



Chapter Four: Activities and Environmental Practices

4.1 Hull Maintenance and Cleaning

4.2 Boat Cleaning

4.3 Engine Maintenance

4.4 Bilge Water Handling

4.5 Fueling

4.6 Spill Response

4.7 Boat Sewage and Wastewater Management

**4.8 Shoreside Facilities and
Pet Waste Management**

4.9 Solid Waste Management

**4.10 Hazardous Materials and
Hazardous Waste Management**

4.11 Fish Waste Management

4.12 Stormwater Management

4.13 Boat Operations



While each marina business is unique, all facilities can adopt environmental practices.

BMPs

Best Management Practices (BMPs) help solve the environmental pollution problems that result from marina activities, such as boat cleaning, fueling, and waste disposal. BMPs use one or more basic methods to control this pollution, such as preventing accidental spills or leaks, capturing pollutants as they are produced, containing the spread of spills or debris, reducing the use of a potentially harmful material, and filtering or trapping out pollutants. They may include structural changes to a marina, acquisition and use of environmentally-preferable products and equipment, and educational efforts aimed at helping boaters understand how to prevent pollution. Additionally, you may develop your own BMPs to address particular problems based on the specific conditions at your marina. Note that it is almost always less costly to prevent pollution from occurring than it is to clean it up later. Consider pollution prevention BMPs when prioritizing BMP implementation.

Activities and Environmental Practices

All marinas are different and can have different activities going on that change from season to season. As a result, every marina will use different pollution reduction strategies.

Marinas are required under federal and Massachusetts laws and regulations to take actions to control pollution from normal operations and to prevent accidents. Some regulations, such as the National Pollutant Discharge Elimination System (NPDES), require that you take specific actions. Other laws, particularly the Coastal Zone Act Reauthorization Amendments of 1990, leave it up to the regulated party (e.g. marina owners) to decide which practices to implement. This chapter lists a range of proven options. Don't feel you are limited to this list. If you have a better way to control a potential pollutant, use it. Because marina operators, by the nature of their business, are creative problem solvers, CZM encourages innovative solutions to be developed and used.

This chapter is organized according to the following activities that occur at marinas:

- Hull Maintenance and Cleaning
- Boat Cleaning
- Engine Maintenance
- Bilge Water Handling
- Fueling
- Spill Response
- Boat Sewage and Wastewater Management
- Shoreside Facilities and Pet Waste Management
- Solid Waste Management
- Hazardous Materials and Hazardous Waste Management
- Fish Waste Management
- Stormwater Management
- Boat Operations

For each activity, a list of applicable state and federal laws that apply is provided. The laws are followed by a list of Best Management Practices (BMPs), or pollution prevention strategies and technologies, which will reduce the environmental impact of each activity. Some BMPs will help you achieve compliance with existing laws and you should be sure that you are implementing these BMPs first. Other BMPs are provided as suggestions for achieving pollution prevention goals.

The following symbols are provided to help you identify which BMPs will help you comply with existing laws and which are recommended for protecting marina waters.

► **BMP will assist with Regulatory Compliance**

▷ **BMP recommended**

Read about each activity that applies to your facility, and follow these steps.

1. Review the regulations for each activity and make sure your facility is in compliance. Refer to Chapter 6 for more details on applicable regulatory programs and contact the agency personnel for details.
2. Read the list of BMPs and highlight those that might work at your marina.
3. Complete the checklist at the end of the section to conduct a formal inventory of pollution sources and available BMPs.
4. Make a list of immediate tasks in the “Action” column on each checklist, such as names and numbers of marinas to call, vendor contact information, and sources of regulatory requirements that need follow-up.

Once you have completed all of the checklists, you have the basic information for a marina environmental plan. Chapter 7 will help you refine your plan including prioritizing, financing, and scheduling environmental improvements.

Consider This

Consider making multiple copies of the activity checklists for future use. Then you can use these checklists in conducting annual self-audits, to document progress and evaluate future improvements.



Boat bottoms should be maintained in desigated areas away from the water.

Please Note

Marinas that provide commercial boat maintenance services where maintenance activities are exposed to stormwater are likely to require a National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit from the US Environmental Protection Agency (EPA). See Chapter 6 for a description of the program and the requirements for complying or call the EPA NPDES Program at (617) 918-1615.

4.1 Hull Maintenance and Cleaning

If not properly controlled, hull maintenance activities, including scraping, sanding, pressure washing, and painting, can put toxic pollutants into the marine environment. Where marinas do not provide these services, Do-It-Yourselfers and outside contractors may be performing this work on the marina's property. In all cases, this section provides you with tools to reduce the potential negative impacts from hull maintenance.

LEGAL REQUIREMENTS

The following laws apply to hull maintenance activities. If you perform or allow hull maintenance services and activities at your facility, please read the summary of these regulatory programs in Chapter 6.

- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit (MSGP) for Industrial Activities
- Organotin Anti-Foulant Law
- Massachusetts Air Quality Program
- Massachusetts Hazardous Waste Regulations
- Massachusetts Industrial Wastewater Regulations
- Massachusetts Waterways Regulations

Best Management Practices

Hull Scraping, Sanding, and Washing

Hull scraping, sanding, and washing releases pollutants that are bound up in hull paint and exposes marine organisms to those pollutants. Employing the following BMPs will minimize the potential for pollutants associated with hull paint to reach coastal waters.

- ▶ **Designated Maintenance Areas:** Restrict all major vessel repair and maintenance work to designated work areas that are located away from the bulkhead. Activities that should be restricted to designated areas include abrasive blasting, pressure washing, hull scraping and sanding, and hull painting. Maintenance work such as painting, scraping, and hull cleaning should be done on land, not at marina slips or moorings. Underwater cleaning of hulls must be prohibited. The area should be provided with containment as outlined below.
- ▶ **Containment:** Maintenance areas should be designed and equipped to minimize the spread of pollutants by:
 - Containing all waste and wastewater generated from hull maintenance activities for proper treatment and disposal; and

- Covering the containment areas to prevent rainwater from entering these areas.

If covering the containment areas is not feasible, then all the stormwater collected within the containment areas must be handled as industrial wastewater generated from hull maintenance activities. Berms or curbs made of concrete or asphalt can be used to enclose the area and prevent runoff from entering or leaving the maintenance area. To prevent pollutants from seeping into the soil below, all maintenance areas should be located on top of a hard, impermeable surface, such as blacktop. These maintenance areas must be kept clean or covered to prevent rainwater from entering these containment areas and washing away the remnant pollution left over after work, or alternatively, the work area must drain to a storage tank for further recycling, treatment or disposal.

- ▶ **Pressure Washwater Management:** Pressure washwater is considered to be a “process” wastewater (or industrial wastewater). Therefore, discharge of pressure washwater to coastal waters, the ground, or a sewer system is illegal without a permit. To meet permit conditions, significant pretreatment of the wastewater prior to discharge would likely be required—regardless of the discharge option chosen. In addition, most pretreatment systems (for discharge) must be operated by staff properly certified by the state.

The significant investments in permitting, training, and operator certification for discharge systems likely make them cost prohibitive. Therefore, recycling systems that treat the wastewater for reuse as washwater without discharge may be a more viable option. The recycling systems without discharge need no operational permit if there is no hazardous waste involved. However, these systems will require periodic maintenance. No matter the disposal option selected, all pressure wash facilities must develop a system to collect the wastewater for treatment, recycling, or offsite disposal. For smaller yards that wash fewer boats, collecting all washwater for offsite disposal may be the most cost effective option.

The following practices should be considered when addressing pressure washing at marinas.

Collect Pressure Washwater: Pressure washwater must be collected for pretreatment prior to reuse, permitted discharge, or disposal. Vessels must be washed over an impervious pad that can collect all wastewater (process wastewater).

Handle Pressure Wastewater Properly: One of the following options must be selected for the management of wastewater from pressure washing operations. Facilities will need to consider many variables before selecting an appropriate management option. The number of boats washed (wastewater volume), site characteristics, sewer availability, staff technical ability, cost, and other factors must all be weighed before one of the following options is selected:

- Recycle washwater for reuse. No discharge permit is needed, but this may require periodic hauling for disposal of residual wastewater and solids.

Hazard Alert

Paint chips that are collected must be tested and confirmed as non-hazardous before disposal as solid waste. See Section 4.10 for more information on Hazardous Waste Management.

Please Note

EPA regulates the discharge of pressure washwater under the NPDES Permit Program. If you discharge any washwater to marine (or other surface) waters, you are required to obtain a NPDES Individual Permit for Industrial Discharges. This wastewater is not covered by the NPDES Multi-Sector General Permit for stormwater management.



Consider This

A dust free sander reduces unhealthy dust by as much as 98 percent, which makes for a healthier work area and cleaner natural environment. The dust free sanders are cost efficient as well. A report written by Martin Walter Co., Inc indicated that a marina manager in Missouri increased productivity by cutting sanding time by 30 percent, decreasing cleanup labor by 80 percent, and providing rental profit through weekend rentals to customers.]

- Haul wastewater to treatment facility. This activity will need an industrial wastewater holding tank compliance certification (DEP01) submitted to the Massachusetts Department of Environmental Protection (MassDEP).
- Discharge to sewer system. This activity may require a permit from the local sewer authority, sewage treatment plant, or MassDEP. In addition, a MassDEP certified operator may be required to run the treatment system.
- Discharge to surface waters. This activity will require a NPDES permit from EPA and MassDEP. In addition, a MassDEP certified operator may be required to run the treatment system.
- Discharge/Infiltrate to ground. This activity requires a groundwater discharge permit from MassDEP and a MassDEP certified operator may be required to run the treatment system.

LOCAL EXAMPLE

Parker's Boatyard in Cataumet, MA uses vacuum sanders because they are cost effective, cleaner, and more efficient than old sanding methods. Parker does not allow people to do their own bottom work at the boatyard for both environmental and economic reasons. Other yards, such as Manchester Marine, encourages Do-It-Yourselfers. They rent sanders to their customers, which has allowed Manchester Marine to pay off the cost of the sanders and make a small profit. Call Parker's Boatyard at (508) 563-9366 or Manchester Marine at (978) 526-7911 to find out how vacuum sanders have worked at their marinas.

- ▷ **Work Indoors:** Where practical, conduct vessel maintenance indoors or under temporarily covered areas where the rain cannot cause runoff. Sheet plastic shelters are widely used by many marinas.
- ▷ **Work Away from the Water:** At a minimum, always move each boat inland to the approved work area before scraping or power washing the hull. Do not allow anyone to perform hull maintenance activities on the launch ramp area or in the lift well.
- ▷ **No In-Water Bottom Cleaning:** Removal of seaweed and other marine growth on the bottom of boat hulls by divers must be prohibited. This practice is sometimes carried out by owners of sail boats before races in regattas to enhance boat speed. Cleaning of seaweed also removes anti-foulant paint and associated pollutants.
- ▷ **Dustless Vacuum Sanders:** Dustless sanders use industrial vacuum cleaners to trap dust created in the sanding process before it becomes airborne. As the sander removes paint, dust is drawn into several holes located through the sanding pad. The dust is then sucked into a vacuum container that can be emptied for disposal. Dustless vacuum sanders are one of the best ways to control paint dust before it can become a pollutant. Added advantages include keeping a clean workplace, reducing health risks to

workers, and reducing clean-up costs and time. If you choose dustless sanders as a BMP, require all staff, outside vendors, and Do-It-Yourselfers to always use this equipment. Train staff to use equipment and develop a user manual for Do-It-Yourselfers. See Appendix C for vendors of dustless sanders.

- ▶ **Tarps and Filter Cloth:** Use tarps and/or filter cloth to catch scrapings and other debris produced during maintenance work. Tarps and cloth are inexpensive “low-tech” methods to collect debris before it can be washed into coastal waters by stormwater. Filter cloths are better than tarps when boat work is expected to last longer than one day. Should it rain, the water passes through the cloth instead of washing the debris off the tarp. Have these items available to rent or sell to customers who do their own boat maintenance.
- ▶ **Clean Up Designated Areas:** Clean up the designated work area after scraping and painting. Leaving areas cluttered and messy will cause spills and allow pollutants to be tracked outside the work area.

Painting

Because hull paints contain toxic pollutants, they should be used with care. Consider the following BMPs when painting your boat.

