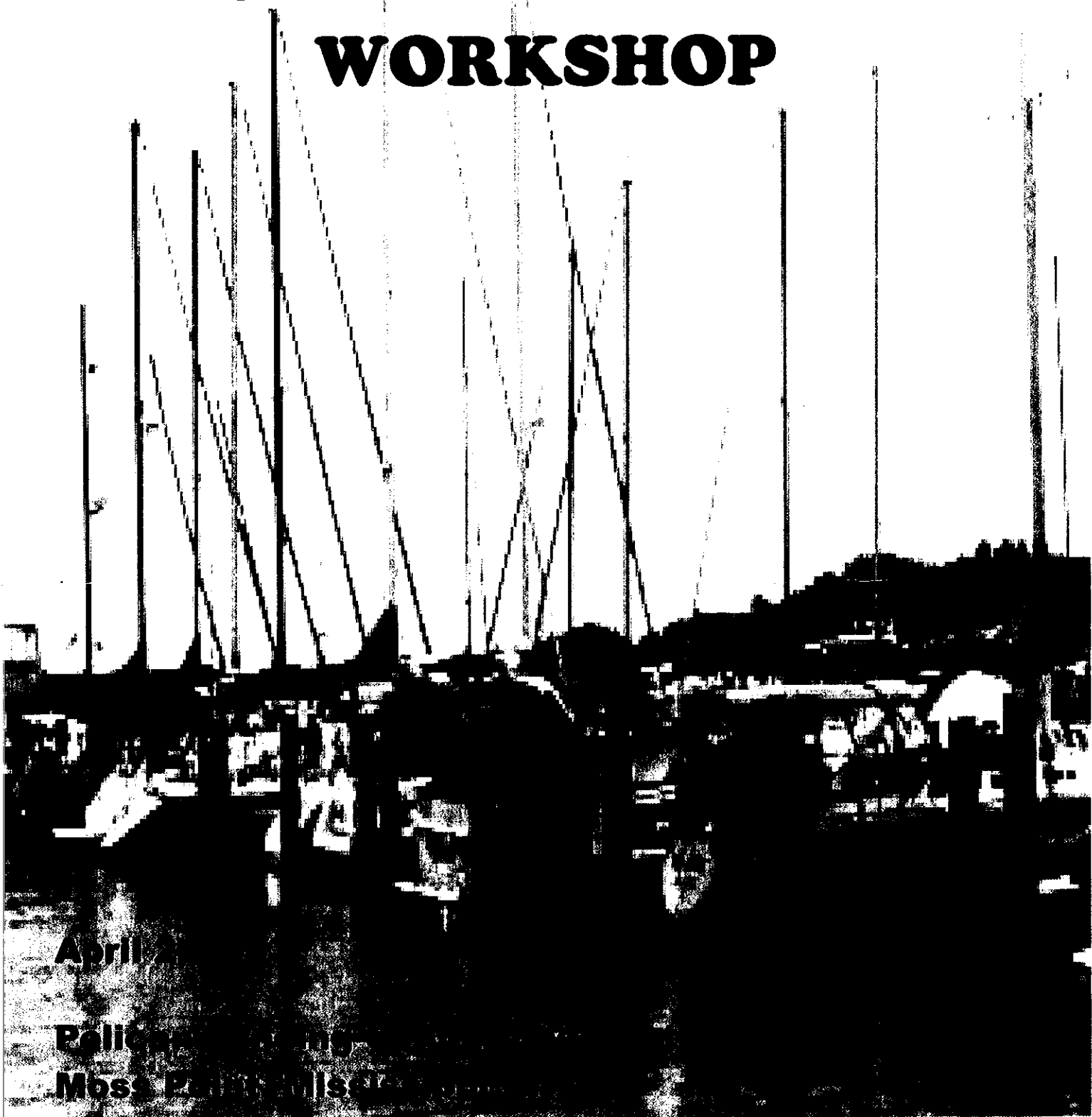


# ALABAMA-MISSISSIPPI SPRING MARINA WORKSHOP



April 2-4

Pollock Springs

Moss Point, Mississippi

## Welcome Marina Owners and Operators

On behalf of all the sponsoring agencies and businesses listed below, we thank you for participating in the Alabama-Mississippi Spring Marina Workshop. Many of you have traveled a long distance to attend this workshop and we intend to make it worth your while.

What led to this workshop? Over the last few years there have been many individual marinas, agencies, and organizations that have shown a strong interest in seeing the marina industry along the bi-state coasts and waterways grow and evolve into a stronger and more cohesive group. There also has been movement in both states associated with starting a clean marina program like those in the 10 other coastal states including Florida and Texas. Designated Clean Marinas are recognized by the boating community as well as business community for their extra effort toward environmental stewardship. And finally, there has been a need expressed for more interaction and information flow between marinas, government agencies, and industry to help marinas meet their regulatory requirements and improve their economic status.

Active participation in this workshop will assist in resolving these issues. The workshop isn't intended to be a one-way flow of information from the speakers to you. The presentations are meant to give you examples of how other states have addressed these three issues—how they went about developing their programs, who took the lead, what worked and what didn't work. We will then open up the floor for questions, comments and discussion so that we understand your position and concerns regarding each issue. Many of those who have supported the workshop and shown interest in addressing these issues will take your input and develop a strategy for taking each issue to the next step. The ultimate goal is to help the marina community become stronger and more economically sound.

We hope you enjoy the workshop and find it both educational and valuable.

### **A special thanks to our workshop sponsors:**

Alabama Coastal Nonpoint Pollution Control Program coordinated by  
ADEM, Coastal Programs, and ADCNR—State Lands Division, Coastal Section  
Auburn University Marine Research & Extension Center  
Byfield Marine Supply LLC  
Centek Marine Environmental Products  
Hancock County Board of Supervisors  
Mississippi-Alabama Sea Grant Consortium  
Mississippi Department of Marine Resources  
Mobile Bay National Estuary Program  
Waring Oil Company

# AL/MS Spring Marina Workshop

## AGENDA

	Session	Speaker
8:00-8:30	Registration	
8:30	Introduction/Workshop Goals	LaDon Swann, Director Mississippi-Alabama Sea Grant Consortium.  Hank Burch, Natural Resource Planner AL Dept. of Conservation & Natural Resources
8:45	Clean Marina Background/ TX Clean Marina Program	Dwayne Hollan Texas Sea Grant Texas Clean Marina Program
9:15	TVA Clean Marina Program	Linda Harris Tennessee Valley Authority TVA Clean Marina Initiative
9:45	Florida Clean Marina Program	Don Jackson Florida Sea Grant Florida Clean Marina Program
10:15	Break	
10:45	Tennessee Clean Marina Operator	Dalan Courtney Shanghai Marina LaFollette, TN
11:00	Florida Clean Marina Operator	Rocky DeSimone Pensacola Marine Complex Pensacola, FL
11:15	Development of a AL-MS Clean Marina Program	Tim Reid Mississippi-Alabama Sea Grant Consortium
11:30	Q&A Session/Discussion about speaker presentations and the proposed AL/MS Clean Marina Program	
12:00	Lunch	
1:00	Benefits of Marina Associations	Facilitated Discussion on Forming a Bi-state Marina Association
1:40	Break	
2:00	Financial Incentives and Opportunities for Marina Operators	Panel Presentation on Incentives Offered through Other Clean Marina Programs followed by Facilitated Discussion
2:45	Q&A Session/Discussion	
	Adjourn	



# TENNESSEE VALLEY CLEAN MARINA PLEDGE

The Tennessee Valley Clean Marina Initiative is a voluntary program established to promote environmentally responsible marina and boating practices. Tennessee Valley Clean Marinas are recognized as leaders in improving water quality and preserving an important resource, the Tennessee River.

