pursuant to state and federal rules and regulations for construction activities where the land meets the water and including wetlands, often referred to as the land/water interface. It is intended to prevent duplication of state and federal regulations. The application covers activities on or for; wetlands, inland lakes and streams, floodplains, Great Lakes bottomlands, marinas, critical dunes, dams, and high risk erosion areas.

Generally, it will take 45 to 180 days from application until your permit is issued or denied. Factors to consider include the size and complexity of the project, the number of corrections requested and the information provided for it to be administratively complete, whether the project requires Public Noticing or a Public Hearing, and the season of the year, with spring and summer being the busiest.

Permit applications should be sent to the Geological and Land Management Divisions, Permit Consolidation Unit (GLMD-PCU) at:

MDEQ  
GLMD PCU  
P.O. Box 30204  
Lansing, MI 48909-7704

All applications are entered into the Coastal and Inland Waters Permit Information System (CIWPIS) within 7 days of receipt. This system allows you to follow your application through the review process. Available online at [www.michigan.gov/jointpermit](http://www.michigan.gov/jointpermit). The applications are processed in the order in which they are received and review time for “complete” applications ranges from 15 to 45 days, depending upon level of completeness and the need for additional information.

**In order to avoid potential delays, an application should, at a minimum, include the following:**

- Sections 1 through 9 fully completed, as well as the specific sections that relate to your project. Make sure that data provided in the application corresponds to attached diagrams.
- The Application certified with a Signature, signed by the owner of the property, agent or corporation. NOTE: A letter of authorization from the property owner must be included if someone other than the property owner signs the application.
- A filing fee determined from the GLMD fee schedule.
- A clear and legible vicinity map and directions to the proposed site.
- A clear and legible site plan that shows all of the work proposed within the boundaries of your parcel, the size and dimensions of structures, wetland and floodplain boundaries, the type of materials proposed to be used, and the volumes of cut and fill.
- Scaled and properly labeled cross sections showing existing and proposed conditions.
- Information about any previous work done on the parcel. Provide drawings of these, clearly labeling existing and proposed work.
- Provide four sets of plans 8.5 by 11” or 11 x 14”. If large plans are provided, include one set of legible plans that can be reproduced for public noticing purposes

If during the application review process your application is determined to be incomplete for any reason, you will be contacted immediately by phone, email or letter. Additional information is often required. Examples include; if provided information is not consistent, if diagrams are not included, incomplete or unclear; if an appropriate signature is not provided, or if you have not included a check for the correct fee. Depending on the project, additional information may be required to clearly define the proposed activity.

When an application is determined to be complete, you will be notified by letter of your application file number and the telephone number of the field office where your application is being processed. If your application requires public noticing, you will also at that time receive a copy of the public notice specifying the corresponding comment period.

Once the PCU has received the information on your project necessary to consider your application complete, including the full application fee and drawings that have adequate detail for review, the file will be sent to the

appropriate MDEQ District Office for site inspection and final processing. **Note: during the field inspection, district staff may determine that the application does not fully represent the proposed project and require more information.** In some cases, this may mean that the application completeness date will change.

District office processing times for technical review usually range from 60 to 90 days, more time is required if a public notice is required or if a public hearing is held. Also, GLMD staff from your local district office may visit your project site and may contact you for additional information prior to making a decision on the permit.

A copy of the permit application will be sent to the Detroit District Office, USACE for processing at the federal level, see [www.lre.usace.army.mil](http://www.lre.usace.army.mil) or call (888) 694-8313.

If you have any questions about the permitting process or if you need to modify your application, contact the PCU at (517) 373-9244, send an email to [MDEQ-LWM-PCU@michigan.gov](mailto:MDEQ-LWM-PCU@michigan.gov).

## Environmental Permits and Licenses

### National Pollutant Discharge Elimination System (NPDES).

Perhaps the most notable goal of the NPDES was the elimination of discharge of pollutants into navigable waters by 1985. This goal was not realized, but remains a principle for establishing permit requirements. The Act had an interim goal to achieve “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water” by July 1, 1983. This is more commonly known as the “fishable, swimmable” goal.

The enactment of the 1972 amendments marked a distinct change in the philosophy of water pollution in the United States. The amendments maintained the water quality based controls, but also included technology based control strategies. As treatment technology improves, these Federal standards are expected to become more restrictive in order to progress toward the goal of zero discharge. As permits expire, they must be reissued with limits reflecting the most recent treatment technology standards.

**NPDES also contains four important principles:**

1. The discharge of pollutants to navigable waters is not a right.
2. A discharge permit is required to use public resources for waste disposal and limits the amount of pollutants that may be discharged.

3. Wastewater must be treated with the best treatment technology economically achievable - regardless of the condition of the receiving water.
4. Effluent limits must be based on treatment technology performance, but limits that are more stringent may be imposed if the technology based limits do not prevent violations of water quality standards in the receiving water.

Permit applications for discharges to surface water must be submitted to the appropriate Surface Water Quality Division district office at least 180 days before the permit is needed. The application then proceeds through the standard permit review and development process.

The NPDES application form and instructions can be obtained from the district office in your area or downloaded from the web page ([www.michigan.gov/deq/0,1607,7-135-3313\\_3682\\_3713-10440-,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3713-10440-,00.html)). The electronic permit application should be completed, saved, printed, and signed. The original should be sent to the appropriate district office with all attachments. Be sure to save a copy for your records.

## Downloadable Forms

### Permit Application

[www.michigan.gov/deq/0,1607,7-135-3313\\_3682\\_3713-10440-,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3713-10440-,00.html)

**Additional information can be obtained from the Appendices.**

All marinas or other facilities that discharge waste water to the waters of the state are required to obtain an NPDES permit from the MDEQ. This includes the wastewater generated from boat washing. The permit may cover both the storm water and nonstorm wastewater discharges from:

- Areas involved in boat maintenance (rehabilitation, mechanical repairs, painting, and fueling) and cleaning operations;
- Wastewater discharges to surface water from boat and equipment washing areas; and
- Noncontact cooling water and condensate discharges to surface waters from ice machines, refrigeration units, and other machinery.