- ▶ **Designated Maintenance Areas:** Restrict mixing of paints, solvents, and reducers, as well as the painting itself, to designated areas that are located on a hard surface and isolated from the weather.
- ▶ **Prohibit Spray Painting on the Water:** Sprayed paint can be difficult to control. Paint can be inadvertently sprayed into the water and expose marine life to toxic chemicals.
- ▶ **Clean Up Paint and Supplies:** Treat paint spills like oil spills. Clean up immediately with absorbent materials, paper, and/or rags. Since liquid paints are classified as hazardous material, dispose of paint brushes and paint properly (see Section 4.10). If your customers are permitted to paint their own boats, require them to clean up after themselves. Provide paint disposal areas for customers to use. Before disposal, all paint cans and worn out brushes and rollers should be allowed to air dry.
- ▶ **Appropriate Use and Storage of Hazardous Materials and Waste:** Make certain that all painting materials are used strictly according to manufacturers' instructions. Consult the Material Safety Data Sheets and Massachusetts hazardous waste regulations for proper product handling and disposal of waste. Refer to Section 4.10 for more information about hazardous waste disposal. Keep covers and caps on paints, thinners, and solvents to minimize the release of Volatile Organic Compounds (VOC). Outside contractors working in your marina must, under terms of your contract with them, comply to the same BMP and cleanup standards as adopted by your business.

Please Note

Spray booths may require a permit from the Massachusetts Department of Environmental Protection Air Quality Program.

- ▷ **Spray Booths:** A spray booth is a permanent shed or temporary enclosure erected around a boat during painting. Spray booths confine overspray and prevent drifting onto other boats, land, or water. Booths equipped with air filters reduce air quality impacts by filtering paint dust and particulates out of the air. Filters also help protect workers by drawing harmful fumes and paint overspray away from employees.
- ▷ **High Volume, Low Pressure (HVLP) Spray Guns:** HVLP sprays are the most efficient means for applying paint. Promote use of spray guns that are rated at 65 percent efficient paint transfer or greater. These spray guns direct more paint onto the intended surface and as a result, less paint gets into the air, and fewer VOCs are released. HVLPs also save money because less paint is used and clean up costs are reduced. Electrostatic spraying is another option that allows more paint to stay on the boat bottom. See Appendix C for companies that sell innovative paint applicators.
- ▷ **Traditional Paint Applications:** Use brushes and rollers where possible. Spray guns physically agitate the paint during application, which releases more of the chemical compounds into the air. Traditional applications reduce air emissions.
- ▷ **Water-Based Paints:** Use water-based paints wherever possible. Water-based paints are environmentally-preferable because they use small amounts of VOC solvents. Performance can be just as good as oil-based paints and cleanup is easier because brushes, rollers, and equipment can be cleaned in water, making paint thinners unnecessary.
- ▷ **Inform Do-It-Yourselfers:** Provide information to customers who work on their boats at the marina about the potential harm caused by uncontrolled release of paint products. Visible signs, clauses in customer contracts, fact sheets, and tips in mailings are all good ways to communicate this information. A Boater Fact Sheet on Hull Maintenance Activities is provided in this guidebook. Photocopy it and distribute it to your customers. For information about communicating clean boating practices to your customers, see Chapter 3.
- ▷ **Train Employees:** Train your employees to be on the lookout for hull maintenance activities by Do-It-Yourselfers that may be harmful to the coastal environment.

Useful Contacts

US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Program - Call (617) 918-1615 or look online at <http://cfpub2.epa.gov/npdes/stormwater/msgp.cfm> for more information about the NPDES Multi-Sector General Permit.

Massachusetts Environmentally Preferable Products Procurement Program has information on acquiring recycled paints -<http://www.mass.gov/epp>.



HULL MAINTENANCE AND CLEANING

Complete this checklist if hull scraping, sanding, pressure washing, or painting occurs at your facility.

Activities that occur at the facility: ☐ Hull Scraping ☐ Sanding ☐ Pressure Washing ☐ Painting

Check either the “Yes” or “No” column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put “NA” in the “Yes” column. In the “Action” box, list the next steps for all BMPs where you have checked the “No” column.

BMP	YES/NA	NO	Refer to Page	Action
*Designated Hull Maintenance Areas			4.3	
*Containment			4.3	
*Proper Pressure Washwater Management			4.4	
Work Indoors			4.5	
Work Away from the Water			4.5	
No In-Water Boat Cleaning			4.5	
Dustless Vacuum Sanders			4.6	
Tarps and Filter Cloth			4.6	
Clean Up Designated Areas			4.6	
*Designated Maintenance Areas for Painting			4.6	
*Prohibit Spray Painting on the Water			4.6	
*Clean Up Paint and Supplies			4.6	
*Use and Storage of Hazardous Material and Waste			4.6	
Spray Booths			4.7	
High Volume, Low Pressure (HVL) Spray Guns			4.7	
Traditional Paint Applications			4.7	

BMP	YES/NA	NO	Refer to Page	Action
Water-Based Paints			4.7	
Inform Do-It-Yourselfers			4.7	
Train Employees			4.7	

***BMP will assist with regulatory compliance.**

NOTES:



4.2 Boat Cleaning

Cleaning boats and boat equipment is important for aesthetics and longevity. Some of the soaps and solvents commonly used in cleaning boats can be toxic to marine life. Consequently, it is important to educate boaters about environmentally-sound cleaning products and practices. Set an example for your boating guests by selling and using “green” products while providing boat cleaning services by the marina.

LEGAL REQUIREMENTS

The following laws apply to boat cleaning activities. If you perform boat cleaning services at your facility, please read the summary of these regulatory programs in Chapter 6.

- Massachusetts Air Quality Regulations
- Massachusetts Clean Waters Act
- Massachusetts Hazardous Waste Regulations

Best Management Practices

Consider employing the following BMPs for environmentally-protective boat cleaning methods.

- ▶ **Designated Maintenance Areas:** Cleaning should be restricted to designated maintenance areas. See section 4.1 for more information.
- ▷ **Natural Cleaners:** Promote the use of natural cleaners at your marina. The most natural cleaner you can use is water. Scrubbing a dirty section of your boat with a rag soaked with water can be as effective as any cleaning agent if you apply more “elbow grease.” Other natural cleaners that can be very effective include lime juice, borax, and baking soda. Because even natural cleaners can have a negative effect on the environment, use them in moderation.
- ▷ **Biodegradable Soaps:** When a boater needs to use a detergent, suggest phosphate-free soaps that are non-toxic and biodegradable. These soaps should still be used sparingly since even biodegradable soaps can harm marine life. Manufacturers and distributors of biodegradable soaps are listed in Appendix C.
- ▷ **Solvent Alternatives:** Encourage the use of solvent alternatives by distributing a list of non-hazardous cleaning products. For example, teak can be effectively cleaned with a mild soap and abrasive pad or bronze wool. However, never use steel wool as it will leave rust marks. A list of some of these products is provided on a fact sheet in the inside pocket at the back of this guide.

Consider This

Try cleaning with water and some extra “elbow grease” before relying on cleaning products. People forget that water is one of the best solvents available.

- ▷ **Use Solvents Properly:** When solvents are needed, they should be used in designated maintenance areas only. Keep covers and caps tightly closed as much as possible to minimize the release of VOCs. Also, limit amounts used to the minimum needed to get the job done. For more about solvent management and disposal, refer to Section 4.10.
- ▷ **Inform Do-It-Yourselfers:** Provide information to encourage your customers who work on their boats at the marina to use environmentally preferable detergents, soaps, and other cleaning products. Education can be provided by posting signs, distributing boater fact sheets, inserting clauses in customer contracts, and including tips in mailings. See Chapter 3, for more information.
- ▷ **Train Employees:** Train employees to be on the lookout for cleaning activities by Do-It-Yourselfers that may be harmful to the coastal environment.

Useful Contacts

1. US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Program — Call **(617) 918-1615** or look on-line at **www.epa.gov/owm/sw/industry/msgp** for information about the NPDES Multi-Sector General Permit and its requirements.
2. Massachusetts Environmentally Preferable Products Procurement Program has information on natural cleaning products at **www.state.ma.us/osd/enviro/products.htm#building**.

Hazard Alert

Solvents are liquid substances capable of dissolving or dispersing one or more other substances. As a result, they are useful for cleaning up paints, oils, and greases. Solvents are classified as hazardous waste if their flash point is below 140°F. Check the label.



BOAT CLEANING

Complete this checklist if boat cleaning occurs at your facility.

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Designated Maintenance Area			4-11	
Natural Cleaners			4-11	
Biodegradable Soaps			4-11	
Solvent Alternatives			4-11	
Use Solvents Properly			4-12	
Inform Do-It-Yourselfers			4-12	
Train Employees			4-12	

***BMP will assist with regulatory compliance.**

NOTES:



Engines are central to the boating experience. Engine maintenance must be performed regularly to ensure optimum performance and with care to protect the environment.

4.3 Engine Maintenance

Engine maintenance requires using hazardous materials such as oil, solvents, and anti-freeze. These substances must be used with care. Any marina that provides commercial engine services (for a fee) must use BMPs and be covered by a NPDES Multi-Sector General Permit. This section provides you and your boating customers with the information needed to prevent and control pollution from engine maintenance activities.

LEGAL REQUIREMENTS

The following laws apply to engine maintenance activities. If you perform engine maintenance services at your facility, please read the summary of these regulatory programs in Chapter 6.

- Clean Water Act – Discharge of Oils
- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Industrial Activities
- Massachusetts Hazardous Waste Regulations
- Massachusetts Waterways Regulations

Best Management Practices

Routine Maintenance

Engine maintenance is necessary on a regular basis to ensure proper performance of boat engines. Consider the following list of BMPs when conducting routine engine maintenance.

- ▶ **Designated Maintenance Areas:** Set up designated maintenance areas for engine work as described under Section 4.1.
- ▶ **Proper Waste Disposal:** Oil, solvents, anti-freeze, batteries, and other materials generated in engine maintenance is classified as hazardous waste. See Section 4.10 for information on proper handling and disposal of these materials.
- ▷ **Clean Work Areas:** Keep engine maintenance areas clean. Regularly sweep or vacuum to keep them free of clutter that can cause spills and collect pollutants. Inspect these areas daily to be sure they are clean and all products are properly stored and used.
- ▷ **Prohibit Hosing Down of Maintenance Areas:** Prohibit engine maintenance areas from being cleaned with water from hoses. Water will collect all oil, grease, and lubricants and wash them to drainage structures. Use absorbent materials to clean up liquids.
- ▷ **Provide Absorbent Pads:** Make sure that absorbent materials are always available in the designated maintenance area to immediately soak up any spills. Absorbent

materials might include cloths, pads, booms, or granular materials. The latter is often used for small, contained spills on hard surfaces. Several pads or a boom may be employed for a larger spill that is running over land. Any absorbent materials that are saturated (i.e. able to squeeze more than one drop) with oil or other hazardous materials must be disposed of as hazardous waste.

- ▷ **Inform Do-It-Yourselfers:** Keep your customers who work on their boats at the marina informed about the proper use of petroleum products and solvents. Use visible signs, clauses in customer contracts, fact sheets, and/or tips in mailings.

Oil Changes

The following pollution prevention strategies should be considered when changing the oil in your engine.

- ▷ **Oil Spill Control:** Use drip pans with absorption pads inside to catch and soak up any spills. Avoid mixing different hazardous liquids, a practice that can make them unacceptable for recycling and can seriously increase disposal costs. Always have a sufficient supply of oil absorbent pads near all engine work, whether in a boat or shop, to mop up any drips or spills.
- ▷ **Spill-Proof Oil Changes:** Purchase equipment that will conduct spill proof oil changes. These vacuum systems draw crankcase oil out through the dipstick tube. You can rent these systems to Do-It-Yourselfers so they conduct their own oil changes. Some manufacturers of these systems are listed in Appendix C.
- ▷ **Recycle Used Oil:** Establish a safe and effective method for collecting, storing, and arranging for transport of used oil for recycling. Used oil collection should be conducted by trained staff only to avoid potential for cross-contamination. The used oil storage area should be safe and secure. If your facility works year-round, you may want to consider used oil as a heating source on-site. See Section 4.10 for more information on recycling and reusing used oil.

Engine Cleaning

Engine cleaning will remove build-up of grease and grime on your engine. The following list of BMPs should be used to make sure the pollutants you remove do not reach coastal waters.

- ▷ **Pre-Cleaning Methods:** Before using solvents, clean the engine using environmentally-sound alternatives. One easy example is to loosen the engine grime with a brush and then wipe it away with a rag.
- ▷ **Use Solvents Properly:** Use non-VOC (Volatile Organic Compounds) solvents where possible to wash engine parts and tools. If VOC-based solvents must be used, catch excess solvents in a pan below the engine and reuse them. Keep VOC-based solvents in tightly closed containers to reduce the amount of VOCs that are released into the air. Many marinas use the services of companies that provide parts washing equipment and solvents, which are collected regularly for recycling.

Hazard Alert

Oil absorbent materials include pads, booms, and granules that can be used to quickly to absorb small drips and spills. Regular use of these materials will help keep the marina clean and reduce the amount of petroleum falling on the land or escaping to the water. Used pads must be disposed of as hazardous waste if oil can be squeezed from them. Store them with other hazardous waste for pick-up by a hazardous waste hauler. Companies that sell oil absorbent products are listed in Appendix C.