As the first step in achieving Clean Marina status,

---

(Marina)

pledges its commitment to controlling pollution and erosion at their facility and to promoting water-protective behavior with the boating public.

) By pledging our support, we will focus on improving water quality associated with

- Sewage management
- Oil and gas control
- Solid waste and petroleum recycling/disposal
- Vessel maintenance and repair
- Marina siting, design and maintenance
- Stormwater management and erosion control

We are dedicated to the issues identified in the Tennessee Valley Clean Marina Initiative and will work toward attaining Tennessee Valley Clean Marina status. Our goal is to adopt an environmental action plan and attain Tennessee Valley Clean Marina status within two years of the date below.

---

(Marina Operator)

---

(Date)

---

(TVA Watershed Team Representative)

---

(Date)

# Tennessee Valley Clean Marina Checklist



Marina Name: \_\_\_\_\_ Marina Website: \_\_\_\_\_

Reservoir: \_\_\_\_\_ River Mile: \_\_\_\_\_

Owner and/or Manager: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail Address: \_\_\_\_\_

The first step toward Clean Marina designation is to sign the pledge card included in the introductory material delivered to your marina. These are also available at your nearest TVA Watershed Team office. In signing the pledge card, you commit "to controlling pollution and erosion at your facility and to promoting water-protective behavior with the boating public" as you work toward attaining Tennessee Valley Clean Marina status. Return a copy of the pledge card to the appropriate TVA Watershed Team and keep the original to display at your marina.

The second step is to review this Clean Marina Checklist carefully to understand the practices supported by the program. If you have any questions, contact your TVA Watershed Team for assistance.

Make a preliminary assessment of your marina using the Clean Marina Checklist. At the same time, consider which actions you need or want to select in order to reach Clean Marina status. When you have completed your marina assessment, contact your TVA Watershed Team to schedule a visit. With your checklist to guide you, review your assessment with the team member who visits, identify areas where improvements are indicated, and work with them to develop your plan of action for attaining Clean Marina status. Schedule a revisit when you believe all your qualifications have been met.

Tennessee Valley Clean Marina designation will be awarded to those marinas achieving 75% of the actions identified in each subject area, including ALL applicable federal, state and local regulations identified as required by the symbol **R**.

## Section 1 Sewage Management

Do you:	Yes	No	N/A
1. Comply with federal, state and local wastewater outfall and septic system regulations? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. In "No Discharge" reservoirs, require that marine sanitation device (MSD) Type III holding tanks be pumped into sewage treatment systems and no sewage be discharged overboard? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Keep inventory records of all sewage pumpout users, dates, and volumes pumped? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. In "Discharge" reservoirs, require that no untreated or improperly treated sewage be discharged overboard? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have a pumpout system (fixed point system, portable/mobile system, or dedicated slipside system) that meets the needs of your marina users either free or at a reasonable cost, or have an agreement with a mobile pumping service for servicing boats in your marina?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



- |   |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
| 6. Have a dump station or a wand attachment to empty portable toilets?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Keep pumpout stations clean and easily accessible and/or have marina staff do pumpouts?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Regularly inspect and maintain your sewage facilities?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Hold MSD inspections periodically at your marina, assuring that MSDs are properly installed and functioning; appropriate chemicals are being used in MSDs Types I and II if they are approved for use in your reservoir; and y-valves are tied down so no raw sewage may be released into the water? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Maintain records of MSD inspections, noting boat owners, registration numbers, and all violations identified on date of inspection?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Designate your marina as a "No Discharge" marina and prohibit sewage discharges within your marina basin/harbor limits?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Establish equipment requirement policies that prohibit the use of y-valves on MSDs, such as installation of a tie-down?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Have clean, functioning restrooms available 24 hours per day?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section 1 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 (Goal=75% or more)

## Section 2 Fuel Management

Do you:

- |   | Yes                      | No                       | N/A                      |
|---|--------------------------|--------------------------|--------------------------|
| 1. Comply with all federal, state, and National Fire Protection Association (NFPA) petroleum handling and storage requirements? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Operate an underground storage tank (UST)? If yes, do you have an annual state permit for your UST posted at your facility and are you in compliance with all UST state regulations? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Operate an aboveground storage tank (AST) larger than 660 gallons or a UST larger than 42,000 gallons? If yes, do you have a Spill Prevention, Control, and Countermeasure (SPCC) Plan that was prepared within the past 3 years and has been signed and stamped by a professional engineer (PE)? <b>R</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Prohibit the use of detergents and emulsifiers on fuel spills? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Regularly inspect, maintain, repair, and replace fuel hoses, pipes, pumps, and tanks? <b>R</b>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Use automatic shutoffs on fuel lines and at hose nozzles to eliminate fuel loss? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Remove old style fuel nozzle triggers that are used to hold the nozzle open without being held? <b>R</b>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Have a pump delivery rate of less than 10 gallons per minute?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Have easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Have personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Provide "gas guzzlers," nozzle rings, or small petroleum absorption pads to patrons for use while fueling to catch splashback and drips?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Have staff pump fuel during regular operating hours?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section 2 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 (Goal=75% or more)



### Section 3 Solid Waste and Petroleum Recycling/Disposal

**Do you:**

- |  | Yes                      | No                       | N/A                      |
|--|--------------------------|--------------------------|--------------------------|
| 1. Store, use, and dispose of non-recyclable hazardous waste in accordance with state and federal regulations? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Provide trash cans, bins, and dumpsters that are covered, well-marked, and convenient?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Minimize the use of hazardous products and replace them with more environmentally protective alternatives at your marina?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Have and enforce a policy for handling polluters?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Provide materials needed for spill-proof oil changes?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Provide facilities for collecting recyclable liquids (e.g., oil)?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Provide facilities for collecting solid recyclables such as aluminum, glass, and plastic, and discourage the use of glass by not selling it in your marina store? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Conduct routine trash pick-up within your marina and along your shoreline?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Confine fish scrap disposal to areas and methods that do not impair water and air quality?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section 3 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
**(Goal=75% or more)**