The control of pollutants that may be carried by storm water runoff from boat maintenance areas is addressed in Boat Maintenance. Please refer to Laws and Regulations for more information about the Permit for Discharges from Marinas.

## State Law: Soil Erosion and Sedimentation Control.

NREPA Act 451, Part 91 is intended to protect the waters of the state by minimizing erosion and controlling sediment. A permit is required for any earth change that disturbs one or more acres, or is within 500 feet of a lake or stream. Counties have the primary responsibility for issuing permits but cities, villages, and townships have assumed permitting responsibilities within their jurisdictions. The applicant must submit an application that provides specific information such as the name of the on-site responsible person, location, and size of the earth change, description of the earth change, and project starting and ending dates. Also required is a Soil Erosion and Sedimentation Control plan that includes the following information:

1. A map showing the site location, predominant land features proximity to lakes, streams and wetlands, and contour intervals or slope information.
2. Soils information.
3. Physical limits of each earth change.
4. Location of existing and proposed drainage patterns.
5. Timing and sequence of each proposed earth change.
6. Description of all temporary and permanent erosion and sedimentation control measures.
7. A schedule for maintaining all control measures.
8. Any other information required by the permitting agency.

### The principles involved with the development of an SESC plan include:

- Integrating the overall construction design and activities to fit the physical and vegetative feature of the site;
- Staging construction and stabilization activities to minimize the area and duration of disturbance;
- Identifying control measures that will minimize erosion;
- Identifying controls that will prevent off-site sedimentation. Sediment control should not be used as a substitution for erosion control, but rather in conjunction with erosion control, and;
- Establishing an inspection and maintenance schedule.

The penalties for noncompliance with permit conditions or Part 91 can include civil fines of up to \$25,000/day, and the cease and desist orders. Permittee may install and maintain control at landowner's expense, and a person may be ordered to restore all affected areas.

Storage Tank Regulations (Part 3, Chapter 11 of NFPA 30A) addresses the storage and handling of flammable and combustible liquids (FL/CL) at marine fueling locations.

- Where individual storage capacity is more than 1,100 gallons, an application for plan review shall be submitted to the department not less than 30 days before the installation of an aboveground storage tank (AST) system by the owner or owner's designee on behalf of the owner.
- As soon as practicable after detection of a release, the owner or operator of an AST system that releases or permits to be released any flammable or combustible liquid of more than 55 gallons to the ground or within a secondary containment area during any 24-hour period shall notify the department by contacting the department's pollution emergency alerting system (PEAS) at (800) 292-4706.
  - Within 10 days after the release, the owner or operator shall file a written report with the department outlining the cause of the release, discovery of the release, and response measures taken or a schedule for completion of measures to be taken, or both, to prevent recurrence of similar releases.
  - An owner or operator of an AST system, where a release has occurred and who is liable for the activity that caused the release, is responsible for the response activity at the facility.
- Depending upon the classification, either "Flammable Liquids – Keep Fire Away" or "Combustible Liquids – Keep Fire Away," shall be displayed in letters that are not less than 3-inches in height. Tanks shall be conspicuously marked with the name of the product contained and with the following marking: "FLAMMABLE (or COMBUSTIBLE when appropriate) – KEEP FIRE AND FLAME AWAY. Tanks shall also bear the following marking: "KEEP 40 FEET FROM BUILDINGS" and all lettering on signage shall be 3 inches (75 millimeters) or more.
- Leak detection for underground tanks. A monthly monitoring method of release detection shall be chosen for each underground storage tank. Leak detection for aboveground tanks includes accurate inventory control or an appropriate leak detection method that is acceptable to the department. These are required for all aboveground storage tank systems that are in contact with the ground or have underground piping systems.
- Any storage area that contains the aggregate capacity of 1,320 gallons of flammable and combustible liquid shall have impervious secondary containment that diverts possible spills away from buildings or other exposures or shall be surrounded by a curb not less than 6 inches (150 millimeters) high. Where curbs are used,

provisions shall be made for draining of accumulations of groundwater, rainwater, or spills of liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions. Until fire protection liquids are removed and properly disposed of, the safe location shall be capable of containing any released product. The secondary containment shall be capable of preventing any released product or contaminated water from reaching surface water, groundwater, and subsurface soils. Class I, class II, and class IIIA tanks and containers shall be kept closed when not in continuous or intermediate use.

- Where tanks are at an elevation that produces a gravity head on the dispensing device, the tank outlet shall be equipped with a device, such as a normally closed solenoid valve, positioned adjacent to and downstream from the valve that is installed and adjusted so that liquid cannot flow by gravity from the tank if the piping or hose fails when the dispenser is not in use.
- Storage of liquids include the following guidelines:
  - The use of aboveground storage tanks at motor fuel dispensing facilities, fleet vehicle motor fuel dispensing facilities, and marine motor fuel dispensing facilities shall be permitted when installed in accordance with the requirements of chapters 2 and 3 of part 2 of these rules.
  - Tanks designed and built for underground use shall not be installed for aboveground use and tanks designed and built for aboveground use shall not be installed for underground use.
  - The maximum individual capacity of 16,000 gallons (60,480 liters), where indicated in table 4.3.2.4, shall be permitted to be increased to 24,000 gallons (90,720 liters) for class II and class III liquids at a fleet vehicle motor fuel dispensing facility if located in a protected aboveground tank. The maximum aggregate capacity shall not be more than 80,000 gallons (302,400 liters).
  - Aboveground tanks shall be provided with spill control that meets the requirements of part 2 of these rules. Tank fill connections shall be provided with a noncombustible spill containment device.
- Tanks shall be enclosed with a chain link fence which is not less than 6 feet (1.8 meters) high and which has a means of ingress and egress. The fence shall be separated from the tanks by not less than 10 feet (3 meters) and shall have a gate that is properly secured against unauthorized entry. Aboveground tanks, other than tanks in vaults, shall be protected against vehicular collision by suitable barriers. Guard posts or other approved means shall be provided to protect tanks that are subject to vehicular damage.