Safe Practice

Popular with marinas in the northeast is the drip-proof tank, which uses a vacuum to suck old oil and dirt from the bottom of the boat engine during oil changes. Once inside the tank and with the valve closed, no oil can spill should the tank tip over or fall into the water. It is a simple to use, clean, quiet, efficient, and inexpensive way to change oil and protect the environment.

- ▷ **Bioremediating Systems:** Explore the use of bioremediating systems that use microbes that eat oil and grease. These solvents either contain natural enzymes or live bacteria, which digest many petroleum products. Since they are based on naturally occurring organisms, they pose less of a risk to the marine environment. Some companies that offer bioremediating systems are listed in Appendix C.
- ▷ **Solvent Alternatives:** Encourage the use of solvent alternatives by distributing a list of non-hazardous cleaning products. A list of some of these products is provided on a fact sheet in the inside pocket at the back of this guide.

Boat and Engine Winterizing

Specific considerations apply to boat and engine winterizing. Appropriate BMPs are listed below.

- ▷ **Use Environmentally-Preferable Anti-Freeze:** Traditional antifreeze can kill on contact or when swallowed. Antifreeze is soluble in water and will sink into the water column. If spilled, it can cause immediate harm to plankton and small fish. The “green” colored ethylene glycol antifreeze, commonly used in automobile engines, will kill dogs if they drink it from a spilled puddle. Unfortunately, it tastes good to animals. Switch to less toxic products, such as propylene glycol (orange or pink color), when possible. Propylene glycol anti-freeze is available at most marine supply stores.
- ▷ **Fuel Stabilizers:** Add stabilizers to fuel to prevent degradation. Stabilizers are available for gasoline, diesel fuel, and crankcase oil. Stabilizers protect engines by preventing corrosion and the formation of sludge, gum, and varnish.
- ▷ **Fuel Protection:** Fill fuel tanks to between 80 and 90 percent capacity prior to winter storage to minimize the build-up of flammable fumes and reduce condensation that can lead to corrosion. Make sure the gas cap is on tight to prevent fuels from volatilizing. Do not fill the tank more than 90 percent to keep fuel from spilling out of the fuel vent in the springtime when it warms up and expands.
- ▷ **Drain Water from the Fuel System:** Rather than using anti-freeze, drain as much water from the water system as is possible. Some marinas successfully use air pressure to blow the lines empty. If there are traps that cannot be drained completely, use a diluted solution of water system-approved antifreeze, such as propylene glycol.
- ▷ **Use Canvas Covers and Recyclable Shrink-Wrap:** Encourage the use of canvas covers or recyclable shrink-wrap for winterizing your boat. Information on shrink-wrap recycling is provided in Section 4.9.
- ▷ **Train Employees:** Train employees to be on the lookout for engine maintenance activities by Do-It-Yourselfers that may be harmful to the coastal environment.

Useful Contacts

1. US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Program — Call **(617) 918-1615** or look on-line at **www.epa.gov/owm/sw/industry/msgp** for information about the NPDES Multi-Sector General Permit and its requirements.
2. The Department of Defense Pollution Prevention Equipment Program Work Book is available on-line at **www.lakehurst.navy.mil/P2/index.htm**. This reference provides information on innovative pollution prevention strategies.
3. Used Oil Coordinator, Massachusetts Department of Environmental Protection — Call **(617) 292-5898** with your questions about used oil requirements in Massachusetts.
4. Massachusetts Environmentally Preferable Products Procurement Program — **www.state.ma.us/osd/enviro/products/motoroil.htm**. Call for information on propylene glycol and other environmentally preferable products.



ENGINE MAINTENANCE

Complete this checklist if engine maintenance occurs at your facility.

Activities that occur at the facility: ☐ Routine Maintenance ☐ Oil Changes
☐ Engine Cleaning ☐ Boat and Engine Winterizing

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Designated Maintenance Area			4-15	
*Proper Waste Disposal			4-15	
Clean Work Areas			4-15	
*Prohibit Hosing Down of Maintenance Areas			4-15	
Provide Absorbent Pads			4-15	
Inform Do-It-Yourselfers			4-16	
Oil Spill Control			4-16	
Spill-Proof Oil Changes			4-16	
Recycle Used Oil			4-16	
Pre-Cleaning Methods			4-16	
Use Solvents Properly			4-16	
Bioremediating Systems			4-17	
Solvent Alternatives			4-17	
Use Environmentally-Preferable Anti-Freeze			4-17	
Fuel Stabilizers			4-17	
Fuel Protection			4-17	

BMP	YES/NA	NO	Refer to Page	Action
Drain Water from Fuel Systems			4-17	
Use Canvas Covers / Recyclable Shrink-Wrap			4-17	
Train Employees			4-17	

***BMP will assist with regulatory compliance.**

NOTES:

[illegible]



Most boats have bilges where excess water and wastes like oil can collect.

4.4 Bilge Water Handling

Dumping oily bilge water directly into the water can harm marine life, and is illegal. This section provides you and your boating customers with the information you need to minimize the impacts of contaminated bilge water.

LEGAL REQUIREMENTS

The following laws apply to bilge water discharge. Please read the summary of these regulatory programs in Chapter 6.

- Clean Water Act – Discharge of Oils
- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Industrial Activities
- Massachusetts Clean Waters Act
- Massachusetts Waterways Regulations

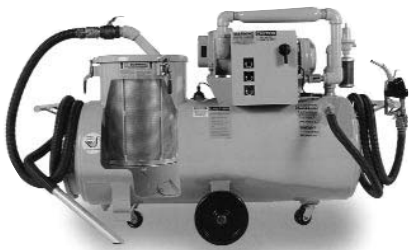
Best Management Practices

The following BMPs will help minimize the impacts of oil and other pollution that often results from bilge water discharge.

- ▶ **Suspend Bilge Water Discharges by the Marina:** Oily bilge water is hazardous waste and it is illegal for marinas to discharge it into the water. If your marina discharges bilge water, you are required to secure a NPDES Individual Permit for Industrial Discharges.
- ▶ **Prohibit Discharge of Untreated Water by Boaters at Your Marina:** Require as part of the environmental contract, or by other appropriate means, that untreated bilge water not be discharged within the marina perimeter. Provide customers with options for proper discharge either by making oil absorbent pads available or by providing services for pumping out bilge water. Encourage them to do the right thing with bilge water.
- ▷ **Make Oil Absorbent Pads Available:** Oil absorbent pads absorb oil while repelling water. They are an effective means for collecting oil that leaks into your bilge, and thereby preventing the discharge of oily water. Oil booms can be used in larger boats. Pads should be replaced several times a season and more often if the engine and engine lines are leaky. Make sure your customers who use oil absorbent pads know where they may be properly disposed of at the marina. If oil can be squeezed out of the pad, it must be disposed of as hazardous waste.
- ▷ **Vacuum Systems for Removing Bilge Water:** Consider purchasing a vacuum pump system to remove bilge water for your customers. A vacuum system removes all of the bilge water and pumps it into drums for off-site treatment and disposal.

The drums should be stored in a hazardous waste storage area prior to pick-up (see Section 4.10 on hazard waste). Providing this service will ensure that boaters can comply with the law. It may also generate revenue for the marina. See Appendix C for list of manufacturers.

LOCAL EXAMPLE



Yellow-Bellied Sump-Sucker™

Manchester Marine in Manchester, MA uses the Yellow-Bellied Sump-Sucker™ to clean out bilges at their marina. It is stored next to a boatlift in a convenient and efficient place for use after boats are hauled. The system consists of a large tank and several hoses. Water and scum are removed from the boat's bilge with a hose connected to the storage tank on the

Sump-Sucker. Once the bilge is dry it can be cleaned out with biodegradable soaps and pumped out again into the Sump-Sucker. The Sump-Sucker tank can be emptied through another hose into a storage drum, which can later be removed by a hazardous waste removal company. This system is more efficient, less messy, and reduces the possibility of a spill compared to the more traditional bilge cleaning methods. Manchester has a policy of mandatory bilge cleaning as the boats are hauled, which reduces liability by preventing spills. Manchester has defrayed the cost of the Sump-Sucker with an "environmental charge" to customers every time the Sump-Sucker is used. Call Rob Hoyle at Manchester Marine for more information (978) 526-7911.

- ▷ **Mandatory Bilge Water Removal:** Make bilge water pumping a requirement for all vessels hauled out at your marina. Include a charge for this service, which is incorporated into the haulout fee.
- ▷ **Bilge Oil Filters:** Sell and install bilge oil filters. These filters clean bilge water on the boat prior to it being discharged overboard. The filter cartridge system is built into the bilge pump system for convenience and efficiency.
- ▷ **Portable Oil/Water Separator:** Use a portable oil/water separator to treat oily bilge water and contaminated fuel. These systems treat bilge water on-site by directly pumping it through the separator, which removes petroleum products and sediments. The treated water can then be discharged into coastal waters. The oily water that is removed must be disposed of as hazardous waste.
- ▷ **Install Oil/Water Separators:** Promote the installation of oil/water separators in bilges. If your facility is equipped, consider adding separator installation to your list of services. Otherwise, contact local boatyards and find out where these services can be provided. If you discover that your customers are particularly interested in the service, you may be able to receive a commission from the boatyard.

Harzard Alert

Never use detergents to dissipate an oil sheen. It is illegal (see Chapter 6).

- ▷ **Inform Boaters:** Inform boaters about the negative effects of bilge water discharge. Direct them to solutions for managing bilge water.
- ▷ **Train Employees:** Train employees to be on the lookout for bilge water discharge by boaters. Discuss with your staff an effective way to deal with customers who are discharging bilge water. Some boaters may not know that it is an illegal act.

Useful Contacts

1. US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Program — Call **(617) 918-1615** or look on-line at **www.epa.gov/owm/sw/industry/msgp** for information about the NPDES Multi-Sector General Permit and its requirements.
2. State Fire Marshall's Office — Call **(978) 567-3300** for information on state spill response and reporting requirements.
3. National Spill Response Center — Call **(800) 424-8802** to report a spill.
4. U.S. Coast Guard Marine Safety Office — Boston (Cape Cod Canal to NH border), **(617) 223-3000**; Providence (RI border to Cape Cod Canal; including Cape & Islands), **(401) 435-2300** or **(800) 644-0217**. Call for information on federal spill response and reporting requirements.



BILGE WATER HANDLING

Complete this checklist if bilge water is discharged at your facility.

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Suspend Bilge Water Discharge by the Marina			4-21	
*Prohibit Discharge of Untreated Bilge Water			4-21	
Make Oil Absorbent Pads Available			4-21	
Vacuum Systems for Removing Bilge Water			4-21	
Mandatory Bilge Water Removal			4-22	
Bilge Oil Filters			4-22	
Portable Oil/Water Separator			4-22	
Install Oil/Water Separators			4-22	
Inform Boaters			4-23	
Train Employees			4-23	

***BMP will assist with regulatory compliance.**

NOTES:



Fueling dock at Hewitt's Cove Marina.

Safe Practice

A Spill Prevention Control and Countermeasures (SPCC) Plan is required as part of a Stormwater Pollution Prevention Plan under the federal NPDES Program. A SPCC Plan must be developed for any facility with above ground oil storage capacity in excess of 1,320 gallons or one above ground container of oil with a capacity of more than 660 gallons or underground storage capacity in excess of 42,000 gallons prepare an SPCC Plan. Oil means oil of any kind including petroleum, fuel oil, oil sludge, sulfonated fish oil, etc. Call the U.S. EPA NPDES Program at (617) 918-1615 for more information.

4.5 Fueling

For many marinas, fueling boats is an essential service to boaters and an important revenue generator. Marinas with fueling services must evaluate all aspects of their operation, including fuel station design, delivery, and dispensation, to ensure that their facility complies with safety, fire, and environmental laws. This section provides you and your customers with information about how to minimize impacts to coastal waters from fueling activities.

LEGAL REQUIREMENTS

The following laws apply to fueling activities. If your marina has a fuel pump, please read the summary of these regulatory programs in Chapter 6.

- Clean Water Act - Discharge of Oil
- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Industrial Activities, Spill Prevention Control and Countermeasures (SPCC) Plan
- Massachusetts Clean Waters Act
- Massachusetts Waterways Regulations
- Massachusetts State Fire Code

Best Management Practices

Planning and Training

- **Develop a Spill Prevention Control and Countermeasures Plan:** A Spill Prevention Control and Countermeasures Plan (SPCC) is required for all facilities that provide above ground oil/fuel storage capacity in excess of 1,320 gallons or one above ground container of oil with a capacity of more than 660 gallons or underground storage capacity in excess of 42,000 gallons.
- ▷ **Document All Formal Training Sessions:** Keep records of all training sessions for spill response, pumpout use, and other marina pollution prevention procedures. This information will be useful to show the good work your marina is doing.

Fuel Station Design

Fuel stations must be designed to be stable and to decrease the number of accidental spills. Naturally, fuel station design considerations are most effectively included when developing a new fuel station. However, each marina that provides fuel services should consider implementing the following BMPs.