### Section 4 Vessel Operation, Maintenance, and Repair

**Do you:**

- |   | Yes                      | No                       | N/A                      |
|---|--------------------------|--------------------------|--------------------------|
| 1. Ensure that the boats in your harbor meet the TVA regulations for navigability? <b>R</b>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Restrict engine maintenance activities to designated work areas where pollutants are contained and properly disposed? <b>R</b>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Contain dust from sanding? <b>R</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Contain debris from blasting? <b>R</b>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Buy and use detergents and cleaning compounds that will have minimal impact on the aquatic environment?                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Minimize the impacts of wastewater from pressure washing by providing an area with pervious surface or drain wastewater to sewer system? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Use long-lasting and low-toxicity or nontoxic anti-fouling paints?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Change engine oil using non-spill vacuum-type systems for spill-proof oil changes and suctioning oily water from bilges?                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Use antifreeze and coolants (pink) that are not hazardous and less toxic to the environment?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Discourage in-water maintenance such as pressure washing or hull scraping?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Clean hull maintenance areas immediately after any maintenance activity to remove debris, and dispose of collected material properly?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Establish and enforce no-wake zones in your harbor limits to decrease turbidity, shore erosion, and damage to marinas?                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section 4 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
**(Goal=75% or more)**



## Section 5 Marina Siting, Design, and Maintenance

Do you:	Yes	No	N/A
1. Have accessible, current, written emergency response plans for likely threats? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Maintain files of material safety data sheets (MSDS) as required by the Occupational Safety and Health Act (OSHA) for any chemicals kept on site? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Comply with TVA and other federal flotation devices and material/regulations? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Keep boats, marina facilities, and other moored craft within harbor limits designated by TVA at times when the reservoir is at or near summer pool? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Keep marina structures and facilities in good condition, repairing or removing dilapidated facilities? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have TVA permits for all structures and facilities in your harbor? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Have a clean environmental record with all applicable agencies (no pending citations or Notices of Violation)? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Use environmentally neutral materials that will not leach toxins into the water for new marina construction and additions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Minimize adverse effects to aquatic life and habitats during construction and expansion by maintaining a vegetation buffer and using appropriate best management practices (BMPs) such as silt booms?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Maximize the flushing effects of currents at your marina to refresh water regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Maintain your marina basin during the drawdown to remove hazards, accumulated litter, and potential pollutants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Use mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Practice water conservation by regularly inspecting for leaks and repairing them, and installing low-flow shower heads and toilets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Use upland, inland, and contained areas for storage and maintenance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Use environmentally friendly lawn and garden products or avoid hazardous chemicals altogether?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 5 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_%  
 (Goal=75% or more)

## Section 6 Stormwater Management and Erosion Control

Do you:	Yes	No	N/A
1. Have a general NPDES permit for (stormwater runoff) discharges from marinas related to sanding, painting, repairing or maintaining boats? <b>R</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Use native herbs and grasses, wetlands, and aquatic vegetation wherever possible to protect shorelines, dissipate wave energy, filter pollution, and provide wildlife habitat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have a stormwater management system in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Use riprap revetment or biostabilization instead of a solid vertical bulkhead where shorelines need stabilization and where space and use allow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Plant grass, herbs, or shrubs between impervious areas and the marina basin to retain and filter pollutants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have limited areas of impervious pavement and use pervious pavement or pavement tile where feasible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





7. Have oil and grit separators installed in storm drains to capture petroleum spills and coarse sediment?
8. Use catch basins where stormwater flows to the marina basin in large volumes?

Section 6 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 (Goal=75% or more)

**Section 7 Public Education**

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Do you:	Yes	No	N/A
1. Have bulletin boards for environmental education messages and idea sharing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Educate and train marina staff to do their jobs in an environmentally conscious manner and to be good role models for marina patrons?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Use signs and/or hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how your patrons can protect the environment and practice clean boating behavior?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Have language in customer contracts to ensure that tenants use designated areas and clean boating techniques when maintaining their boats and will comply with the marina's BMPs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have signs posted that require proper usage of your pumpout system or dump station (or have signs posted directing patrons to the nearest pumpout facility)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Teach boaters how to fuel boats to minimize fuel spills and have easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Have signs on storm drains instructing patrons to not dump waste in or around the drains?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Educate boaters about good fish cleaning and disposal practices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Recommend vessel bottom coatings with minimal environmental impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Sell a full line of environmentally sound products in your company store, and educate/encourage your marina users to select them over more harmful products?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Hold Clean Boating Campaigns at your marina, or offer fun-directed contests, quizzes, etc. for marina patrons which reinforce desired behavior, and award prizes such as absorbent pads, MSD chemicals, etc. which encourage that behavior?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 7 Score: Yes responses \_\_\_\_\_ ÷ Number of applicable items \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 (Goal=75% or more)

**Other Considerations**

Does your marina have any other environmentally friendly practices or policies that you feel should be taken into consideration in being designated a Tennessee Valley Clean Marina, or that would be useful to other marina operators working on Clean Marina goals? If so, briefly describe them below for further discussion.

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**Tennessee Valley Authority Watershed Teams**

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**Upper Holston Watershed Team**

Suite 218  
4105 Fort Henry Drive (HFB 1A-KPT)  
Kingsport, TN 37663  
423-239-2000

**Cherokee-Douglas Watershed Team**

2611 W. Andrew Johnson Highway (WPB 1A-MOT)  
Morristown, TN 37814  
423-587-5600 or 423-632-3791

**Clinch-Powell Watershed Team**

P.O. Box 1589 (ABL 1A - N)  
Norris, TN 37828  
865-632-1539

**Melton Hill Watershed Team**

2009 Grubb Road (LM 1A-MHH)  
Lenoir City, TN 37771  
865-988-2440

**Little Tennessee Watershed Team**

Suite 300  
804 Highway 321 North (HWY 1A-LCT)  
Lenoir City, TN 37771  
865-988-2420

**Hiwassee Watershed Team**

221 Old Ranger Road (MLO 1A-MRN)  
Murphy, NC 28906  
828-837-7395

**Chickamauga-Nickajack Watershed Team**

1101 Market Street (PSC 1E-C)  
Chattanooga, TN 37402  
423-~~697~~-4178

**Guntersville Watershed Team**

2325 Henry Street (WTR 1A-CVA)  
Guntersville, AL 35976  
256-571-4280

**Wheeler Watershed Team**

Reservation Road, (SB 1M-M)  
P.O. Box 1010  
Muscle Shoals, AL 35662  
256-386-2560

**Pickwick Watershed Team**

Reservation Road (SB 1H-M)  
P.O. Box 1010  
Muscle Shoals, AL 35662  
256-386-2560

**Elk-Duck Watershed Team**

P.O. Box 1010 (CTR 2U-M)  
Muscle Shoals, AL 35662  
256-386-2568

**Kentucky Watershed Team**

202 W. Blythe Street (LM 1A-PAT)  
P.O. Box 280  
Paris, TN 38242  
731-641-2000



# Tennessee Valley Clean Marina Guidebook



**A product of the Tennessee Valley  
Clean Marina Initiative**

**Prepared by  
Tennessee Valley Authority  
Chattanooga, Tennessee**

**2001**





The Tennessee Valley Authority developed and authored this guidebook to support marina operators and owners who are voluntarily striving to protect the water resources of the Tennessee Valley. This manual is intended as an educational tool and reference for reducing water pollution and erosion from marina and boating activities. It does not constitute a complete reference to State, Federal, or local laws. Relying on the information in this book will not protect you legally. It is not intended to be legal advice, and should not be relied upon as such. This book may not be relied upon to create a right or benefit substantive or procedural, enforceable at law or in equity by any person.