- Each dispensing device shall be located not less than 10 feet (3.1 meters) from property lines, openings to buildings, and buildings of combustible wall construction. A dispensing device shall not be less than 20 feet (6.1 meters) from any activity that involves a fixed source of ignition.
- A container shall not be filled with liquid while it is inside a passenger carrying vehicle. A container shall be removed from the interior of a passenger vehicle, from the back or enclosed portion of any other vehicle, or from the bed of a pickup truck, which has a bed liner during fueling. A person shall not fill or transport a portable container that holds more than 6 gallons (23 liters) of class I or class II liquid inside the passenger compartment of a motor vehicle. A container that is filled with, or sold containing, gasoline, benzene, or naphtha shall be painted vermilion (bright red) and shall be lettered or labeled with the name of the product. Kerosene, fuel oil, or other combustible liquid shall not be put into, or sold in, a container that is painted vermilion or bright red.
- Fire extinguishers shall be located so that an extinguisher will be within 100 feet of each pump, storage tank fill pipe opening, and lubrication or service room.
- Warning signs shall be conspicuously posted in the dispensing area and shall incorporate the following or equivalent wording: "WARNING. It is unlawful and dangerous to dispense gasoline into unapproved containers. No smoking. Stop motor. No filling of portable containers in or on a motor vehicle. A person shall remain in attendance outside of the vehicle and in view of the nozzle."
- Tanks that supply marine motor fuel dispensing facilities shall be located on shore or on a pier of the solid fill type. Pumps that are not integral with the dispensing device shall also be located on shore or on a pier of the solid-fill type.

Exception: Where shore location would require excessively long supply lines to dispensing devices, tanks shall be permitted to be located on a pier, if the installation meets all applicable requirements of chapters 2 and 3 of part 2 of the FL/CL code, and the quantity stored is not more than 1,100 gallons (4,180 liters) aggregate capacity.

- Where a tank is at an elevation that produces a gravity head on the dispensing device, the tank outlet shall be equipped with a device, such as a normally closed solenoid valve, that will prevent gravity flow from the tank to the dispenser. The device shall be located adjacent to and downstream of the outlet valve. The device shall be installed and adjusted so that liquid cannot flow by gravity from the tank to the dispenser if the piping or hose fails when the dispenser is not in use. If a submersible pump system is used, a listed emergency shutoff valve shall be installed at each dispensing location.
- Open flames and smoking materials shall not be permitted in the storage area and the area within 10 feet (3 meters) of the tank shall be kept free of combustible materials.

### **Storm Water Pollution Prevention Plan**

- The permittee must develop and implement a storm water pollution prevention plan. The plan must identify potential sources of pollution, which may reasonably be expected to affect the quality of storm water discharges associated with industrial activity at the facility.
- For guidance in developing a storm water pollution prevention plan, refer to Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices and an EPA-published summary document on the same subject.
- For existing marinas and boatyards, the plan must be completed within one year of obtaining coverage under this permit and must be in compliance with the terms of the plan within 18 months of receiving coverage.
- For new facilities, the plan must be completed and implemented prior to submitting a NOI for coverage under the general permit.
- Upon request, the plan must be submitted to the MDEQ. The permittee may then be notified that the plan does not meet one or more of the minimum requirements.
- The permittee shall amend the plan whenever there is a change in design or operation that will have a significant effect on the potential for pollutants to be discharged to State waters.

## **Contents of a Storm Water Pollution Prevention Plan**

1. Pollution prevention team
2. Description of potential pollutant sources
3. Site map indicating drainage, maintenance, and storage areas
4. Inventory of materials exposed to precipitation
5. List of significant spills and leaks that occurred in the three most recent years
6. Sampling data describing pollutants in storm water discharges from the facility
7. Summary of potential pollutant sources and identification of associated risks
8. Description of storm water management controls including: washing areas, blasting and painting areas, material storage areas, engine maintenance and repair areas, and material handling areas
9. Preventive maintenance
10. Spill prevention and response procedures
11. Inspections and employee training
12. Record keeping and internal reporting procedures
13. Nonstorm water discharges
14. Sediment and erosion control
15. Comprehensive site compliance evaluation
16. Special requirements for storm water discharges associated with industrial activity to municipal separate storm sewer serving a population of 100,000 or more

## **Summary of Environmental Permits and Licenses**

### **Aquatic Invasive Control Inland Lakes & Streams Permit**

Public Health Code, 1978 PA 368, as amended. Permits are required to control invasive aquatic plants and swimmers' itch. MDEQ staff regulates the use of pesticides through the permit process and review and assess new products for use in Michigan waters. Occupants of adjacent riparian dwellings whose bottomlands are within the treatment area, or within 100 feet of treatment area, must be notified in writing at least 7 days, and not more than 45 days, before the initial chemical treatment.

- (a) For treatment areas less than 2 acres, MDEQ approved signs posted along shoreline of treatment area not more than 100 feet apart.
- (b) For treatment of areas greater than 2 acres, post as in (a) and post all access sites, boat launching areas, and public and private parks.

Aquatic Invasive Control  
Water Division, MDEQ  
Phone: (517) 241-7734  
Email: deq-lwm-anc@michigan.gov

### **Floodplain Permit**

Part 31 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended  
To ensure that development which occurs within the 100-year floodplain is reasonably safe from flooding and does not increase flood damage potential. To obtain a permit prior to any alteration or occupation of the 100-year floodplain of a river, stream or drain.