- **Spill Containment:** Design boat-fueling stations with spill containment areas so that spills cannot be released to the water.

- ▷ **Reduce Wakes:** Locate fueling stations where they are protected from passing boat wake waves that may cause unstable conditions for fueling. Request that the Harbormaster establish a “no-wake zone” for the area in close proximity to the fuel docks, if not currently in place.
- ▷ **PWC Fueling Floats:** Install personal watercraft (PWC) floats at fuel docks to raise PWCs from the water and provide a more stable setting for fueling.
- ▷ **Secure the Fuel Station:** Secure and lock fueling stations and oil tanks during non-servicing hours.

Fuel System Components

Practical changes at the pump can improve your fueling system and prevent against all types of fuel spills. If you haven’t yet made changes to upgrade components of your fueling system, consider the following BMPs.

- ▶ **Shut-Off Nozzles:** To prevent overflow spills, install automatic back pressure shut-off nozzles on fuel pump discharge hoses. The nozzles automatically stop the flow of fuel into a boat’s fuel tank when sufficient reverse pressure is created by the full tank.
- ▶ **Nozzle Triggers:** If automatic shut-offs are not used, then remove fuel nozzle triggers that are used to hold the nozzle open without being held. Nozzles can be purchased through the fuel companies that service your pumps. Prohibit the use of cans or other items to prop the trigger open, especially on large boats with big fuel tanks.
- ▷ **Alternative Fuel Nozzles:** Install fuel nozzles that redirect blow-back into vessels’ fuel tanks or vapor control nozzles to capture fumes. Blow-back is when fuel comes back out of the fuel vent when the tank fills up. Consult your fuel pump service provider for more information.

Fuel Delivery

The point of delivery for bulk fuel from your fuel service to the marina has the potential to produce major impacts. There are many requirements under fire prevention and underground storage tank design regulations, so consult these regulations to ensure that your system complies with the law. In addition, consider the following BMPs.

- ▶ **Spill Response Training:** Train all appropriate staff annually in the implementation of a spill response plan. Document the training. Also, review fueling procedure practices with staff and customers to reduce all small drips and spills. Include information about fueling in your spill response plan (see Section 4.6).
- ▷ **Fuel Delivery Staffing:** Be sure that a member of your staff is always on-hand when fuel is delivered so that the marina staff can be sure that fuel delivery is conducted without incident.



Install easy-to-read signs on the fuel dock that explain proper fueling procedures, and include spill reporting phone numbers.

- ▶ **Spill Response Locker:** Locate a small locker with spill response equipment near the delivery area so that you can quickly react to a spill. Also post a telephone number to report a spill.

Fueling Procedures

Precautions should be taken every time someone removes the gas nozzle to fill up. The following BMPs will reduce frequent small drips and the potential for more serious spills.

- ▶ **Disposal Procedures:** Provide for proper disposal of oil absorption materials and rags (refer to Section 4.10 for more tips).
- ▶ **Fuel System Inspection:** Regularly inspect the fueling system, and maintain, or replace fuel hoses, pumps, and tanks when necessary.
- ▶ **Fueling Signs and Supervision:** Install easy-to-read signs on the fuel dock that explain proper fueling procedures and list the spill reporting phone numbers. Be sure that an attendant is on hand to do the fueling.
- ▶ **Spill Equipment and Reporting:** Have a dock box or locker on the fuel dock filled with spill absorption pads and containment booms. Provide a sign that briefly states spill reporting requirements and a phone number for reporting a spill.
- ▶ **Fuel Collars and Absorption Pads:** Use oil absorption pads, or fuel collars directly at the gas line to catch splash back and small drips during fueling. Some companies that sell these products are listed in Appendix C.

LOCAL EXAMPLE

Seaport Landing Marina in Lynn provides absorbent materials to all its customers while filling up to catch all drips and small spills. A member of the staff is always on-hand during fueling to ensure against topping off and other signs of spill. These practices have become a standard part of their business. Call Jim Perry of Seaport Landing Marina at (781) 592-5821 for more information.

- ▶ **Proper Fueling Procedures:** Make it a policy to discourage topping off practices. Avoid overfilling boat tanks when selling fuel. Do not fill the tank beyond 95% capacity. Warn boaters not to top-off tanks in summer, since fuel expands when it heats up – an important consideration during the hot boating season. (There is an unfortunate practice among some boaters to keep pumping fuel until it squirts out the air vent indicating a full tank.) Typically even after the pump is shut off and the nozzle removed, fuel can continue squirting out as the boat rocks with waves and as the fuel in the tank warms up and expands.
- ▶ **Reducing Fuel Overflow:** Attach a container to the boat external vent fitting to collect overflow. Containers with suction cups used for attaching to the side of the boat directly underneath the fueling port are available from vendors. Pads can also be placed over the vent to catch any overflow.

- ▷ **Proper Nozzle Placement:** Hang nozzles vertically when not in use to prevent fuel remaining in hose from draining out after vessel fueling. If the fuel pump is high on a pier and a long hose runs out on a floating fuel dock, an alternative is to lay the nozzle into a shallow pan lined with an absorption pad between uses. In the evening when the fuel dock is closed, the nozzle should be locked in its slot on the side of the fuel pump.
- ▷ **Use In-Water Sausage Boom During Fueling:** Place a long sausage boom in the water between the dock and the boat to collect any drips and spills. Because fuel can inadvertently spit of the air vent, the boom will trap and absorb spilled fuel.

LOCAL EXAMPLE

Nantucket Boat Basin began using a three-step method to reduce unintentional spills. This method includes placing an absorbent donut around the end of the fuel nozzle, giving the boater an absorbent pad to catch drips, and using the sausage boom between the boat and the dock as added insurance. Small spills can really add up when fueling demand is high. These precautions have greatly reduced the release of small spills at the Nantucket Boat Basin. Call George Bassett at (508) 228-8941 for more information.

- ▷ **Proper Gas Can Placement:** Place portable gas cans in an oil absorbent-lined drip pan when filling.
- ▷ **Install Fuel/Air Separators:** Sell fuel/air separators at the marina store and provide services to install them. Fuel/air separators are installed between the fuel tank and fume release vent to prevent fuel from exiting the vent during fueling. When installed properly, they allow air to escape but not fuel. These devices can be installed either by marina staff or the Do-It-Yourselfer (see Appendix C for manufacturers).

Useful Contacts

1. Call the State Fire Marshall's Office at **(617) 566-4500** for information about state fire code requirements and spill response.
2. National Spill Response Center — Call **(800) 424-8802** to report a spill.
3. U.S. Coast Guard Marine Safety Office — Boston (Cape Cod Canal to NH border), **(617) 223-3000**; Providence (RI border to Cape Cod Canal; including Cape & Islands), **(401) 435-2300** or **(800) 644-0217**. Call for information on federal spill response and reporting requirements.



FUELING

Complete this checklist if fuel services are provided by your facility.

Activities that occur at the facility: ☐ Attendant Fueling ☐ Self-Service Fueling
☐ PWC Fueling

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Develop SPCC Plan			4-27	
Document All Formal Training Sessions			4-27	
*Spill Containment			4-27	
Reduce Wakes			4-28	
PWC Fueling Floats			4-28	
Secure the Fuel Station			4-28	
*Shut-Off Nozzles			4-28	
*Nozzle Triggers			4-28	
Alternative Fuel Nozzles			4-28	
*Spill Response Training			4-28	
Fuel Delivery Staffing			4-28	
Spill Response Locker			4-29	
*Disposal Procedures			4-29	
*Fuel System Inspection			4-29	
Fueling Signs and Supervision			4-29	
Spill Equipment			4-29	
Fuel Collars and Absorption Pads			4-29	

BMP	YES/NA	NO	Refer to Page	Action
Proper Fueling Procedures			4-29	
Reducing Fuel Overflow			4-29	
Proper Nozzle Placement			4-30	
Use In-Water Sausage Boom During Fueling			4-30	
Proper Gas Can Placement			4-30	
Install Fuel/Air Separators			4-30	

***BMP will assist with regulatory compliance.**

NOTES:



Safe Practice

The first step in spill response should be to notify appropriate marina personnel and report the spill to the National Response Center at (800) 424-8802. Then follow procedures adopted by your facility.

4.6 Spill Response

Spill response preparedness and training is a basic requirement for any fueling facility. A quick response to a spill on the water can prevent major harm to the marine environment. Effective spill control is dependent on having proper spill response equipment readily available and having a well-trained staff. All marinas should practice the BMPs in this section to prevent against and prepare for a major spill at the marina.

LEGAL REQUIREMENTS

The following laws apply to spill response. All marinas must be prepared to respond to a spill. Please read the summary of these regulatory programs in Chapter 6.

- Clean Water Act — Discharge of Oil
- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Industrial Activities, Spill Prevention Control and Countermeasures (SPCC) Plan
- Massachusetts Clean Waters Act
- Massachusetts Hazardous Waste Regulations
- Massachusetts Waterways Regulations

Best Management Practices

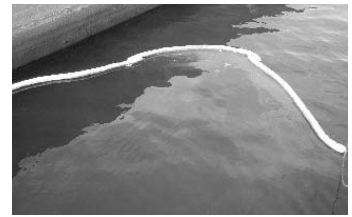
All marinas should be prepared to act quickly in the event of a hazardous waste or oil spill. Consider the following BMPs to make sure you are prepared.

- ▶ **Spill Response Plan:** Develop a written spill response plan for the marina and include it as part of your SPCC Plan if you are required to develop one (see Section 4.5). The plan should include a listing of immediate spill response actions, a contact list for response communication, a chain-of-command within the marina, and an inventory of spill response equipment and its location. The list of immediate spill response actions including the phone number of the National Resource Center should be posted at the fueling station and at the spill response station. Make the plan easily accessible to marina staff. Provide a copy of the spill response plan to the harbormaster.
- ▶ **Spill Response Station:** Establish a clearly marked and easily accessible spill response station, such as a large dock locker, that contains large booms, mops, and other spill response equipment. Make sure you have enough length of boom available to go around the entire fuel dock and the largest boats that fuel there. A minimum length is two times the length of the largest boat that can fuel at the dock.
- ▶ **Spill Reporting:** Provide information on spill reporting requirements at the spill response station, including requirements for notifying local, state, and federal agencies. Clearly post the National Response Center phone number at the fuel dock.

- ▶ **Spill Response Training:** Train all appropriate staff annually in the implementation of a spill response plan. Document the training. Contact vendors of spill response equipment listed in Appendix C for available training services.
- ▶ **Proper Spill Clean Up:** Prohibit the use of detergents and emulsifiers on fuel spills. Under the Clean Water Act, this activity is illegal.
- ▶ **Spill Drills:** Contact the U.S. Coast Guard about organizing a mock-spill training day. A “Spill Drill” will help teach your staff how to respond to a spill. These drills may be conducted at your marina or at a nearby facility and can be conducted in association with other marinas.
- ▶ **Absorption Booms:** Use a small floating absorption boom tied on the end of a long pole near the fueling station to quickly mop any small spill from the surface of the water.
- ▶ **Make Spill Equipment Accessible:** Make spill equipment available to the harbor-master, who can help you protect your facility after-hours.

Useful Contacts

1. National Spill Response Center — Call **(800) 424-8802** to report a spill.
2. State Fire Marshall’s Office — Call **(617) 566-4500** for information about state fire code requirements and spill response.
3. U.S. Coast Guard Marine Safety Office — Boston (Cape Cod Canal to NH border), **(617) 223-3000**; Providence (RI border to Cape Cod Canal; including Cape & Islands), **(401) 435-2300** or **(800) 644-0217**. Call for information on federal spill response and reporting requirements.



Absorption booms are effective for controlling small spills.

Consider This

Neighboring marinas in some ports have a mutual aid agreement to share spill equipment during emergencies. This way each marina needs to have enough supplies for modest spills, but can quickly muster enough equipment from neighbors in rare cases of large spills.



SPILL RESPONSE

All marinas should complete this checklist.

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Spill Response Plan			4-29	
*Spill Response Station			4-29	
*Spill Reporting			4-30	
*Spill Response Training			4-30	
*Proper Spill Cleanup			4-30	
Spill Drills			4-30	
Absorption Booms			4-30	
Make Spill Equipment Accessible			4-30	

***BMP will assist with regulatory compliance.**

NOTES:



Nantucket Boat Basin in Nantucket has been recognized by the U.S. Fish & Wildlife Service for its success in providing pumpouts to boaters.

4.7 Boat Sewage and Wastewater Management

Untreated sewage and other boat-generated wastewater dumped into coastal waters can be harmful to humans and marine life. Therefore, it is in your best interest to steer boaters in the right direction with sewage disposal. This section provides information on pumpouts and other BMPs for reducing impacts from boat wastewater discharge.

LEGAL REQUIREMENTS

The following laws apply to vessel discharge and wastewater. Please read the summary of these regulatory programs in Chapter 6.