Tennessee Valley Authority, contributing agencies, organizations, and individuals do not assume any liability for the accuracy or completeness of the information in this publication. Inclusion in this book is not an endorsement of the companies listed. Final determination of the proper handling and disposal of waste is the sole responsibility of the generator.


For more information on the Tennessee Valley Authority, please visit the website: [www.tva.gov](http://www.tva.gov).

**Tennessee Valley Authority  
Resource Stewardship  
1101 Market Street, PSC 1E  
Chattanooga, Tennessee 37402-2801  
423.876.4178**



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**NOTE: ALL applicable federal, state, and local regulations identified as required by the symbol .**



## Acknowledgments

The Tennessee Valley Clean Marina Guidebook was developed by Linda B. Harris with support from the people and publication resources of the Maryland Clean Marina Initiative, the Florida Clean Marina Program, EPA's National Management Measures to Control Nonpoint Source Pollution From Marinas and Recreational Boating, and the expertise available through the National Clean Boating Campaign.

A special thank you goes to the many subject area experts in Tennessee Valley Authority and within our supporting agencies and organizations who provided their time and effort to review, edit, and discuss the Guidebook. Special thanks also to the TVA Watershed Team members who helped assure that the program was appropriate and applicable from one end of the Valley to the other.

Agencies and organizations working cooperatively to support development and implementation of the Tennessee Valley Clean Marina Initiative include:

Alabama Department of Environmental Management  
Alabama Marina Police  
The Assistant United States Attorney General  
Boone Lake Association  
Boone Watershed Partnership  
Environmental Crimes Joint Task Force  
Federal Bureau of Investigation, Knoxville Division  
Friends of Norris Lake  
Johnson City Clean Team  
Johnson City Power Squadron  
Keep Bristol Beautiful  
Kentucky Marina Association  
Norris Lake Dock Owners Association  
Project R.O.S.E. (Recycled Oil Saves Energy)  
Tennessee Basin Clean Water Partnership  
Tennessee Marina Association  
Tennessee Wildlife Resources Agency  
Tim's Ford Council  
Tim's Ford State Park  
TVA Police  
United States Coast Guard  
USDA Forest Service

And numerous marina managers and owners committed to protecting the water resources of the Tennessee Valley.



## Introduction

The Tennessee Valley Clean Marina Initiative (TVCMI) is a voluntary program developed and implemented by Tennessee Valley Authority (TVA) and its watershed partners to promote environmentally responsible marina and boating practices. This program, established in support of the National Clean Boating Campaign, will help marina operators protect the very resource that provides them with their livelihood: clean water. It is designed as an ongoing program to reduce water pollution and erosion in the Tennessee River watershed. The effort will encourage boater education, coordination among state agencies and better communication of existing laws, as well as offer incentives for creative and pro-active marina operators.

The TVCMI includes seven *management measures* that were identified by marina operators as priorities:

- Sewage management
- Fuel Management
- Solid Waste and Petroleum Recycling and Disposal
- Vessel operation, maintenance, and repair
- Marina siting, design, and maintenance
- Stormwater management and erosion control
- Public education

Each management measure is discussed in detail in one of the sections of this guide. Each section offers several *best management practices* (BMPs), individual activities or structures that can be used alone or in combination to achieve the management measures. The BMPs include both pollution prevention practices and source reduction practices.

### TYPES OF PRACTICES ADDRESSED THROUGH THE CLEAN MARINA INITIATIVE

*Pollution prevention practices* occur at the spot where the pollutants are created or used. Pollution prevention measures include all practices that can prevent pollution from either being created or being released into the environment. They are often the first, best, least costly, and most effective ways to prevent contaminants from entering the water.

*Source reduction practices* occur after pollutants have been created and entered the environment. Source reduction practices are those used between where pollutants are released and the surface water. They include practices that capture, filter, screen, trap, contain, absorb, chemically neutralize, or divert to municipal sewer lines any pollutants before they can get into the water. Recycling is a form of source reduction.

The scope of this guide is broad, covering diverse nonpoint source pollutants from marinas and recreational boating. Because all waterbodies and marinas are different, not all practices and techniques described in this guide will be applicable to all situations. Also, BMPs are continually being modified

and developed as a result of experience gained from their implementation and the innovation of marina owner and operators across the country.

This guide can assist marina owners and managers in identifying potential sources of nonpoint source pollution and offer potential solutions. Finding the best solution to any nonpoint source pollution problem at a marina requires taking into account the many site-specific factors that together comprise the setting of a marina.

#### BENEFITS OF ACHIEVING CLEAN MARINA DESIGNATION

By participating in the TVCMI your marina can demonstrate its commitment to addressing water quality issues. If successful, it could help the marine industry avoid new regulations. Marina operators, who depend on boaters for their income, have the utmost interest in protecting the resource upon which they rely so heavily. Studies have shown that the most important aspect in a marina for boat owners is cleanliness. By operating a clean, safe marina and flying the Clean Marina flag, you have an advantage in attracting new customers. Chances are, the new customers you attract will be more environmentally responsible, thus reducing your liability from careless boaters.

You also have opportunities for new revenue sources such as selling and promoting the use of "green" products in your marina store. Renting equipment such as vacuum sanders to your customers also presents a new source of revenue. Additionally, by reducing, reusing and recycling, marina operators can cut the costs of waste disposal/removal while encouraging environmentally sensitive behavior. Using non-disposable products and products that allow re-use can also save on the cost of supplies. These practices are mutually beneficial for your marina and the resource on which it depends.

#### STEPS TO BECOMING A TENNESSEE VALLEY CLEAN MARINA

The first step toward Clean Marina designation is to sign the pledge card included in the introductory material delivered to your marina. These are also available at your nearest TVA Watershed Team Office. In signing the pledge card, you commit "to controlling pollution and erosion at your facility and to promoting water-protective behavior with the boating public" as you work toward attaining Tennessee Valley Clean Marina status. Return a copy of the pledge card to the appropriate TVA Watershed Team and keep the original to display at your marina. Watershed Teams will provide you with a Clean Marina Checklist and a *Tennessee Valley Clean Marina Guidebook* to get you started.

The second step is to review the Clean Marina Checklist carefully to understand the goals and objectives of the initiative. If you have any questions, the Watershed Team and their partners for your reservoir is on hand to provide assistance.





Make a preliminary assessment of your marina using the Clean Marina Checklist. You may want to reference the guidebook as you do this, as it includes recommended actions to address the various checklist items. At the same time, consider which actions you need or want to select in order to reach Clean Marina status. When you have completed your marina assessment, contact your TVA Watershed Team to schedule a visit. With your checklist to guide you, review your assessment with the team member who visits, identify areas where improvements are indicated, and work with them to develop a plan of action for attaining Clean Marina status.