Flood Hazard Management  
Mr. Bruce Menerey  
Phone: (517) 335-3181  
Email: menereyb@michigan.gov

### **Great Lakes Submerged Bottomlands Permit**

Part 339 (Control of Certain State Lands) and Part 325 (Great Lakes Submerged Lands) of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended. To regulate construction activities along 3,165 miles of Great Lakes shoreline and over 38,000 square miles of Great Lakes bottomlands, including coastal marshes. The State of Michigan is trustee of the bottomlands and waters of the Great Lakes and has a perpetual duty to manage these resources for the benefit of its citizens. Requires a permit from the State for altering the bottomlands, i.e., such as dredging, construction of a marina, or shore protection. The MDEQ must consider the impact on the public trust when reviewing permit applications to construct on or occupy Great Lakes bottomlands. This consideration includes boating and navigation, as well as the impact on fisheries and wildlife habitat that are directly related to other public trust uses such as hunting and fishing. Submerged Lands

Geological and Land Management, MDEQ  
Phone: (517) 335-3471  
Email: graft@michigan.gov



### **Groundwater Discharge Permit**

Part 31 (Water Resources Protection) of the Natural Resources and Environmental Protection Act, 1994 PA 451 and Part 22 Rules. To provide for authorizations to discharge wastes and wastewaters to the ground or groundwaters of the state. Authorizations include permits, self-certifications, and exemptions. Upon completion of an application review, staff makes recommendations leading to the determination of appropriate action including issuance or denial of an authorization to discharge.

Field staff review groundwater sampling data and inspect discharge facilities to ensure legal requirements are being met. Field staff also review compliance with requirements for storage of hazardous material under the Part 5 Rules issued under Part 31 of the NREPA.

Groundwater Discharge  
Water Division, MDEQ  
Ground Water Section, Permits and Technical Support Unit  
Phone: (517) 241-1355

### **Marina Operating Permit**

Part 301 (Inland Lakes and Streams) of the Natural Resources and Environmental Protection Act, 1994 PA 451 and Part 22 Rules. To regulate marina operations. Depending upon the site specifics, obtain an operating permit and abide by the requirements. Marinas Operating

Geological and Land Management (GLM), MDEQ  
Phone: (517) 373-4608  
Email: milnej@michigan.gov

### **Public Swimming Pool Operation Permit**

Public Act 368 of 1978, as amended. To determine proper construction per approved plans and afterwards to determine that operation of the pool is adequate to protect public health. Obtain a permit and abide by the requirements. Annual renewals are issued after determination that operation and maintenance is adequate. Environmental Health Section

Water Division, MDEQ  
Phone: (517) 241-1313

### **National Pollutant Discharge Elimination System Permit**

(NPDES) Federal Water Pollution Control Act Part 31 of the Natural Resources and Environmental Protection Act, 1994 PA 451. Regulate discharges consistent with federal effluent guidelines. Submittal of permit application.

Water Division, MDEQ  
Phone: (517) 373-8088

### **Permit for Certain Activities near Shorelands of the Great Lakes and connecting Waterways.**

Part 323 (Shorelands Protection and Management) of the Natural Resources and Environmental Protection Act, 1994 PA 451. Review projects to construct permanent structure and additions in designated high risk erosion areas, designated flood risk areas, and designated environmental areas. In the absence of an approved local ordinance, a person or agency proposing to erect, install, move or enlarge a permanent structure on a parcel of property, any portion of which is designated as a high-risk erosion, flood risk, or environmental areas must first apply for and obtain a permit.

Geological and Land Management Division, MDEQ  
Permit Consolidation Unit  
Phone: (517) 373-9244

### **Critical Dune Area Permit**

Part 353 (Sand Dunes Protection and Management) of the Natural Resources and Environmental Protection Act, 1994 PA 451. To regulate activities within Critical Dune areas. Obtain permit prior to conducting any activities.

Geological and Land Management Division, MDEQ  
Permit Consolidation Unit  
Phone: (517) 373-9244

### **Wetland Protection Permit**

Part 303 (Wetland Protection) of the Natural Resources and Environmental Protection Act, 1994 PA 451. To issue permits to dredge, fill, drain surface water, or construct, operate, or maintain any use or development in a wetland. Obtain permit prior to conducting any activities within wetlands.

Geological and Land Management Division, MDEQ  
Permit Consolidation Unit  
Phone: (517) 373-9244

### **Inland Lakes and Streams Permit**

Part 301 (Inland Lakes and Streams) of the Natural Resources and Environmental Protection Act, 1994 PA 451. To protect the public trust and riparian rights in inland lakes and streams. Obtain permit prior to conducting any construction activities on or over bottomlands of inland lakes and streams.

Geological and Land Management Division, MDEQ  
Permit Consolidation Unit  
Phone: (517) 373-9244