- Clean Water Act — Discharge of Sewage
- Clean Water Act — No Discharge Areas
- Massachusetts Clean Waters Act
- Massachusetts Waterways Regulations

Best Management Practices

Pumpouts

Providing pumpout services at your marina gives boaters an easy way to do the right thing, and helps keep the waters around your marina clean. The most important factor in pumpout success is for the service to be convenient and easy for boaters. The most successful services have marina staff doing the pumping out.

Pumpout facilities are available in five primary forms: fixed pumpout stations, dock-side pumpouts, portable pumpouts, pumpout boats, and dump stations. For more information on the types of pumpout facilities and which system would be appropriate for your marina, contact the pumpout manufacturers listed in Appendix C. A listing of all pumpout locations in Massachusetts is included in Appendix D. If you do not own a pumpout facility, consider purchasing one if the demand for pumpout services exists. Financial assistance is available through the Clean Vessel Act (see information sources below).

If you already own a pumpout, consider the following measures to ensure maximum and proper use:

- ▷ **Pumpout Maintenance:** Conduct regular inspections and maintenance on pumpout facilities.
- ▷ **Pumpout Cleanliness:** Keep pumpout facilities clean and easily accessible.

- ▷ **Convenient Service Hours:** Provide pumpout services at convenient times, such as during normal business hours in the boating season. Pumpout service is not expected to be available 24-hours a day, or in the cold non-boating season.
- ▷ **Pumpout Staffing and Training:** Staff the pumpout facility and offer to provide pumpout services during weekdays when boats are not in use. Some marinas have sign-up sheets for customers to request such services. Train all your staff on how to use the pumpout so that customer's pumpout needs can always be met.
- ▷ **Low Pumpout Costs:** Offer pumpouts at a reasonable cost. Studies have shown when pumpout costs are over \$5.00, the willingness of boaters to use the service decreases. Many marinas give the service free to their regular customers because it increases the frequency of use, builds good will, and helps protect the environment. The Clean Vessel Act grant program imposes a \$5.00 ceiling charge if federal money was used to purchase the pumpout equipment (see information contacts below). Note that most pumpout facilities in Massachusetts are available at no charge.
- ▷ **Pumpout Signs:** Promote availability of pumpout services with signs that identify the pumpout station, list the hours of use, and cost, if any. CZM provides pumpout pennants free to marinas to help them advertise pumpout availability. A separate sign should remind the boat owner to make sure the holding tank vent is clear before pumping out.
- ▷ **Holding Tank Additives:** Encourage boat owners to use holding tank additives to help breakdown holding tank contents. Additives increase the rate of breakdown and decrease bacteria and oxygen demand when the contents are legally discharged off-shore.
- ▷ **Portable Dump Stations:** Provide portable toilet dump stations near small boat slips and boat ramps.

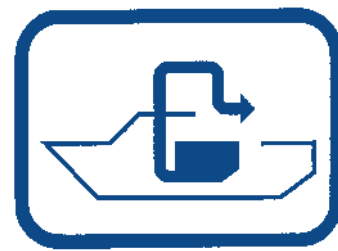
LOCAL EXAMPLE



Constitution Marina's mobile boat pumpout service

Constitution Marina in Charlestown has a mobile boat pumpout service that is available to its customers free of charge. The marina operators have set up a system for its use to make the pumpout as convenient as possible. Customers call in and set up a time during the week to be pumped out. They don't have to be at the boat when this occurs. Then when they want to use their boat on weekends, the hold-

ing tank has already been pumped and they are ready to go. Constitution Marina has made the pumpout boat very popular by making the service easy and convenient and, as a result, the pumpout boat is used everyday. Call Peter Davidoff at (617) 241-9640 for more information.



Please Note

Congress passed the Clean Vessel Act (CVA) in 1992 to help reduce pollution from vessel sewage discharges. CVA established a five-year federal grant program administered by the U.S. Fish and Wildlife Service and authorized \$40 million from the Sport Fish Restoration Account of the Aquatic Resources Trust Fund. Up to 75 percent of the costs of approved projects can be paid for with CVA money, with the remaining funds provided by the states or marinas. Reauthorized in 1998, Congress extended the pumpout grant program through 2003, providing \$50 million. Pumpout stations installed with CVA funds are restricted to charging no more than \$5.00 per pumpout (with certain exceptions), and must be maintained in operating condition, available during reasonable hours of service (such as normal business hours), and convenient to boats for use.

NDA's

A No Discharge Area (NDA) is a designated body of water in which the discharge of treated and untreated sewage is banned. The use of Type I and Type II MSDs is prohibited in NDA's and MSDs must be properly secured when boats are cruising through an NDA. Closing the seacock and padlocking it, using a non-releasable wire tie, or removing the seacock handle (with the seacock closed) are options for securing the MSD. Locking the door of the head with a padlock or door handle key is another acceptable method.

Mass. NDA's

NDA's in Massachusetts include Nantucket Harbor; Waquoit Bay, Falmouth; Stage Harbor Complex, Chatham; Harwich coastal waters, Wellfleet Harbor, and Buzzards Bay. All Rhode Island waters are also designated as No Discharge. See information sources below for a map of No Discharge Areas in Massachusetts.

Proper Use and Operation of Marine Sanitation Devices

All new boats over 20 feet with cabins are generally equipped with one of two standard U.S. Coast Guard approved boat toilet systems for on-board waste management. These systems are called Marine Sanitation Devices (MSDs). Type I and II MSDs are systems that mechanically chop up the sewage, chemically treat it, then discharge it through a screen and overboard. These MSD systems can not be used in coastal waters that are designated as No Discharge Areas. Massachusetts has designated many coastal boating waters as No Discharge Areas (see NDA box). Type III MSDs are boat toilets that empty into built-in holding tanks that must be emptied at a pumpout station. It is illegal for any untreated sewage to be discharged into any of the waters of Massachusetts and the United States, except beyond three miles offshore in the ocean. While the U.S. Coast Guard must approve each MSD system, it is up to the boat owner to properly use and maintain the MSD to effectively lessen impacts on the marine environment. To promote proper use at your marina:

- ▶ **Prohibit Sewage Discharge:** Prohibit use and discharge of Type I and II MSDs at slips or moorings. While all Coast Guard approved Type I and II MSDs are legal to use on some waters and do treat sewage to approved standards, the discharge still contains high nutrients and chemical disinfectants that may impact water quality and marine life in coastal harbors, coves, and bays. In designated No Discharge Areas, all discharge is illegal. Some marinas in their slip rental contract forbid the discharge of any sewage from Type I and II MSDs to prevent odors, to keep the water cleaner, and to prevent algal blooms.
- ▶ **Fill Disinfectant Tanks:** Encourage boaters with Type I and II MSDs to fill the disinfectant tanks each boating day to ensure proper operation.
- ▶ **Shoreside Facilities:** Urge boaters to use the marina's shoreside restroom facilities while at dock or staying overnight. Maintenance of clean and comfortable shoreside restroom facilities will help promote use by boaters.
- ▶ **Biodegradable Holding Tank Cleaners:** Promote the use of non-toxic biodegradable cleansers and deodorants for holding tank treatment that do not use formaldehyde. Enzyme-based products use aerobic bacteria to accelerate natural breakdown and reduce lingering odor. Vendors of non-toxic biodegradable cleaners and deodorants are provided in Appendix C.
- ▶ **Discharge Prevention Steps:** Encourage all boat owners to prevent discharge while boating in coastal waters by removing their existing Y-valves and seacocks with thru-hulls, or plug hulling the holes; or alternatively, by removing the handle on the Y-valve, or using a wire tie.
- ▶ **MSD Retrofit Services:** Offer winter services to retrofit MSDs with holding tanks, and inspect MSD systems to ensure their proper operation.

Proper Graywater Handling

Graywater is the wastewater from the sink and shower (sewage is called blackwater). Graywater can contain detergents, soap, and food wastes and when released to the environment can reduce oxygen levels in small bays and coves by enriching algae growth and bacterial breakdown of wastes, both of which use up oxygen. Help your customers to reduce the impacts of graywater by taking the following steps:

- ▷ **Customer Education:** Educate customers about the impacts of graywater and steps they can take to help reduce graywater impacts.
- ▷ **Refrain from Using Dish Soap On-Board:** Discourage your customers from using dish soaps to clean dishes on board their boats. If soap is necessary for hard to clean jobs, use biodegradable soaps in moderation.
- ▷ **Low Nitrogen Detergents:** Sell only low nitrogen detergents in your ship store.
- ▷ **Dishwashing Station/Laundry Facilities:** Consider providing shoreside dishwashing facilities for boaters and encourage their use. Also explore the potential for offering coin operated laundry facilities.
- ▷ **Encourage Use of Marina Facilities:** Encourage customers to use the showers and restrooms provided by the marina when at the docks.

Useful Contacts

1. Massachusetts No Discharge Area Program, Massachusetts Office of Coastal Zone Management (CZM). This Program provides assistance to municipalities that are seeking a No Discharge Area designation. Call CZM at **(617) 626-1200** or log on to CZM's website at www.state.ma.us/czm for more information.
2. The CZM Coastal Pollutant Remediation (CPR) Program has funds available for pumpout programs. Call CZM at **(617) 626-1200** or log on to CZM's website at www.state.ma.us/czm/ for more information.
3. Clean Vessel Act Program at the Massachusetts Division of Marine Fisheries — Contact them at **(617) 626-1531** or see www.state.ma.us/dfwele/com/comcvahm.htm for more information on the federal Clean Vessel Act Program and pumpouts in Massachusetts.



BOAT SEWAGE AND WASTEWATER MANAGEMENT

Complete this checklist if boat sewage and graywater may be a problem. An indicator of a potential problem is if you have a large number of live-aboards at your marina

Activities that occur at the facility: ☐ Pump-out ☐ Holding Tank Discharge ☐ On-board Dishwashing/Laundry

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
Pumpout Maintenance			4-37	
Pumpout Cleanliness			4-37	
Convenient Service Hours			4-38	
Pumpout Staffing and Training			4-38	
Low Pump-out Costs			4-38	
Pumpout Signs			4-38	
Holding Tank Additives			4-38	
Portable Dump Stations			4-38	
Prohibit Sewage Discharge			4-39	
Fill Disinfectant Tanks			4-39	
Shoreside Facilities			4-39	
Biodegradable Holding Tank Cleaners			4-39	
Discharge Prevention Steps			4-39	
MSD Retrofit Services			4-39	
Customer Education			4-40	
Refrain from Using Dish Soap On-Board			4-40	

BMP	YES/NA	NO	Refer to Page	Action
Low Nitrogen Detergents			4-40	
Dishwashing Station / Laundry Facilities			4-40	
Encourage Use of Marina Facilities			4-40	

NOTES:



4.8 Shoreside Facilities and Pet Waste Management

Bacteria from shoreside restrooms and uncontrolled pet waste can contaminate waters around the marina. Shoreside sanitary facilities should be functioning properly to protect public health and the environment. Keeping them clean will reflect well on your business. Dirty, wet, and dark restrooms are often a source of complaints from boaters. Uncontrolled use of the marina by visiting pets can also create a nuisance. Waste from pets, especially dogs, whether on a marina dock, walkway, or lawn is a major source of complaints from barefoot boaters. Pets should be led to designated walking areas and their owners should take responsibility for properly disposing of pet waste. This section covers some of the BMPs for shoreside facilities and pet waste management.

LEGAL REQUIREMENTS

The following laws apply to shoreside facilities. Please note that many municipalities have enacted local bylaws that regulate pet waste.

- Massachusetts State Sanitary Code Title 5
- Massachusetts Waterways Regulations

Best Management Practices

Shoreside Sanitary Facilities Management

Shoreside facilities make a strong impression on your customers. Take the following steps to be sure that they are pleasing to your visitors and protect the environment.

- ▷ **Clean Restrooms:** Provide clean, safe, dry, well-lit, and ventilated restrooms for your customers 24 hours a day. Some marinas clean their restrooms four or more times a day on busy summer weekends. Other marinas have found that contracting out restroom cleaning is cost effective.
- ▷ **Convenient Restroom:** Locate restrooms convenient to all boats, especially for guests sleeping overnight on weekends.
- ▷ **Septic System Maintenance:** Ensure proper functioning and management of shoreside facilities including septic systems and sewer connections. Pump your septic tank on a regular basis.
- ▷ **Dishwashing/ Laundry Facilities:** Provide an area near the restrooms where boaters can clean their dishes. Also, consider providing laundry facilities for your customers. Encouraging boaters to use on-shore facilities that provide adequate waste- and washwater treatment will decrease the amount of untreated wastes that enter coastal waters.

Pet Waste Management

Proper management is essential for setting ground rules for pets at the marina, avoiding conflicts between marina users over pet issues, and reducing the impacts of pet waste on marina waters. The following BMPs are important to an effective pet waste management program.