TVA and its partners can provide assistance, help you find needed resources and answer, or help find the answer, to any of your questions. The goal is to have all Valley marinas who wish to participate successfully certified as a Clean Marina within two years of committing to be a part of the program. When your marina has succeeded in implementing the agreed to actions on the checklist, contact the Watershed Team to schedule an endorsement visit.

After the successful endorsement visit, you will receive a Tennessee Valley Clean Marina certificate acknowledging your commitment and authorization to use the Clean Marina logo. You will also receive a Clean Marina flag to fly from your property. Your marina will be recognized in press releases, on the TVA Web site, and in other Clean Marina promotions and events.

Sustaining your Clean Marina status is easy. Simply complete a new self-assessment once every two years using the Tennessee Valley Clean Marina Guidebook and Checklist. When it is time for your self-assessment, call your Watershed Team to receive the most current checklist. Complete the self-assessment and set up a meeting with a TVA Watershed Team member for a visit to reaffirm your Clean Marina status. As rules and regulations are not static, you will be notified if there are any changes in the contents of the guidebook and checklist. You will also receive fact sheets on new technologies and products as they become available.

#### CONTACT INFORMATION FOR TVA WATERSHED TEAM OFFICES

##### **Upper Holston Watershed Team: Boone, Bristol Project, Fort Patrick Henry, South Holston, Watauga, and Wilbur**

Suite 218  
4105 Fort Henry Drive (HFB 1A-KPT)  
Kingsport, TN 37663  
423.239.2000

##### **Cherokee-Douglas Watershed Team: Cherokee, Douglas, Nolichucky, and French Broad**

2611 West Andrew Johnson Highway (WPB 1A-MOT)  
Morristown, TN 37814  
423.587.5600 or 423.632.3791

**Clinch-Powell Watershed Team: Clinch, Norris, and Powell**

P.O. Box 1589 (ABL 1A-N)  
Norris, TN 37828  
865.632.1539

**Melton Hill Watershed Team: Great Falls, Melton Hill, and Watts Bar**

2009 Grubb Road  
Lenoir City, TN 37771  
865.988.2440

**Little Tennessee Watershed Team: Fontana, Fort Loudoun, Tellico, and Little Tennessee**

Suite 300  
804 Highway 321 North (HWY 1A-LCT)  
Lenoir City, TN 37771  
865.988.2420

**Hiwassee Watershed Team: Apalachia, Blue Ridge, Chatuge, Hiwassee, Nottely, and the Ocoees**

221 Old Ranger Road (MLO 1A-MRN)  
Murphy, NC 28906  
828.837.7395

**Chickamauga-Nickajack Watershed Team: Chickamauga and Nickajack**

1101 Market Street (PSC 1E-C)  
Chattanooga, TN 37402  
423.876.4178

**Guntersville Watershed Team: Guntersville**

2325 Henry Street (WTR 1A-GVA)  
Guntersville, AL 35976  
256.571.4280

**Wheeler Watershed Team: Lower Elk and Wheeler**

Reservation Road, (SB 1M-M)  
P.O. Box 1010  
Muscle Shoals, AL 35662  
256.386.2560



**Pickwick Watershed Team: Bear Creek, Cedar Creek,  
Little Bear Creek, Pickwick, Upper Bear Creek, and Wilson**

Reservation Road (SB 1H-M)  
P.O. Box 1010  
Muscle Shoals, AL 35662  
256.386.2560

**Elk-Duck Watershed Team: Columbia Project, Duck, Elk,  
Normandy, and Tims Ford**

P.O. Box 1010 (CTR 2U-M)  
Muscle Shoals, AL 35662  
256.386.2568

**Kentucky Watershed Team: Beech River Project,  
Kentucky, and Lower Duck**

202 W. Blythe Street (LM 1A-PAT)  
P.O. Box 280  
Paris, TN 38242  
731.641.2000







## Using the Guidebook

The *Tennessee Valley Clean Marina Guidebook* is a reference tool complementing the self-assessment checklist. The sections in the checklist correspond to the sections in the guidebook. As you work through the checklist, refer to the applicable guidebook section for background information and recommended actions. The section called "Programs to Control Nonpoint Pollution" summarizes the requirements of TVA, local, state and federal agencies and is referred to in applicable chapter items.

Two other publications will provide further support and details important to successful implementation of the Clean Marina program:

- *Sewage Systems for Recreational Boats* - a joint publication of Tennessee Wildlife Resources Agency and Tennessee Valley Authority that offers the text of the state and federal laws and provides detailed information on sewage system design, and equipment selection, installation and maintenance, and
- *2001 Guide for the Safe Operation and Maintenance of Marinas* - by the National Water Safety Congress, the recommendations in this publication provide a guide for minimum safety requirements for the operation and maintenance of marinas to assure adequate protection of the public from mishaps, encouraging compliance with applicable state and local codes, the National Fire Protection Association Codes, the National Electric Code, and Code of Federal Regulations, Title 40, Subchapter I Solid Wastes, Part 280.

All actions required by regulation and law are not negotiable and must all be implemented in order to achieve Clean Marina status.

*"Helpful Hint:  
As you read  
through the  
Guidebook,  
you will find  
that the prac-  
tices listed in  
each section  
correspond to  
the items  
listed in the  
Checklist."*



## Section 1 Sewage Management

### Background

Raw or improperly treated boat sewage is harmful to human health and water quality. Sewage contains nutrients that can stimulate pathogens (fecal coliform bacteria and viruses) and plant growth (algae and aquatic plants).

Gastroenteritis, hepatitis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. Pathogens can affect health directly through contact in the water or indirectly through the consumption of contaminated shellfish.

Microorganisms present in sewage need oxygen. When sewage is discharged to waterways it reduces the amount of oxygen available to fish and other forms of aquatic life. The heavy nutrient load in sewage encourages excessive algal growth, which in turn blocks life-giving sunlight from reaching subsurface vegetation providing habitat for aquatic life. When the algae die, the bacteria active during the decomposition process reduce the levels of dissolved oxygen.

Progress has been made toward eliminating discharges of sanitary waste from boats through designation of no discharge zones, installation of pumpouts nationwide, and the growing number of boater education programs. Efforts to reduce sewage discharges and to educate boaters about the impacts caused by sewage discharges needs to continue, and marinas can play a direct and important role in these matters.

#### 1. Comply with federal, state and local wastewater outfall and septic system regulations.

It is illegal to discharge raw sewage from a vessel within U.S. territorial waters. Discharge of any pollutant from a point source (outfall) into waters of the U.S. requires a National Pollutant Discharge Elimination System (NPDES) permit from the state. In addition, written permission (permit or other appropriate document) from the municipality must be obtained for discharging into a municipal sewer; written permission from the state and local groundwater/drinking water authorities must be obtained for discharging into the groundwater; and all septic systems must be permitted by the county and inspected for proper installation by the county health department.