# Bibliography

- Amaral, Mark and Virginia Lee. 1994. Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island. Narragansett, RI: Rhode Island Sea Grant, University of Rhode Island Coastal Resources Center.
- American Boat and Yacht Council. 1993. "A Visible Sheen," ABYC Newsletter. Edgewater, MD.
- American Boat and Yacht Council. 1995. Sewage Holding Tank Systems for Recreational Boats. Edgewater, MD.
- Arthur D. Little, Inc. 1995. Biodiesel Marine Market Pre-evaluation for the Chesapeake Bay. Cambridge, MA: Arthur D. Little, Inc.
- Associated Press. 1995. "Bacteria is Altered to make Ethanol from Garbage," Baltimore Sun. January 13, 1995.
- BOAT/U.S. "Winterizing Your Boat," Seaworthy, Item 920901.
- Broward County Board of County Commissioners. 1996. Pollution Prevention and Best Management Practices for Marine Facilities. Fort Lauderdale, FL: Broward County Department of Natural Resource Protection.
- Buller, Pat. 1995. Clean Marina+Clean Boating+Clean Water Partnership. Seattle, WA: Puget Soundkeeper Alliance.
- Chesapeake Area Professional Captains Association. 1996. "New Fuel Fill Fitting also Serves as Overflow, Vent," The Log, Vol. 7, No. 10, October 1996.
- Chesapeake Bay Foundation. 1994. Your Boat and the Bay: Simple Ways to Save the Bay. Annapolis, MD: Chesapeake Bay Foundation.
- City of Austin. 1991. Design Guidelines for Water Quality Control Basins. Austin, TX: Public Works Department.
- Clifton, Clay B. and Leigh T. Johnson. 1995. Clean Boating Tips. San Diego, CA: California Sea Grant, UCSGEP-SD 95-7.
- Clifton, Clay B., Erika J.A. McCoy, Leigh T. Johnson. 1995a. Marina Pollution Prevention Manual. San Diego, CA: California Sea Grant, UCSGEP-SD 95-5.
- Clifton, Clay B., Erika J.A. McCoy, Leigh T. Johnson. 1995b. Clean Boating Guide. San Diego, CA: California Sea Grant, UCSGEP-SD 95-6.
- Delaware Department of Environmental Quality and Environmental Control. 1990. Your Boat and Water Pollution. Dover, DE: DNREC.
- Department of the Interior. OEA Pollution Prevention Handbook: Marinas and Boatyards.
- Dodson, Paul E. 1994. Practices & Products for Clean Marinas: A Best Management Practice Handbook. North Kingstown, RI: International Marina Institute.
- Florida Department of Environmental Protection. 1997. Florida "Clean Marina" Draft Best Management Practices.
- Fugro and McClelland. 1992. Best Management Practices for Coastal Marinas. Hartford, CT: Connecticut Department of Environmental Protection.
- Gordon, Nancy D., Thomas A. McMahon, and Brian L. Finlayson. 1992. Stream Hydrology: An Introduction for Ecologists. New York: John Wiley & Sons.
- Halbach, Thomas R. and Dale R. Baker. 1991. Composting Fish Waste: An Alternative for Minnesota Resorts. St. Paul, MN: Minnesota Sea Grant College Program and Minnesota Extension Service, University of Minnesota.
- Hardy, John T. 1991. "Where the Sea Meets the Sky," Natural History. May, 1991.
- Image Club Graphics. 1994. "Image Club Clipart Software: Woodcuts, Art Jam, and Our Environment." Alberta, Canada: Image Club Graphics Incorporated.
- Kent County News. 1997. Haven Harbour Assists Oyster Comeback. November 13, 1997.
- Kumble, Peter, Lorraine Herson-Jones, and Thomas Schueler. 1993a. Applicant's Guide for 10% Rule Compliance. Annapolis, MD: Chesapeake Bay Critical Area Commission.
- Kumble, Peter, Lorraine Herson-Jones, and Thomas Schueler. 1993c. Technical Guide for 10% Rule Compliance. Annapolis, MD: Chesapeake Bay Critical Area Commission.
- Leopold, Aldo. 1949. A Sand County Almanac and Sketches Here and There. New York: Oxford University Press.
- Marin County Office of Waste Management. 1996. The Regional Marina and Boat Yard Pollution Prevention Project: Final Report. San Rafael, CA: Marin County Office of Waste Management.
- Michigan. Code of Michigan Regulations.

- Michigan Department of Natural Resources. 1999. Pumpout Station Grants. Lansing, MI: Michigan Department of Natural Resources.
- Michigan Department of Environmental Quality. 2002. Environmental Permits. Lansing, MI: Michigan Department of Environmental Quality.
- McCoy, Erika J.A. and Leigh T. Johnson. 1995a. Underwater Hull Cleaner's Best Management Practices. San Diego, CA: California Sea Grant, UCSGEP-SD 95-2.
- McCoy, Erika J.A. and Leigh T. Johnson. 1995b. Selecting Underwater & Topside Maintenance Services for Your Boat. San Diego, CA: California Sea Grant, UCSGEP-SD 95-3.
- McCoy, Erika J.A. and Leigh T. Johnson. 1995c. Selecting a Hull Paint for Your Boat. San Diego, CA: California Sea Grant, UCSGEP-SD 95-4.
- McCoy, Erika J.A. and Leigh T. Johnson. 1995d. Boating Pollution Economics & Impacts. San Diego, CA: California Sea Grant, UCSGEP-SD 95-8.
- Miller, Thomas H. and Paula A. Eubanks. 1993. Septic Records and Maintenance Guidelines. College Park, MD: University of Maryland Cooperative Extension Service.
- Natchez, Daniel S. 1997. "Marina Engineering II: Preventing Marina Pollution," Docks and Marinas '97: Marina Design for the 21st Century. Madison, WI: University of Wisconsin.
- National Marine Manufacturers Association. Water Watch: What Boaters Can Do to be Environmentally Friendly. Chicago, IL: National Marine Manufacturers Association.
- New York State Department of Environmental Conservation. 1996. Marina Operations for Existing Facilities.
- O'Brien, Egan P. 1994. A Guide to Boating-Related Activities in the Critical Area. Annapolis, MD: The Chesapeake Bay Critical Area Commission.
- Oregon Sea Grant and Oregon State Marine Board. 1996. Protecting Oregon Waters: Practical Solutions for Boaters. Corvallis, OR: Oregon Sea Grant.
- Outboard Marine Corporation. 1997. The Johnson Great Lakesrunner® Outboards with FICHT™ Fuel Injection (FFI™). USA.
- Practical Sailor. 1997. "Oil-Safe Bilge Pump Switches," Practical Sailor. May 15, 1997. Pp.12-15.
- Prince George's County and Michigan Department of Environmental Quality. Low Impact Development. Landover, MD: Prince George's County Government.
- Queeney, Tim. 1994. "Burned Vegetables," Great Lakes Navigator. No. 63, September/October 1994.
- Rhode Island Sea Grant. "Bilges, Fueling, and Spill Response," Boater Fact Sheet. Narragansett, RI: University of Rhode Island.
- Rhode Island Sea Grant. "Engine Maintenance," Boater Fact Sheet. Narragansett, RI: University of Rhode Island.
- Rhode Island Sea Grant. "Sanding and Painting," Boater Fact Sheet. Narragansett, RI: University of Rhode Island.
- Rhode Island Sea Grant. "Vessel Cleaning and Fish Wastes," Boater Fact Sheet. Narragansett, RI: University of Rhode Island.
- Rhode Island Sea Grant. "Vessel Sewage," Boater Fact Sheet. Narragansett, RI: University of Rhode Island.
- Rhodes, Jared, Mark Amaral, Jason Marino, and Virginia Lee. 1996. Nonpoint Source Pollution Abatement for Recreational Boating Facilities: Applying Innovative Best Management Practices. Narragansett, RI: Rhode Island Sea Grant, University of Rhode Island Coastal Resources Center.
- Ross, Neil W. Pumpouts for Marinas: Why We Need Them. Kingston, RI: Neil Ross Consultants.
- Ross, Neil W. 1996. Clean Marinas Best Management Practices Workbook. Kingston, RI: Neil Ross Consultants.
- Ross, Neil W. 1996. "Clean Marinas-Clear Value," Boating Industry Magazine. November, 1996.
- Schueler, T.R. 1987. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices. Washington, DC: Metropolitan Washington Council of Governments.
- Schueler, T.R. 1991. "Mitigating the Adverse Impacts of Urbanization on Streams: A Comprehensive Strategy for Local Governments," Proceedings of the National Conference Integration of Storm water and Local Nonpoint Source Issues. Northern Illinois Planning Commission.
- Schueler, T.R. 1992. Design of Storm water Pond Systems. Washington, DC: Metropolitan Washington Council of Governments.
- Spinazola, Gene. 1997. "Marina Fire Emergency Response Contingency Planning," Docks and Marinas '97: Marina Design for the 21st Century. Madison, WI: University of Wisconsin.
- United States Coast Guard. How's the Water? Washington, DC.