- ▷ **Dog Walking Areas:** Provide a specific dog walk area at the marina with signs to direct customers.
- ▷ **Pet Waste Disposal:** Require marina customers to immediately clean up all pet feces. Provide free disposable dog scoop or litter bags to boaters and ask them to dispose of the material in the marina dumpster. Also consider installing mini septic systems for pet waste. These systems are buried in the ground and have a lid on top for dropping the waste in. They also come with a digester enzyme. Pet septic systems are available in many pet catalogs for a low cost (<\$50). One such product is called the “Doggie Doolie.”
- ▷ **Pet Regulations:** Include relevant pet rules and regulations in patron contracts and signage.
- ▷ **Litter Box Use and Disposal:** Encourage cat owners to maintain litter boxes on their boats and to dispose of used litter in appropriate trash receptacles.
- ▷ **Wildlife Feeding Rules:** Prohibit the feeding of wild birds or animals at marinas. Consider posting “No Feeding Wildlife” signs around marina grounds and having staff casually educate children and adults on the negative effects of wildlife feeding.

LOCAL EXAMPLE



Nantucket Boat Basin has an “animal needs park” and biodegradable bags. This program concentrates pet use in one area of the marina and requires owners to be responsible for clean up. For more information, contact George Bassett at (508) 325-1360.

Useful Contact

The State Sanitary Code regulations (310 CMR 15.00) are available from the MA Department of Environmental Protection website at www.state.ma.us/dep/brp/www/t5pubs.htm#regs.



SHORESIDE FACILITIES AND PET WASTE MANAGEMENT CHECKLIST

Complete this checklist if you provide shoreside amenities like restrooms and laundry facilities, or if pets frequently visit your marina.

Activities that occur at the facility: ☐ Restroom Use ☐ On-Shore Dishwashing/Laundry ☐ Pet Walking

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
Clean Restrooms			4-43	
Convenient Restrooms			4-43	
Septic System Maintenance			4-43	
Dishwashing / Laundry Facilities			4-43	
Dog Walking Area			4-44	
Pet Waste Disposal			4-44	
Pet Regulations			4-44	
Litter Box Use and Disposal			4-44	
Wildlife Feeding Rules			4-44	

NOTES:



Covered dumpster at Seaport Landing Marina in Lynn.

4.9 Solid Waste Management

The type of solid waste found in marinas includes trash from boat maintenance and repair, the marina office and store, and the boats themselves.

Boat maintenance and repair examples: shipping boxes, board and metal scraps, cleaning rags, paper, old engine parts, fiberglass chips, sawdust, construction waste, sand blasting waste, floor sweepings, sanding dust, burned out light bulbs, batteries, garbage, bottles, cans, sheet plastic, worn out tarps, dirty filters, etc. Solid waste that has a hazardous component, such as acid from a leaking battery, or toxic antifouling paint chips, must be disposed of as hazardous waste. See Section 4.10 for more information.

Marina office and store examples: waste paper, boxes, shipping materials, floor sweepings, cups, used office supplies, bottles, cans, garbage, etc.

Boat examples: drink containers, food scraps, garbage, fish cleaning waste, old fishing line, dirty cleaning rags, cigarette butts, papers, plastic bags, utensils and plates, etc.

This section discusses BMPs for appropriate disposal of solid waste.

LEGAL REQUIREMENTS

The following laws apply to solid waste disposal. Please read the summary of these regulatory programs in Chapter 6.

- Massachusetts Solid Waste Regulations
- Massachusetts Solid Waste Master Plan
- Massachusetts Waterways Regulations

Best Management Practices

Solid Waste Disposal

Consider incorporating the following BMPs to make trash disposal easy and effective.

- ▶ **Recycling Strategies:** Develop a waste and recycling strategy based on the characteristics of the marina that considers factors such as the number of boats, types of boats and activities, and length of docks. Think of ways to reduce waste generated.
- ▶ **Used Battery Storage and Disposal:** Used batteries must be stored in a single layer on pallets or shelving with an impermeable or sealed base until they can be recycled or disposed of at an appropriate location off-site. If a battery is leaking, it must be disposed of as hazardous waste. If you are unable to collect old batteries, require that customers return their old batteries to the retailer where they bought them.
- ▶ **Trash Container Placement:** Place covered trash receptacles in lighted areas and in locations that are convenient for marina customers. Avoid placing trash containers

on docks where trash can be inadvertently blown into the water. Tie down trash containers to stationary fixtures and empty them frequently before they can overflow.

- ▷ **Trash Covers:** Provide covered trash receptacles at boat haul-out and launch sites. Use lids that cannot be blown or fall off and that keep animals out.
- ▷ **Dumpster Signs:** Post a sign at the dumpster listing items that can be disposed of in the dumpster.
- ▷ **Locate Dumpster Away from the Water:** Place the dumpster as far away from the water as is feasible yet still convenient for use. Erect a fence or plant vegetation as a windscreen between the dumpster and the prevailing wind.
- ▷ **Smoking Signs:** If smoking is allowed, provide signs that direct smoking customers to always use ashtrays. Note that discarded cigarette butts are the most common litter found on coastal waters and shores.
- ▷ **Litter Bag Distribution:** Distribute free litter bags to customers to encourage them to bring back all trash.

Staff Responsibilities

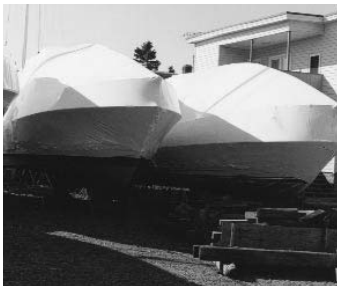
To keep the marina grounds clean everyday, your employees should consider the following tips:

- ▷ **Trash Clean Up:** Make picking up stray trash at the marina a daily practice required of all staff.
- ▷ **Pool Skimmers:** Use a pool skimmer or some other net for collecting floating trash around the docks.
- ▷ **Trash Awareness:** Post signs to remind customers where they can dispose of different trash.

Recycling

Recycling provides society with broad environmental benefits, from decreasing demand for natural raw materials to minimizing waste disposal space at landfills. Recycle items that can be collected by your waste hauler and encourage your customers to recycle.

- ▶ **Recycle as Much as Possible:** Maximize recycling capabilities. Materials for recycling will depend on the service company's capabilities and market demand for different materials. Items that should be considered include scrap metal, aluminum, glass, wood pallets, batteries, paper, plastic, and cardboard. Used oil, oil filters, and other liquids should also be recycled and reused. Contact a waste hauler or your local solid waste recycling coordinator to set up a service to take recyclables away from the marina. A partial list of haulers is provided in Appendix C.



Consider using recyclable shrink wrap.

- ▷ **Community Recycling Participation:** If your community has a recycling program, participate fully by providing a marina recycling center with separate marked containers.
- ▷ **Mark Recycling Containers:** Clearly mark each recycling receptacle to prevent mixing of recyclable materials. Containers should be provided for plastics, paper, bottles, cans, and other recyclables. Establish a marked place for used battery recycling.
- ▷ **Recycling Signs:** Post signs to direct customers to the recycling area and to inform them how to separate their waste.
- ▷ **Recycle Shrink Wrap:** If you use shrink-wrap for protecting boats during the winter, consider using recyclable shrink wrap. See Appendix C for a list of vendors.

LOCAL EXAMPLE

Dions Yacht Yard in Salem believes shrink wrap recycling is a cost effective method for disposing of the large volume of shrink wrap that is produced every year. It has developed a successful method of heating the shrink wrap to compact it into UPS bags to be sent to the recycler. Call Fred Atkins at (978) 744-0844 for more information.

Useful Contacts

1. DEP Solid Waste Program — (617) 292-5500 or www.state.ma.us/dep/bwp/dswm/dswmpubs.htm. Call for more information on solid waste management in Massachusetts.
2. The 1999 Massachusetts Private Hauler Directory is available from the DEP website at www.state.ma.us/dep/recycle/files/haulers.pdf.



SOLID WASTE MANAGEMENT

All marinas generate solid waste, and therefore, all should complete this checklist.

Activities that occur at the facility: ☐ Customer Trash Disposal ☐ Recycling

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Recycling Strategies			4-47	
*Used Battery Storage and Disposal			4-47	
Trash Container Placement			4-47	
Trash Covers			4-48	
Dumpster Signs			4-48	
Locate Dumpster Away from the Water			4-48	
Smoking Signs			4-48	
Litter Bag Distribution			4-48	
Trash Clean Up			4-48	
Pool Skimmers			4-48	
Trash Awareness			4-48	
*Recycle As Much As Possible			4-48	
Community Recycling Participation			4-49	
Mark Recycling Containers			4-49	
Recycling Signs			4-49	
Recycle Shrink-wrap			4-49	

***BMP will assist with regulatory compliance.**



4.10 Hazardous Materials and Hazardous Waste Management

Hazardous materials — gasoline, oil, paints, and solvents — are used in a variety of marina activities and services, and must be managed carefully. This section discusses the requirements for hazardous materials management and hazardous waste disposal, and describes BMPs available to help the marina meet those requirements and reduce impacts on coastal waters.

LEGAL REQUIREMENTS

The following laws apply to hazardous materials and waste management. Please read the summary of these regulatory programs in Chapter 6.

- Massachusetts Hazardous Waste Regulations
- Massachusetts Waterways Regulations

Best Management Practices

Planning, Training, and Spill Coordination

Gasoline, solvents, and paints can be dangerous substances if mishandled. Marina owners and their employees should understand the risks associated with handling hazardous materials, and know who to contact in case there is a spill.

- ▶ **Provide Employee Training:** Train employees on proper handling, storage, transfer, and disposal practices for hazardous materials and hazardous waste. Arrange a training session with your hazardous waste hauler.
- ▶ **Coordinate with Town Safety Departments:** Ensure that local response officials, particularly the fire department, are familiar with the location and character of hazardous materials stored on site (required by law). Call the municipal fire department and arrange to have them visit the facility to inspect storage areas. Provide them with a list of chemicals stored at the facility and a plan of the site showing storage locations.
- ▷ **Establish a Facility Hazardous Waste Plan:** Develop a plan that includes information about hazardous materials used and waste generated at the marina. The plan should include the following information: type of waste accepted; details about the storage area and design requirements (for example containment and security); who is responsible for the area; who should be contacted when waste needs to be disposed; contact information for the waste hauler; training procedures for staff; schedules for staff training and storage area inspections, and other relevant information.

- ▷ **Understand Chemical Type and Hazard Degree:** For each hazardous material used, be aware of the chemical type (toxic, ignitable, reactive, and/or corrosive) and hazard posed (high or low hazard on a relative scale). Seek out less hazardous alternatives to any product or practice that generates significant amounts or highly hazardous wastes. Contact the Massachusetts Office of Technical Assistance at (617) 626-1060 for more information.
- ▷ **Use Signs:** Post signs that locate hazardous waste disposal, recycling, and reuse areas. Also post a list of products that must be disposed of as hazardous waste. The sign should have customers direct all questions to the marina office.

LOCAL EXAMPLE

Hawthorne Cove Marina in Salem has made a special effort to collect and recycle hazardous waste including used oil and batteries. It has a waste center available to all marina users to dispose of hazardous waste, which is contained in 35-gallon drums within a secondary containment system. The waste is then removed and recycled by a certified company. Call Russ Vickers at (978) 740-9890 for more information.

Handling

Employees regularly handle hazardous materials and hazardous waste at the marina when providing services to boaters. Appropriate handling procedures are described for specific activities that use hazardous materials, such as paints (Section 4.1) and fueling (Section 4.5). Additional precautions must be taken when handling hazardous wastes while preparing them for off-site disposal.

- ▶ **Limit Hazardous Liquid Transportation:** If you are a Very Small Quantity Generator and transport waste off-site, you can move no more than a total of 55 gallons at one time. This precaution will limit the size of an unexpected spill.
- ▷ **Use Material Safety Data Sheets (MSDSs):** Make certain that all materials are used strictly according to manufacturers' instructions. Consult the MSDSs for proper handling of the products and disposal of the hazardous waste.
- ▷ **Proper Handling of Liquids:** Use funnels when transferring liquids to prevent spills. Check with your waste hauler or recycling contractor to see what liquids can or cannot be mixed. Inappropriately mixing liquids will greatly increase your disposal costs and can be dangerous.

Storage and Disposal

Hazardous materials and hazardous waste must be temporarily stored at the marina either prior to use or off-site disposal. Set up a system whereby all hazardous waste generated at the facility is controlled and stored in a secure central location, then contact a waste hauler or hazardous waste collection company to arrange a pickup service.

Hazard Alert

If your facility collects more than half of a 55-gallon drum of hazardous waste in any month, you are considered a "Small Quantity Generator." Refer to Chapter 6 to learn more about the regulatory requirements for storing hazardous waste.

For More Info

Hazardous Waste Collection Companies are listed on Massachusetts Department of Environmental Protection's website at www.state.ma.us/dep/bwp/dhm/files/trnsalph.pdf. Some local companies are listed in Appendix C.