For example, if a marina in Tennessee has, or plans to install, a holding tank for wastewater and therefore needs to obtain a State Operating Permit and have the engineering plans approved, the manager should contact the Tennessee Division of Water Pollution Control at the nearest Environmental Assistance Center (1.888.891.TDEC). A marina can also contact the Tennes-

*“Consider including information about the MSD regulations in your lease agreements with boat owners.”*

see Division of Groundwater Protection at this number if such information is needed as a septic/wastewater hauler licensed in Tennessee.

A TVA Section 26a permit may also be required for activities subject to wastewater permits. Check with your Watershed Team. TVA may request copies of other federal, state, and local permits, licenses, and approvals required for your facilities when you apply for a TVA 26a permit.

**2. In "No Discharge" reservoirs, require that marine sanitation device (MSD) Type III holding tanks be pumped into sewage treatment systems and no sewage be discharged overboard. ®**

A "No Discharge Area" (NDA) is an area of water that requires greater environmental protection and where even treated sewage cannot be discharged from a boat. In NDAs, Type I and Type II systems must be secured so no discharge can be released. All freshwater lakes, reservoirs, and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as NDAs. With the approval of the U.S. Environmental Protection Agency, states may establish other NDAs in waters of the state.

The most common form of a TYPE III system is a holding tank. Type III systems do not allow sewage to be discharged. If an overboard discharge system ("Y" valve) is installed after the holding tank, the "Y" valve must be secured to prevent overboard discharge of raw sewage in all U.S. waters.

Good plumbing is the key to controlling holding tank odors. Fiberglass and metal tanks are highly resistant to permeation. Specially labeled flexible "sanitation hoses" and PVC piping are also highly impermeable. Hoses should be run the shortest route possible and be as straight as possible. Wherever it is practical, rigid pipe should be used below the level of the holding tank and wherever sewage will tend to accumulate. Seals should be tight and the number of connections kept to a minimum. Odors can be further controlled by use of enzyme-based deodorizing products in the holding tank.

Other forms of Type III systems include recirculating and incinerating systems. A Coast Guard label is not required.

**3. Keep inventory records of all sewage pumpout users, dates, and volumes pumped. ®**

A sign-in sheet at your pumpout enables you to measure usage and monitor users.

**4. In "Discharge" reservoirs, require that no untreated or improperly treated sewage be discharged overboard. ®**

The Federal Clean Water Act requires that any vessel with an installed toilet be equipped with a certified Type I, Type II, or Type III MSD. Whatever



*“Check with your state about grant funding for installation of pumpout facilities.”*

system is utilized, it is illegal to release untreated sewage in U.S. territorial waters. When MSD I's and II's are used, it is critical to disinfect the waste appropriately in order to be in compliance with the regulation.

Type I systems macerate, or mechanically cut, solids, disinfect the waste with a chemical additive or with chlorine disassociated from salt water with an electronic jolt, and discharge the treated sewage overboard. To be in compliance with the law, the fecal coliform bacteria count of the effluence (waste being released) may be no greater than 1,000 per 100 milliliters and may not contain any floating solids.

Type II systems are similar to Type I systems except that the Type II's treat the sewage to a higher standard, require more space and have greater operating energy requirements. In Type II systems the effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters and total suspended solids may not be greater than 150 milligrams per liter.

Deodorizing agents may or may not be used in both these systems. Most products available to control odors do not disinfect. Labels must be read carefully and directions followed to assure that appropriate chemicals are being used to reduce bacteria count to acceptable levels.

Boats 65 feet in length or less may install a type I, II, or III device. Vessels over 65 feet must install a Type II or III device. Type I and Type II systems must display a certification label affixed by the manufacturer.

**5. Have a pumpout system that meets the needs of your marina users either free or at a reasonable cost, or have an agreement with a mobile pumping service for servicing boats in your marina.**

Four types of onshore sewage collection systems to handle sewage from boat holding tanks and portable toilets are available—fixed point systems, dump stations, portable/mobile systems, and dedicated slipside systems.

- *Fixed-point collection systems* include one or more centrally located sewage pumpout stations. The stations are usually located on the fueling dock, so that fueling and pumpout operations can be done at the same time.
- A *dump station or a wand attachment* for a fixed-point system may be a satisfactory disposal facility in a marina where boats use only small portable toilets.
- *Portable/mobile systems* are similar to fixed-point systems. A portable unit includes a pump and a small storage tank. The unit is moved where the boat is docked. Portable pumpout facilities might be the most feasible, convenient, accessible, regularly used, and affordable way to ensure proper disposal of boat sewage.



- *Dedicated slipside systems* provide continuous wastewater collection at select slips in a marina. Slipside pumpouts are particularly suited to large houseboats and other extended use vessels. Dedicated slipside pumpout points could be provided to slips designated for boats receiving heavy use, while the rest of the marina could still be served by either a fixed point or mobile pumpout system.

Provide pumpout services at convenient times and either free or at a reasonable cost. Pumpout stations should be available to all boats that are able to access them and cannot be restricted to marina members. Keeping fees low or offering pumpouts for free encourages boaters to use pumpouts. Remember that no more than \$5.00 may be charged if Clean Vessel Act grant funds were accepted to purchase and/or install your system.

The presence of a pumpout station promotes a public perception that you are environmentally responsible. With increased emphasis on the need for holding tanks to be pumped out regularly throughout the Valley, more customers will also be drawn to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware and food items.

#### **6. Have a dump station or a wand attachment to empty portable toilets.**

MSD requirements do not apply to vessels with portable toilets. Portable toilets must be properly emptied on shore. Remind boat owners with portable toilets that it is illegal to discharge raw sewage to any U.S. waterway. This may be accomplished through signs or other methods.

#### **7. Keep pumpout stations clean and easily accessible, and/or have marina staff do pumpouts.**

Free pumpouts are certainly an attraction for customers, but cleanliness and ease of use are popular features as well. Customers are more likely to use pumpouts if they are kept clean and neat. It is especially important to periodically disinfect the suction connection of a pumpout station by dipping or spraying it with disinfectant, in order to control bacteria and odors.

The ability of a pumpout station to attract new customers is magnified when pumpouts are done by marina staff. Consider installing a buzzer or paging system so that boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.

Post highly visible signs for passing boaters, making them aware of your pumpout facility or directing them to the nearest public pumpout if you do not have one available.



## **8. Regularly inspect and maintain your sewage facilities.**

A pumpout system that is well maintained will run more efficiently, saving on repair costs in the future. Regular inspections of the pumpout system help insure that any problems are repaired immediately, before they become more serious problems. A regular maintenance schedule and a maintenance log ensure a septic system operates efficiently. It is advisable to establish a maintenance agreement with a qualified contractor for service and repair of pumpout facilities if one is available in your area.

Marina workers should handle waste collection with care, taking precautions to avoid coming into direct contact with sewage. Make rubber gloves and respirators available to workers who maintain or repair your pumpout system or MSDs and encourage their use.

Do not allow rinse water or residual waste in the hoses to drain into the reservoir or river. Keep the pump running until it has been re-primed with clean water.