- United States Coast Guard. 1992. Federal Requirements and Safety Tips for Recreational Boats. Washington, DC.
- United States Coast Guard. 1994. Managing Waste at Recreational Boating Facilities: A Guide to the Elimination of Garbage Disposal at Sea. Washington, DC: USCG Marine Environmental Protection Division.
- United States Environmental Protection Agency. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. Washington, DC: EPA-840-B-92-002.
- United States Environmental Protection Agency. 1996a. Clean Marinas-Clear Value: Environmental and Business Success Stories. Washington, DC: EPA-841-R-96-003.
- United States Environmental Protection Agency. 1996b. "Emission Standards for New Gasoline Engines," Environmental Fact Sheet. Washington, DC: EPA-420-F-96-012.
- United States Environmental Protection Agency. 1997. The Recreational Boating Industry and the National Oil and Hazardous Substances Pollution Contingency Plan. Washington, DC.
- United States Fish and Wildlife Service. "Conservation Landscaping," A Homeowner's Guide. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.
- United States Fish and Wildlife Service. "Creating Landscape Diversity," A Homeowner's Guide. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.
- United States Fish and Wildlife Service. "Integrated Pest Management," A Homeowner's Guide. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.
- United States Fish and Wildlife Service. "Using Beneficial Plants," A Homeowner's Guide. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.
- Watershed Information Network News. 1997. "Common Weed Offers Natural Pavement," Runoff Report, Vol. 5, No. 1. Alexandria, VA: Terrene Institute.
- Webb, D.A. and L.R. Gjovik. 1997. "Treated Wood Products, Their Effect on the Environment," Docks and Marinas '97: Marina Design for the 21st Century. Madison, WI: University of Wisconsin.



*Grand Haven, Michigan*





# Clean Boating Tip Sheet

## Waste Containment and Disposal

Trash is ugly and may be dangerous – dangerous to humans and to wildlife. For example, plastic may snare propellers and clog engine intake systems. Congress passed a law in 1987 to protect our waterways from garbage. The Marine Plastic Pollution Research and Control Act regulates the disposal of garbage within U.S. lakes, rivers, and bays. The act states that it is illegal to dump anything. Help others understand ways to protect our environment by passing this information along.

### Contain Trash

- Do not allow trash to be thrown or blown overboard.
- If trash blows overboard, retrieve it. Consider it “crew-overboard” practice.
- Pack food in reusable containers.
- Do not buy products with plastic or excessive packaging.
- Do not toss cigarette butts overboard. They are made of plastic (cellulose acetate).
- Purchase refreshments in recyclable containers and recycle them.
- Properly dispose of all trash on shore. Bring home, or dispose it in a dumpster at the marina.

### Recycle

- Recycle cans, glass, newspaper, antifreeze, oil, oil filters, and lead batteries.
- Contact your local county coordinators or the MDEQ for locations.
- Bring used monofilament fishing line to recycling bins at your tackle shop or marina.

### Fish Scraps

Fish cleaning may pose a problem if the wastes are discarded into a poorly flushed marina basin. Fish waste has an unpleasant smell and is unsightly. In addition, decomposing fish waste reduces oxygen levels, harming aquatic life. Avoid problems by following these tips:

- Discard fish wastes in designated areas only.
- Find out what your marina’s disposal policy is.
- Bag waste and dispose at home or in a dumpster.

## Proper Waste Disposal

Dispose of the following items according to the recommendations listed below. Visit the MDEQ website at [www.michigan.gov/deq](http://www.michigan.gov/deq), then Pollution Prevention and Recycling, or visit the Michigan Recycling Coalition at [www.michiganrecycles.org](http://www.michiganrecycles.org) for the names and numbers of local recycling and hazardous waste coordinators.

Waste Product	Disposal Method
Oil	Recycle.
Oil Filters	Puncture and hot drain for 12 hours. Recycle oil and canister.
Antifreeze	Recycle.
Paint and Varnish	Allow to dry completely and solidify. Dispose in regular trash.
Solvents, Gasoline, and Pesticides	Bring to a household hazardous waste collection.
Expired Emergency Flares	Bring to local fire department or a household hazardous waste collection.