- ▶ **Proper Hazardous Materials and Waste Storage:** Hazardous materials and waste should be stored in closed containers inside a building and on impervious surfaces (such as asphalt or concrete), as far from the water as possible. If storage cannot be provided inside, then secondary containment, such as a berm or large container, must be used around all containers to prevent spills from spreading in case the container leaks. Secondary containment should be designed with sufficient volume to hold 110 percent of the maximum volume of the container. Storage areas should be close to maintenance areas to decrease the distance necessary for transfer, but away from any potential fire source.
- ▶ **Container Labeling:** All containers must be labeled with information that includes what is inside the container and when the waste was generated.
- ▶ **Regularly Inspect and Maintain Storage Areas:** Regularly inspect storage areas to check for leaky containers. Have appropriate spill containment and clean-up equipment, such as absorbent materials and booms, available and easily accessible. Staff should always inspect the contents of the waste before accepting it for recycling. After verifying the liquid received, they should double check the receiving tank before emptying the accepted container.
- ▶ **Secure the Hazardous Waste Storage Area:** Ensure that your hazardous waste storage areas are secure. Prevent access to these areas by untrained employees or customers. If possible, have trained staff transfer hazardous wastes from generation sites (boats, repair shop, etc.) to storage areas. Secure the liquid recycling area (perhaps inside a locked shed) to prevent inadvertent mixing. Create a well-marked drop-off point where boaters can leave waste containers so that they can be later dumped into the proper drum by facility staff.
- ▶ **Minimize On-Site Hazardous Material and Waste Storage:** Keep the total volume of hazardous material and waste stored to a minimum. Keep a record of material and waste on-site and dates of storage. Employ a "first-in, first-out" system. Since hazardous material and waste can degrade over time, this will help you get rid of the substances that can become long-term problems.

Hazard Alert

All on-site recycling by small and large quantity generators of used oil and/or hazardous waste must receive a permit from the Massachusetts Department of Environmental Protection. See the discussion of the Massachusetts Hazardous Waste Regulations in Chapter 6 for more information.

Reuse and Recycling

Reusing and recycling hazardous waste reduces disposal costs and purchasing costs of new products. The following steps will help you establish a successful hazardous waste recycling program.

- ▶ **Properly Collect Wastes:** Collect the following waste products from customers for reuse and recycling: engine oil, antifreeze, paints and solvents, varnishes, pesticides, and transmission fluid. Waste should always be transferred through a funnel to reduce spills. The funnel should be attached so that it is stable and should be large enough to hold oil cans and filters so that they can sit on the funnel and drain. Ask your waste hauler about recycling options or call a recycling company (see DEP website address listed under information sources).

- ▷ **Maintain a Product Exchange Area:** Establish a hazardous material exchange area where customers can drop-off unused paint, varnish, oil, and other materials for other customers to use. Used solvents and paint thinners can be contained and reused after the solids have settled out (the solids must be disposed of as hazardous waste). Allow the solvents to stand for several days to induce the solids to settle.
- ▷ **Require Recycling in Contracts:** Make recycling a requirement under customer and outside contractor contracts. See Chapter 3 for more information on customer contracts.
- ▷ **Drain Fluids:** Fluids must be completely drained from engine parts that are to be disposed. For example, oil filters should be left to drip dry for 12 hours to ensure that no liquid oil is disposed of as solid waste. Drained oil filters can then go in with regular trash or to a filter recycler off-site.
- ▷ **Used Oil Burner:** Consider purchasing a waste oil burner as a winter heating source. Containers for collecting used oil must be marked “Regulated Recyclable Material — Used Oil — Toxic.” There is one limitation about the oil source: all waste oil for heating shall only be collected from the marina’s own customers and engine repairs, with none coming from off-site non-business sources. Burning used oil at your marina in the winter can save you money on winter heating costs and used oil disposal, particularly for marinas and boat shops that are active year-round. You will need to receive approval from your local fire department and there may be other regulatory implications for small marinas. Call the DEP Waste Oil Compliance Hotline at (617) 556-1022.

LOCAL EXAMPLE

Hyannis Marine has one waste oil heater and the owners are considering purchasing a second one because it has worked so well for them. In order to comply with the necessary regulations for the waste oil heater, Hyannis Marine installed double walled underground tanks. Hyannis Marine filters the oil using a Racor™ filter before it is burned and is able to store 4 to 5 thousand gallons of oil in compliance with all regulations. Call Dan Carlin at Hyannis Marine to find out more details (508) 775-5662.

Useful Contacts

1. The 1999 Massachusetts Private Hauler Directory is available from the DEP website at www.state.ma.us/dep/recycle/files/haulers.pdf.
2. Massachusetts Office of Technical Assistance can provide information and technical assistance to marinas looking to reduce their hazardous waste generation. Call (617) 626-1060 for more information.
3. Massachusetts Department of Environmental Protection, Recycling Services — Call DEP at (617) 556-1021 for information about starting and managing a recycling program.



Waste oil burner manufactured by Clean Burn, Inc.

Harzard Alert

Under the Massachusetts Hazardous Waste Regulations, waste oil that is burned on-site is classified as a Regulated Recyclable Material. When waste oil is placed in a drum to be shipped for off-site disposal, it is classified as hazardous waste. Read about the Massachusetts Hazardous Waste Regulations in Chapter 6.



HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Complete this checklist if your facility generates hazardous waste.

Activities that occur at the facility: ☐ Hazardous Material/Waste Storage

☐ Hazardous Material/Waste Generation ☐ Hazardous Waste Recycling

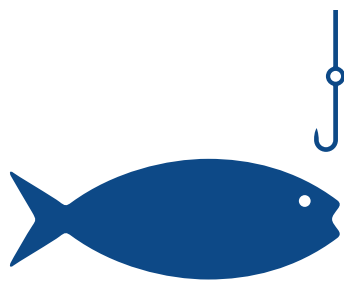
Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
*Provide Employee Training			4-53	
*Coordinate with Town Safety Departments			4-53	
Establish Facility Hazardous Waste Plan			4-53	
Understand Chemical Type and Hazard Degree			4-54	
Use Signs			4-54	
*Limit Hazardous Liquid Transportation			4-54	
Use MSDSs			4-54	
Proper Handling of Liquids			4-54	
*Proper Hazardous Materials and Waste Storage			4-55	
*Container Labeling			4-55	
*Regularly Inspect and Maintain Storage Areas			4-55	
Secure the Hazardous Waste Storage Area			4-55	
Minimize On-Site Hazardous Material Storage			4-55	
Properly Collect Waste			4-55	
Maintain a Product Exchange Area			4-56	

BMP	YES/NA	NO	Refer to Page	Action
Require Recycling in Contracts			4-56	
Drain Fluids			4-56	
Used Oil Burner			4-56	

***BMP will assist with regulatory compliance.**

NOTES:



4.11 Fish Waste Management

Sport fishing is one of the most popular uses of boats. However, fish cleaning waste produced by recreational fishermen can become a major nuisance if not properly handled. If recreational fishermen are regularly cleaning their fish at your marina, review the following BMPs to see if any new practices can help improve the situation.

LEGAL REQUIREMENTS

The following laws apply to fish waste disposal. If fish waste is regularly generated at your marina, please read the summary of these regulatory programs in Chapter 6.

- Massachusetts Solid Waste Regulations

Best Management Practices

If fish waste disposal is a potential problem at your facility, the following tips may help you.

- ▷ **Offshore Cleaning and Disposal:** Encourage fishermen to clean fish off-shore and discard fish waste at sea.
- ▷ **Fish Cleaning Area and Rules:** The best way to prevent a problem is by developing and clearly marking a fish cleaning area and posting rules for disposal of fish waste on the marina property. This will prevent fishermen from cleaning and disposing of fish at improper locations.
- ▷ **Fish Cleaning Staff:** Provide a staff person who can clean fish for fishermen for a per pound service charge.
- ▷ **Covered Containers:** Treat fish waste like any other solid waste that requires covered containers.
- ▷ **Fish Cleaning Provisions in Customer Contracts:** Include requirements for cleaning fish in the customer's environmental contract.
- ▷ **Fish Composting:** Compost fish waste where appropriate by mixing it with peat moss or wood chips to make garden mulch. This quickly produces an excellent compost for use in the marina gardens without any odor problem. For more ideas about composting fish waste, refer to The Leaf and Yard Waste Composting Guide found on the Massachusetts Department of Environmental Protection's website at www.state.ma.us/dep/recycle/files/leafguid.doc.
- ▷ **Fish Cleaning Stations:** Towns should also consider installing fish cleaning stations at public boat launch ramps and fishing piers.

Useful Contacts

Call Massachusetts Division of Marine Fisheries (DMF) at (617) 626-1520 to locate your nearest DMF regional office for assistance.



FISH WASTE MANAGEMENT

Complete this checklist if your customers clean fish at the marina.

Activities that occur at the facility: ☐ Fish Brought to the Dock ☐ Fish are Cleaned

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
Offshore Cleaning and Disposal			4-59	
Fish Cleaning Area and Rules			4-59	
Fish Cleaning Staff			4-59	
Covered Containers			4-59	
Fish Cleaning Provisions in Customer Contracts			4-59	
Fish Composting			4-59	
Fish Cleaning Stations			4-59	

NOTES:



4.12 Stormwater Management

Stormwater runoff is the water from rain and melting snow that flows across the land to local water bodies. As this water runs off the land, it has the potential to pick up pesticides, silt, oil, and other contaminants along the way. Stormwater management aims to reduce the impacts of stormwater runoff pollution on coastal and inland waters. Stormwater management strategies can include regular operations, maintenance, and future improvements to the structural drainage system.

Many stormwater improvements are inexpensive, some can be costly, while others cost nothing more than the time it takes to let people know what they need to do. One of the most important things a marina can do to prevent stormwater pollution is to inventory its drainage system, identify potential sources of pollutants that may be washed into the system, and make simple improvements.

BMPs for reducing stormwater pollution can include either:

- practices that prevent pollution from coming into contact with rain water, or
- practices that clean polluted stormwater before it enters coastal waters.

Many of the practices discussed in previous chapters, such as hull maintenance and fueling, prevent pollution from coming into contact with rain water. The practices discussed below more generally focus on operations and maintenance, and future improvements to the site's drainage system. See *Stormwater Management Volume Two: Technical Handbook* available at www.state.ma.us/dep/brp/ww/wwpubs.htm#storm for more information on BMPs.

Hazard Alert

Planning for control of stormwater pollution from boat repair, maintenance work, and fueling is required by federal law under EPA's Nonpoint Pollution Discharge Elimination System (NPDES) Program.

LEGAL REQUIREMENTS

The following laws apply to stormwater pollution. All marinas should refer to the summaries of these programs provided in Chapter 6.

- National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit (MSGP) for Industrial Activities
- Massachusetts Wetlands Protection Act, Stormwater Management Policy
- Massachusetts Clean Waters Act

Refer to Stormwater Management Volumes One and Two for more detailed information on the Massachusetts Stormwater Management Program. This document can be downloaded from the DEP website at www.state.ma.us/dep/brp/ww/wwpubs.htm#storm.

Best Management Practices

Proper Operations and Maintenance

A marina can act to prevent stormwater pollution by reducing pollutant loading in surface runoff. The following BMPs will help accomplish this goal.

- ▷ **Catch Basin Maintenance:** If your marina parking lot contains a traditional drainage system with catch basins, manholes, and subsurface drainage pipes, have them inspected twice annually and clean them out when needed. If the sump is half full, the sediment should be removed.
- ▷ **Street Sweeping:** Frequently sweep streets, parking areas, boat maintenance areas, and other paved surfaces, including walkways, to maintain a clean marina. Some marinas employ small mobile vacuum sweepers to daily drive around their paved areas. However, regular sweeping with a dust pan and broom, particularly near catch basins, can be just as effective.
- ▷ **“Don’t Dump” Stenciling:** Stencil “Don’t Dump” signs next to catch basins. This will help inform the general public that catch basins are directly connected to coastal waters. Call a local environmental group to find out more about storm drain stenciling.
- ▷ **Prohibit Hosing Down Hard Surfaces for Cleaning:** Prohibit the practice of hosing down pavement, sidewalks, and other hard surfaces for the purpose of cleaning them. This method will clean pollutants off the surface, but wash them into coastal waters.

Facility Improvements

Consider making improvements to the facility site to decrease drainage impacts on coastal waters. While these improvements need to be planned and funding mechanisms developed, these improvements will be investments in your business. The following BMP’s include some typical design modifications that can improve your marina’s appearance while reducing impacts on coastal waters.