Dispose of collected waste in the most environmentally sound way possible. One of the best options for disposing of the collected waste is to connect directly to a public sewer line. If sewers are not available a holding tank is usually the option available to you.

The contents of the tank must be pumped periodically and trucked to a treatment plant. Holding tank size and location is generally determined by the local health department. Selection of a well-qualified, licensed, dependable hauler is key to effective disposal of collected waste from a holding tank system.

## **9. Hold MSD inspections periodically at your marina, assuring that MSDs are properly installed and functioning; appropriate chemicals are being used in MSD Types I and II if they are approved for use in your reservoir; and "Y" valves are tied down so no raw sewage may be released into the water.**

Malfunctioning marine sanitation devices (MSDs) are a cause of nonpoint source pollution. Marina operators can help boat owners discover the MSD malfunctions by offering Type I and II MSD inspections free or for a small charge. Follow-up maintenance service can remedy any problems found during inspection. Environmental audits and retrofits on engines, bilges, fuel systems, and MSDs can be an additional revenue source for your marina.

It is strongly recommended that holding tanks equipped with Y-valves have the valves in the closed position to prevent accidental discharge into boating waters. Marina operators can provide Y-valve lock downs to patrons to ensure that the valves remain in the closed position.

In the Tennessee Valley you may request the assistance of the U.S. Coast Guard Auxiliary, state wildlife or natural resources officers, or TVA Police to assist with this effort.

Boaters may be encouraged to run dye tablets through their Type I and Type II systems outside of the marina basin. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.

**10. Maintain records of MSD inspections, noting boat owners, registration numbers, and all violations identified on date of inspection.**

Maintaining records of MSD inspections will help you identify repeat violations and provide you with documentation of warnings issued.

**11. Designate your marina as a "No Discharge" marina and prohibit sewage discharges within your marina basin/harbor limits.**

Federal law prohibits discharge of untreated sewage into all TVA reservoirs, but does allow, in "discharge" reservoirs, the use of Type I and II marine sanitation devices (MSDs) which pre-treat boat sewage before it is discharged overboard. A marina operator may prohibit sewage discharges altogether within the marina with the addition of a clause to the slip rental contract stating that sewage discharge is not permitted.

To go further, you can state that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees. In follow-through, if a customer fails to observe the law or honor your contract:

- Discuss the matter with the customer,
- Mail a written notice asking that the offending practice stop immediately and keep a copy for your records, and
- If this does not get desired results, evict the boater.

If a tenant is discharging raw sewage, you may report him to your state agency with jurisdiction over boating waste. Provide as much information as possible: name of owner, ID number, location, etc.

**12. Establish equipment requirement policies that prohibit the use of "Y" valves on MSDs, such as installation of tie-downs.**

Only the relatively few boats that do travel out beyond the 3-mile limit may use a "Y" valve to discharge overboard. Yet the reality is that many boats that never enter the ocean have "Y" valves, seacocks, and thru-hulls installed. "Y" valves (also called cheater valves) have no purpose except to bypass the holding tanks or release untreated sewage. This is clearly illegal and not good for water quality.



*"The national pumpout symbol is an easy way to advertise the availability of pumpout facilities."*



A number of marinas, nationally, are no longer allowing "Y" valve use or thru-hull fittings. Many states provide "Y" valve tie downs that are numbered for distribution and tracking purposes. For example, in the state of Tennessee, marina operators may request tie-downs from the Boating Division of the Tennessee Wildlife Resources Agency. "Y" valves may also be locked closed using small locks, wire or tie-downs purchased from a variety of suppliers, but use of the state-supplied tie-downs is the preferred option when they are available. Their use allows you to match the tie-down to a specific boat and identify if the seal has been broken in order to release untreated sewage.

Thru-hull fittings may be plugged solid before allowing boats with holding tanks to sign a lease agreement for space in your marina.

**13. Have clean, functioning restrooms available 24 hours a day.**

Clean, dry, brightly lit restrooms in marinas will generally be used instead of boat toilets, especially if easy to get to. Restrooms are the best way to reduce boat toilet use, especially when they are pleasant, functional, and safe. Keep dock, paths, and restroom/shower areas well lit at night for safety and security.

*"A single pint of oil released onto the water can cover one acre of water surface area (Buller 1995)."*



## Section 2 Fuel Management

### Background

Fuel is easily spilled into surface waters from the fuel tank air vent while fueling a boat, and oil is easily discharged during bilge pumping. Because of the properties of oil, a cup of oil can spread as a very thin oil sheen over more than an acre of calm water. Small amounts of oil spilled from numerous boats can accumulate to create large oil sheens. Gasoline spills are also a safety problem because of gasoline's flammability.

Spread over the surface, oil creates a barrier to oxygen movement across the water surface and to animals that must breathe at the surface. At and below the surface oil attaches to plant leaves, decreasing their respiration, and to bottom sediments.

Petroleum spills can also cause structural damage at marinas, such as discoloration on boat hulls, woodwork, and paint, and deterioration of white styrofoam in floats and docks, since petroleum dissolves this material. Small spills can escape the attention of many people and marina owners and operators can play an important role in bringing the importance of controlling this form of pollution to the attention of their patrons.

#### **1. Comply with all federal, state, and National Fire Protection Association (NFPA) petroleum handling and storage requirements. ®**

- Be sure hydrants are available to allow for fighting fires throughout your facility.
- Install smoke detectors.
- Have available and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near the fuel dock.
- Inspect and test all fire fighting equipment and systems regularly, and test all fire extinguishers annually.
- Train personnel on fire safety and response: who to call, location of hydrants, use of portable extinguishers. Post contact numbers for easy access.
- Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.
- Ask the local fire marshal to visit your marina each year to train employees and to familiarize himself with your facility.

#### **2. Operate an underground storage tank (UST)? If yes, do you have an annual state permit for your UST posted at your facility and are you in compliance with all UST federal and state regulations? ®**

A UST is a tank or combination of any underground piping connected to the tank used to contain an accumulation of regulated substances that has at

least 10% of its combined volume underground. Various state regulatory agencies have referred to the Federal regulations as a basis for their UST regulations. Marinas with one or more stationary fuel storage tanks, above or below ground, with a combined storage capacity of 1,100 gallons or more of petroleum products are subject to federal and state bulk storage regulations for registration, testing, monitoring, replacement, reconditioning, closure, and removal. Underground tanks with a capacity of 110 gallons or more are subject to federal UST regulations. Federal UST regulations can be viewed on the EPA web site at [www.epa.gov/swerust1/fedlaws](http://www.epa.gov/swerust1/fedlaws).

When a tank is buried it is not easily accessible for inspection, maintenance, and painting. Because visual inspection of underground tanks is impossible, minor leaks may go undetected for some time, particularly if inventory control is inadequate. Escaping liquid may travel underground for some distance, polluting both soil and water resources. The labor of replacing an underground tank is often much greater than the cost of installation or the replacement value of a new tank, in addition to the fines which may be levied for violations. USTs should include corrosion protection and spill and overfill prevention equipment, with a leak detection system and readily accessible shut-off valve installed. All motor fuel USTs must meet federal financial responsibility requirements (i.e., insurance) for environmental pollution liability. Because of the potential problems associated with USTs, some marinas are changing from underground storage tanks to above ground, lined tanks.