# Clean Boating Tip Sheet

## Petroleum Control

Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Floating petroleum is particularly bad because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the microlayer. The microlayer refers to the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. The abundance of life in the microlayer attracts predators: seabirds from above and fish from below. Pollution in the microlayer, has the potential to poison much of the plants, animals and microbes.

## The Law

The Federal Water Pollution Control Act (also called the Clean Water Act) prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000 from the U.S. Coast Guard. State law also prohibits the discharge of oil, which may result in additional fines.

## Fueling Practices

Gas or diesel may be spilled during the act of fueling: as back splash out the fuel intake or as overflow out the vent fitting. Spills of this sort harm aquatic life, waste money, and can result in stains on the hull and damage to the gel coat and striping of boats. Follow these tips to avoid problems:

- Fill tanks to no more than 90 percent capacity – gas that is drawn from cool storage tanks will expand as it warms up onboard your boat.
- To determine when the tank is 90 percent full, listen to the filler pipe, use a sounding stick, and be aware of your tank's volume.
- Rather than filling your tank upon your return to port, wait and fill it just before leaving on your next trip. This practice will reduce spills due to thermal expansion because the fuel will be used before it has a chance to warm-up.
- Fill portable tanks ashore where spills are less likely to occur and easier to cleanup.
- Use oil absorbent pads to catch all drips.
- Slow down at the beginning and end of fueling.

## Bilge Maintenance

Engine oil tends to accumulate in bilges. If no precautions are taken, the oil is pumped overboard along with the bilge water. Discharging oily water is illegal. To avoid fines and to protect water quality, follow these tips:

- Keep your engine well tuned to minimize the amount of oil that is released. Be sure there are no leaking seals, gaskets, or hoses.
- Place oil absorbent materials or a bioremediating bilge pillow in the bilge.
- Place an oil absorbent pad under the engine.
- Replace oil absorbent materials regularly.

- Look for contractors or marinas that offer a bilge pumpout service.
- Do not treat oily water with detergents. Soaps pollute and make cleanup impossible. You may be fined up to \$25,000 for using soaps to dissipate oil.

## Disposal of Oil Absorbent Materials

The disposal of used oil absorbent material depends on what type of product it is and how it was used:

- Standard absorbents that are saturated with gasoline may be air dried and reused.
- Standard absorbents saturated with oil or diesel may be wrung out over oil recycling bins (if they are saturated with oil or diesel only!) and reused. Alternatively, they should be double-bagged with one plastic bag sealed inside of another and tossed in your regular trash.
- Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.

## Emissions Control

Marine engines – especially 2-stroke outboard motors – produce the highest average level of hydrocarbon exhaust emissions one of the (second to lawn and garden equipment). Hydrocarbon emissions contribute to ground level ozone, a known health risk. Follow these tips to help your engine operate as efficiently as possible:

- Use the gas to oil ratio recommended by the engine manufacturer. Too much oil can foul spark plugs and too little can lead to increased engine wear or engine failure.
- Use premium two-cycle engine oil (TC-W3 or TC-W4). Premium oils improve engine performance and reduce pollution because they burn cleaner, contain more detergents, and prevent formation of carbon deposits.
- Use gasoline with the octane level recommended by the engine manufacturer.

## Preventive Equipment

Products are available commercially that can help prevent spills and reduce emissions:

- Install a fuel/air separator along your vent line. These devices allow air, but not fuel, to escape through a vent opening.
- Attach a safety nozzle to portable gas cans used to fill outboard engines. These nozzles automatically stop the flow of fuel when the receiving tank is full.
- To prevent oily bilge water from being discharged, install a bilge pump switch that leaves an inch or two of water in the bilge. Alternatively, connect a bilge water filter to your boat's bilge pump. Filters will remove oil, fuel, and other petroleum hydrocarbons from the water.
- When it is time to buy a new engine, select a fuel efficient, low emission model.

## Vessel Sewage

### Is Sewage a Problem?

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.

Sewage is harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent sunlight from reaching subsurface vegetation. When the algae die, they create another problem; the algae are decomposed by bacteria that further reduce levels of dissolved oxygen.

### What Does the Law Say?

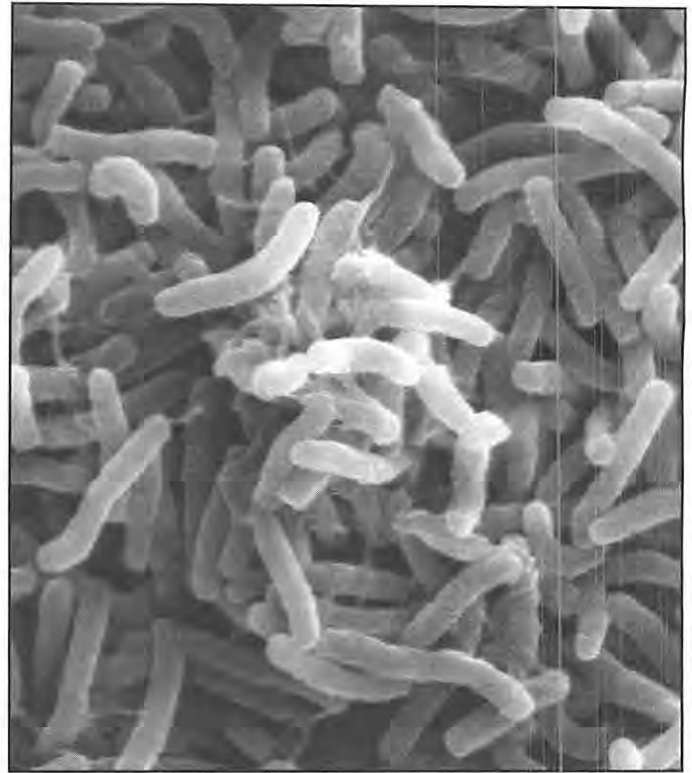
According to Federal and State law, it is illegal to discharge raw sewage.