- ▷ **Vegetated Buffers:** Plant vegetated strips between the developed area and the water. This will reduce impervious area while making your facility more attractive. You may be able to direct surface runoff to vegetated areas for treatment. A 25-foot strip is optimum for water quality control and infiltration; however, any vegetative strip is an improvement. The plants you use will depend on site-specific considerations. Consult with a nursery to select shrubs that look nice, but are hardy, low maintenance, and fit the intended purpose of the buffer. Grass is effective for trapping sediment particles. Bayberry is a good choice because it is a native shrub that survives well near the ocean and requires little maintenance. Evergreen shrubs such as holly and arborvitae are hardy, low maintenance, and provide screening. If runoff is directed to a vegetated area, water tolerant plants such as cattails or sweet pepperbush may



Vegetation between parking areas and the water provide buffers that remove pollution.

For More Info

Contact the University of Massachusetts Cooperative Extension Office at (413) 545-4743, or a local garden center or garden club for advice on selecting plants that will thrive at your marina.

be appropriate selections. These changes will likely improve the look of your marina and could enhance your business by attracting more customers.

- ▷ **Reduce Pavement Area:** Remove pavement where it is not necessary and switch to grass or gravel.
- ▷ **Move Parking Areas:** If possible, relocate parking areas away from the water. There may be opportunities to move parking off-site, which will allow you to maximize your facility space and improve its visibility.

CONTROL STORMWATER

Vegetated swales are narrow grassed areas that collect stormwater, slow its flow and collect sediments, and then allow the stormwater to discharge off-site or just to soak into the earth. They can be designed with deep sandy beds underlain by a perforated pipe, which promotes infiltration of water into the swale and then quickly drains the clean water. In most coastal sections of Massachusetts, the soil is very sandy and has excellent drainage, which may make the use of underground drain pipes unnecessary. Other designs may be used depending on the facility site. The benefit of vegetated swales is that they can be squeezed along the margins of work sites and incorporated into landscaping improvements that help make the facility more attractive to customers.

Improving the Site Drainage System

Consider retrofitting your existing site drainage system with traps or filters that will clean runoff flowing from the marina. These practices have long been incorporated into site planning and highway/roadway design to prevent flooding, erosion, and sedimentation. Civil engineering firms with experience in site development can design these types of systems into your site if you plan to make any major facility modifications. Some of these systems can be expensive (see vendor cost information), so start by creating a specific account for this improvement and develop a dedicated environmental fee to pay for the cost. For even the most dedicated Clean Marina operator, this may be a long-term improvement process. Examples of subsurface structural measures include:

- ▷ **Oil/Grit Separators:** These devices are placed in the drain line to remove oil and sediment. Water passes through several chambers, trapping oils that float on top of the water and sediments that fall out. These devices should be maintained (inspected and cleaned out, if necessary) annually.
- ▷ **Leaching Basins:** These basins generally replace or modify your existing catch basins by adding an area of crushed stone to help filter stormwater. Leaching basins need to be maintained annually or they will not function properly.
- ▷ **Filters in Catch Basins:** Filter screens can be placed under catch basin grates to collect large sediment particles. This approach is a relatively cheap fix, but the screens do need to be inspected after every storm.

- ▷ **Sand Filters:** Sand filters collect runoff and filter it through a sand medium, which is effective in removing sediments and oils. Numerous designs are available. Some use small check dams to slow surface flow and promote infiltration. Others are underlain by a perforated PVC drain pipe wrapped in geotextile fabric to move the treated runoff off-site. Where soils are porous, the runoff will infiltrate into the subsoils.

LOCAL EXAMPLE

A sand filter system was installed at the **Hingham Town Beach** parking lot when the town prepared the area for regrading and paving. The system employs check dams and a PVC drain to control runoff before and after the sand filter cleaning system. Call the Hingham Conservation Commission office at (781) 741-1410 for more information.

- ▷ **Proprietary Technologies:** Several new technologies for stormwater control have been developed by private companies and are in use in Massachusetts. Some systems have been certified by the Massachusetts Strategic Envirotechnology Partnership (STEP) and as a result are approved for meeting stormwater treatment requirements of the Massachusetts Stormwater Management Policy. Over time, other products may become available, so call the Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways at (617) 292-5695 for updates. Some vendors of stormwater technologies are listed in Appendix C.

Useful Contacts

1. The CZM Coastal Pollutant Remediation (CPR) Program provides financial assistance for remediating stormwater pollution from municipal marinas. CZM can also provide technical assistance to marinas to help solve stormwater problems. Call CZM at **(617) 626-1200**, or look on-line at www.state.ma.us/czm/.
2. Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways can provide you with regulatory information about the stormwater management policy. Call **(617) 292-5695** or see their website at www.state.ma.us/dep/brp/www/rpwwhome.htm.
3. US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Program — Call **(617) 918-1615** for information about the NPDES Program and requirements or look on-line at www.epa.gov/owm/sw/industry/msgp.
4. Boston Water & Sewer has new requirements for oil & grit separators for all new and rehabilitated sewer lines. Call **(617) 330-9400** for more information.
5. Center for Watershed Protection (CWP) — a private organization that works with government and business to develop scientifically sound solutions for protecting urban watersheds. Call (410) 461-8323 to discuss your stormwater problems, or log on to CWP's web site at www.cwp.org.

For More Info

STEP is a unique collaboration of the Executive Office of Environmental Affairs and the University of Massachusetts system. STEP effectively helps develop and promote technology-based solutions to environmental challenges across the Commonwealth. For more information about STEP, call (617) 626-1000 or look on-line at www.state.ma.us/envir/step.htm.



STORMWATER MANAGEMENT

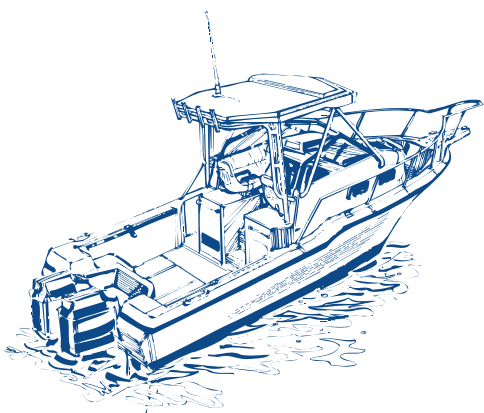
All marinas generate stormwater pollution, and therefore, all should complete this checklist.

The facility contains: ☐ Paved Areas such as Lots and Walkways ☐ Subsurface Drainage Structures

Check either the "Yes" or "No" column to indicate if you are using each of the BMPs listed below. If the BMP does not apply (you are using a different BMP or the activity does not occur at your marina), put "NA" in the "Yes" column. In the "Action" box, list the next steps for all BMPs where you have checked the "No" column.

BMP	YES/NA	NO	Refer to Page	Action
Catch Basin Maintenance			4-64	
Street Sweeping			4-64	
"Don't Dump" Stenciling			4-64	
Prohibit Hosing Down of Hard Surfaces for Cleaning			4-64	
Reduce Pavement Area			4-64	
Move Parking Area			4-64	
Vegetated Buffers			4-64	
Oil/Grit Separators			4-65	
Leaching Basins			4-65	
Filters in Catch Basins			4-65	
Sand Filters			4-66	
Proprietary Technologies			4-66	

NOTES:



Safety Courses

The following organizations, each certified by the U.S. Coast Guard for on-the-water training, offer state- and nationally-approved boating safety classes:

U.S. Coast Guard Auxiliary
(800) 848-3942, ex. 8309
www.uscgaux.org/-013

U.S. Power Squadrons
Locations throughout Massachusetts, including Hingham, Orleans, and Salem
(800) 336-2628
www.usps.org

New England Maritime
Hyannis, Massachusetts
(508) 790-3400
www.nemaritime.com

Boatwise
South Hampton, New Hampshire
(800) 698-7373
www.boatwiseclasses.com

Vineyard Maritime
Vineyard Haven, Massachusetts
(508) 693-7030
www.vineyardmaritime.com

4.13 Boat Operations

Boats allow people to explore the backwaters of marshes, visit stretches of barrier beach miles from the nearest road, and reach rocky islands offshore. Many of these more remote places contain healthy marine habitats that provide feeding, breeding, and other required life functions. Improper use of boats in these areas can cause harm to these healthy habitats.

Destruction of eelgrass is an example of the damage some boats can cause. Eelgrass beds form in sandy areas of only a few feet of water at low tide. These beds are the nursing grounds for many species of fish. While the entire plant is covered completely by water for most of its life, it can only develop in clear, shallow waters where sunlight can penetrate and thereby allow for photosynthesis. The top part of the eelgrass plant floats on the water's surface at low tide and can often be seen by boaters who are cautiously navigating through shallow waters. At mid to high tide, however, the extended plant is stretched out in the water column to within a few feet of the surface, but is often not visible to boaters. Hidden just below the surface, eelgrass is at risk of being damaged by boats that travel through shallow coastal waters. Boat props can tear up eelgrass beds and completely destroy the habitat by uprooting plants. This is of particular concern since potential eelgrass habitat has dramatically decreased statewide due to poor water quality and increased turbidity that has limited light penetration.

Salt marsh visibly forms the border between the land and the sea. At low tide, it is entirely exposed. At high tide, the upper parts of the salt marsh plants extend up above the water in the high marsh alerting boaters to its presence. Like eelgrass beds, salt marshes are important food and nutrient sources for fish and other marine animals. Careless driving of boats over salt marsh, particularly at mid to high tide, can cause damage to the marsh from the propeller. Additional damage is caused to salt marshes by boat wakes. Because salt marsh generally forms in low wave energy areas, such as protected bays and coves and behind barrier beaches, it has not evolved to withstand extended wave action. Regular boat traffic in a salt marsh will cause erosion, which can lead to sediment filling of boat channels and to extensive salt marsh destruction over time.

To keep your marina clean and reduce impacts to coastal waters, it is important to provide boaters with the right tools and information so they can do their part. To help boaters understand potential impacts of their boating behavior on marine habitats, distribute the boater fact sheet on this subject from the back inside pocket of this guide. The following boating tips are discussed in the fact sheet as part of the Clean Marina Philosophy.

LEGAL REQUIREMENTS

The following regulations apply to boating operations.

- Massachusetts Boat Operations Restrictions [MGL c. 90B, ss. 8-12 and 323 CMR 2.00 and 4.00].

Best Management Practices

Oftentimes, boaters may not know how their boat operations can degrade the marine habitats. By passing along the following tips to your customers, you can inform them about simple ways to protect the coastal environment that they enjoy.

- ▶ **Observe No Wake Zones:** In No Wake Zones, boat speed must be decreased to the point where the boat does not produce a wake (or waves). These zones are often located in boating channels where there is a significant amount of boat traffic, in areas where boats are docked and moored, and in salt marsh areas where wakes cause erosion which can lead to boat channel filling. Local enforcement officials monitor adherence to no wake laws and issue citations when the rules are not followed.
- ▶ **Promote Safe and Responsible Use of Boats:** Encourage all boat operators (including personal watercraft riders) at your marina to complete an approved boating safety course of training. Provide safety and legal handouts such as *The Massachusetts Boater's Guide* for easy reference.
- ▶ **Abide by Personal Watercraft Laws:** Make sure personal watercraft (PWC) riders know that regular operation of PWCs within 150 feet of shore is prohibited under Massachusetts State Law.
- ▶ **Avoid Boating in Shallow Waters:** Inform boaters about the environmental damage caused by boating in shallow waters, particularly to eelgrass. As described above, eelgrass is particularly at risk for damage by boat propellers because it grows in shallow waters. Local marine resource departments might consider posting signs informing boaters about sensitive areas.
- ▶ **Do Not Speed Near Salt Marsh:** Because salt marsh naturally forms in low energy environments away from wave action, it is particularly susceptible to boat waves. Regular boat waves will lead to erosion and destroy salt marsh.
- ▶ **Sell Four-Cycle Engines:** If your marina sells boat engines, sell the most advanced and cleanest four-cycle engines available. The newest engines are clean burning and fuel efficient, which saves money for fuel costs and keeps the air and water clean. These engines meet 2006 EPA standards.

Useful Contacts

1. Massachusetts Division of Environmental Law Enforcement (DFWELE)—
Call DFWELE at **(617) 727-3905** for information about boating rules and regulations.
2. State Boater Safety Courses—For further information regarding the Massachusetts' recreational boating safety program contact the Safety Bureau at **(617) 727-8760**. Another source for boating safety information is BOAT/U.S. Foundation at **(800) 336-2628** or **www.state.ma.us/dfwele/dle/DLE_SAF.HTM**.
3. Recent changes in Massachusetts Boating Law are summarized at **www.state.ma.us/dfwele/dle/DLE_UPD.HTM**.

This checklist should be completed by all marinas.

BMP	YES/NA	NO	Refer to Page	Action
*Observe No Wake Zones			4-70	
Promote Safe and Responsible Use of Boats			4-70	
*Abide by Personal Watercraft Laws			4-70	
Avoid Boating in Shallow Waters			4-70	
Do Not Speed Near Salt Marsh			4-70	
Sell Four-Cycle Engines			4-70	

NOTES:

[illegible]