### What Can You Do?

#### Holding Tanks

Install a holding tank. Information explaining how to retrofit a boat to include a holding tank is available from various sources.

Use good plumbing to control holding tank odor. Fiberglass and metal tanks are highly resistant to permeation. Specially labeled flexible "sanitation hoses" and PVC piping are also highly impermeable. Hose runs should be as short and as straight as possible. Wherever practical, use rigid pipe below the level of the holding tank and in other areas where sewage will accumulate. Keep the number of connections to a minimum and ensure that seals are tight.



*Scanning electron microscope image of Vibrio cholerae bacteria, which infect the digestive system.*

*Photo Courtesy of Dartmouth College*

Use enzyme based products in your holding tank to further control odor. Enzymatic products use biological processes, rather than harsh chemicals, to break down sewage. Be sure to pump and rinse your holding tank prior to initial use of an enzyme product if you have used chemical-based, odor control additives in the past. Chemical residues may interfere with the effectiveness of enzyme-based products.

Avoid holding tank products that contain quaternary ammonium compounds (QACs) and formaldehyde. These products may disturb normal sewage treatment plant operations.





# Clean Boating Tip Sheet

## Boat Cleaning and Maintenance

### Alternatives to Toxic Products

While baking soda, vinegar, lemon juice, and vegetable oils are far less harmful than bleaches, scouring powders, or detergents, they are still toxic to marine life. Use cleaning products sparingly and minimize the amount discharged into the water. Never dispose of any cleaning products down the thru-hull drain; dispose of them on shore.

Product	Alternative
Bleach	Borax or hydrogen peroxide.
Detergent & Soap	Elbow grease and plain water.
Scouring Powders	Baking soda. Or rub area with one-half lemon dipped in borax, then rinse.
General Cleaner	Baking soda and vinegar. Or lemon juice combined with borax paste.
Floor Cleaner	One cup vinegar + 2 gallons of water.
Window Cleaner	One cup vinegar + 1 qt. warm water. Rinse and squeegee.
Aluminum Cleaner	2 Tbsp. cream of tartar + 1 qt. of hot water.
Brass Cleaner	Worcestershire sauce. Or paste made of equal amounts of salt, vinegar, and water.
Copper Cleaner	Lemon juice and water. Or paste of lemon juice, salt, and flour.
Chrome Cleaner/Polish	Apple cider vinegar to clean; baby oil to polish.
Stainless Steel Cleaner	Baking soda or mineral oil for polishing; vinegar to remove spots.
Fiberglass Stain Remover	Baking soda paste.
Mildew Remover	Make a paste with equal amounts of lemon juice and salt, or white vinegar and salt.
Drain Opener	Disassemble or use plumber's snake. Or flush with boiling water + one-quarter cup baking soda + one-quarter cup vinegar.
Wood Polish	Olive or almond oil (interior walls only).
Hand Cleaner	Baby oil or margarine will dissolve through grease and dirt.
Bathroom & Shower	Baking soda; brush thoroughly.
Rug/Upholstery Cleaner	Dry corn starch sprinkled on; vacuum off.



# Clean Boating Tip Sheet

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## Boat Cleaning and Maintenance

As a boater, you are well aware of the care your investment requires. In order to keep your boat safe, reliable, and attractive, you must continually clean and maintain it.

As you do so, you can minimize environmental impacts by following the recommendations listed here. The following recommendations should be readily shared and communicated to the boating public.

Caution is necessary because your choice of products and activities can have serious impacts on water quality and aquatic life. For example, if paint chips from a hull are not contained, they may end up in the water. The heavy metals in the paint chips may then be consumed by bottom dwelling creatures and passed up the food chain to fish, birds, and eventually humans.

## Clean Carefully

- Wash frequently with a sponge or nonabrasive pad and plain water. A rinse can help stop growth and will extend the life of the protective coating. Additional "elbow grease" is required to remove stains.
- When detergents are necessary, use soaps that are phosphate free, biodegradable, and nontoxic. Any soap should be used sparingly because even nontoxic products can be harmful to wildlife. For example, detergents will destroy the natural oils on fish gills, limiting their ability to breathe.
- Wax your boat, if appropriate. A good coat of wax prevents surface dirt from becoming ingrained.
- Clean teak with a mild soap and abrasive pads or bronze wool. This method is safe for the environment and better for the boat than the solvents in standard teak cleaners, which tend to eat away at the wood and to damage seam compounds.
- Avoid detergents that contain ammonia, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates, and lye.
- Try some of the alternative cleaning products such as baking soda, vinegar, lemon juice, and borax.
- In your ship's store, stock the least toxic product to complete the job.
- Arrange a boater's material exchange system to distribute or leftover products and materials.

## Appropriate Maintenance

- Collect all paint chips, dust, and residue. Dispose in regular trash.
- Share leftover paint and varnish.
- Use less toxic propylene glycol antifreeze.
- Avoid overkill. Select a bottom paint developed for the Great Lakes region.

## Recycle Regularly

- Recycle used oil, oil filters, and antifreeze.
- Bring used solvents and waste gasoline to local hazardous waste collection points.
- Visit the Michigan Department of Environmental Quality's web page at [www.michigan.gov/deq](http://www.michigan.gov/deq) for local recycling and hazardous waste contacts.

## Be a Conscientious Consumer

- Read product labels. Labels convey information about the degree of hazard associated with a particular product. For example, DANGER equates to extremely flammable, corrosive or toxic; WARNING indicates that the material is moderately hazardous; and caution signals a less hazardous product. Select products that contain no warnings or which merely caution consumers.
- Be wary of unqualified general claims of environmental benefit, e.g., "ozone friendly."
- For additional information about environmentally responsible products, contact Green Seal. Green Seal is an independent, nonprofit organization that establishes environmental standards for consumer goods. Products that meet their criteria are awarded a "Green Seal of Approval." You may search Green Seal's database of Green Seal certified, environmentally responsible products at [www.green Seal.org](http://www.green Seal.org) or call 202-872-6400.