An aboveground storage tank (AST) is any storage tank whose total volume, including piping and tank, is less than 10% underground. No one set of federal regulations covers ASTs. Various air, water, and oil pollution regulations affect ASTs. The result of having these various regulations is that knowing and complying with the applicable regulations is difficult. All states do endorse certain guidelines for tank installations and maintenance: that they are installed and maintained following the guidelines set forth in the National Fire Protection Association Codes, and that the State Fire Marshal or local fire code representative inspect the AST at installation time. Contact your appropriate state agency for more information.

Except in unusual circumstances, TVA does not approve storage tanks on TVA lands. Such tanks should be located on land owned by the applicant.

**3. Operate an aboveground storage tank (AST) larger than 660 gallons or a UST larger than 42,000 gallons? If yes, do you have a Spill Prevention, Control, and Countermeasure (SPCC) Plan that was prepared within the past 3 years and has been signed and stamped by a professional engineer (PE)?**

A Spill Prevention, Control, and Countermeasures (SPCC) plan is a first line of defense against petroleum pollution and should be developed by all marinas, whether required by regulations or not. An SPCC plan should be written to apply to all locations in the marina where fuel or oil is stored or

*“The person fueling the vessel, generally the boater, is liable for all penalties associated with spilled fuel.”*



transferred, and it should clearly explain spill emergency procedures, including health and safety, notification, and spill containment and control measures. The plan should include the following:

- *Who:* Clearly identify who is responsible for taking what action. Action items will include deploying the equipment and contacting the emergency agencies and additional clean-up services. The plan should contain a list, updated periodically, of emergency phone numbers to be used if a spill occurs.
- *What:* Define what actions should be taken if a fuel spill occurs and, based on likely threats, what equipment should be deployed. Include information on the type of spill equipment available on site and its characteristics and capabilities. Make sure dispersants are *not* used on any spill.
- *When:* Clearly state when additional resources such as spill control services, should be called for assistance. Plan when the marina’s spill control equipment will be inspected and replaced, if necessary.
- *Where:* Show where the spill control material is located. Make sure storage lockers are clearly marked and easy to access. Identify sources where additional spill response equipment can be obtained quickly if necessary. Sources may include commercial spill response companies, fire departments, or neighboring marinas.
- *How:* Explain how the spill control equipment should be used and disposed. To be sure that the crew understands the response plan, regularly conduct drills that simulate a fuel spill.

#### **4. Prohibit the use of detergents and emulsifiers on fuel spills. Ⓡ**

Soaps, detergents, and emulsifying products will hide a spill and seemingly make it disappear, but they actually cause petroleum products to sink into the water where the combination of fuel and detergent can harm aquatic life and make the pollutants difficult to collect. Use of detergent bilge cleaners is illegal and subject to a high fine from the U.S. Coast Guard.

#### **5. Regularly inspect, maintain, repair, and replace fuel hoses, pipes, and tanks. Ⓡ**

Regularly scheduled preventive maintenance is the best source control for fuel loss from the fuel storage and delivery system, and it is often less costly than cleanup costs and fines levied for spills. Preventative maintenance projects such as replacing hoses and connections before they become problematic can help ensure that this equipment is not responsible for gas and oil in the water and can save time and money on extensive repairs in the future. Maintenance projects should be scheduled and recorded in a maintenance log.

#### **6. Use automatic shutoffs on fuel lines and at hose nozzles to eliminate fuel loss. Ⓡ**

Fuel expands as it warms, and the temperature in a boat fuel tank usually is much higher than that in the storage tank. While fueling, a distinctive change in sound occurs when a tank is almost full, and filling can be stopped at this time. This leaves a small amount of space in the tank to allow for expansion of the fuel with temperature changes.

Fuel delivery equipment can be altered to help prevent overflow. Installing shut-off nozzles that automatically stop the flow of fuel before overflow occurs can stem problems with overfilling.

**7. Remove old style fuel nozzle triggers that are used to hold the nozzle open without being held. Ⓡ**

The use of any automatic nozzle with a latch-open device is prohibited unless automatic shut-off overrides trigger so no fuel overflows with its use.

**8. Have a pump delivery rate of less than 10 gallons per minute.**

Setting the pump delivery rate at 10 gallons per minute or less allows patrons ample time to stop fueling before overflow occurs.

You can also promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling. Attachments for vent lines are available commercially and are easily installed on most boats. Marinas can make these units available in their retail stores and post notices describing their spill prevention benefits and availability.

**9. Have easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.**

Boaters need to understand that whenever they spill even a few drops of oil or fuel, the environment is harmed. There are simple steps they can take to prevent fuel loss:

- Don't top off the tank,
- Use an oil absorption pad to catch drops when the fueling nozzle is removed from the boat,
- Install a fuel/air separator on the air vent line,
- Place an oil-absorbing pad in the bilge.

Signs with easy-to-follow instructions, perhaps using pictures, can encourage a cleanup if a spill occurs. It is helpful to have signs that state the following information:

- Step-by-step way to fuel a boat,
- Requirements of the law and spill reporting numbers,
- What to do in case of a spill,
- Warnings against the use of detergents or emulsifiers,
- Locations of absorbent materials for cleaning up spills,
- Proper use and disposal of fuel absorbent materials.





*“All marina staff should be trained in proper spill handling.”*



Spills should be immediately reported to either the U.S. Coast Guard or EPA. Oil spills can be reported 24 hours a day at 1.800.424.8802. On navigable waters, any oily slick or sheen must be reported. More information on laws and regulations related to spills can be obtained at the U.S. Coast Guard web site: <http://www.uscg.mil/>.

Marinas posting signs which educate boaters and offering the products referenced at a reasonable cost can help protect the water resources while increasing revenue through boater purchases.

**10. Have personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling.**

Special docking facilities for PWCs can be installed to stabilize them while they are at a fuel dock. Docking PWCs while fueling reduces fuel loss caused by the craft rocking on the water while fueling. These docks have proven popular with PWC operators and do reduce spillage. Consider placing the PWC fueling area at the end of the fuel dock to reduce conflict with larger boats.

**11. Provide “gas guzzlers,” nozzle rings, or small petroleum absorption pads to patrons for use while fueling to catch splashback and drips.**

A doughnut placed over the fuel nozzle or a small absorbent pad in hand to catch any splashback when the fuel tank is full and any drops that fall while the handle is being replaced on the pump is an excellent and easy way to prevent the small spills that can add up to big problems. A small absorbent pad temporarily attached to the hull with suction cups below the fuel tank air vent during fueling provides an added precaution against fuel spilling directly into surface waters. Used absorption pads can be air-dried and reused or disposed of in accordance with petroleum disposal guidelines.

Consider keeping a pole with a small floating absorption boom attached at one end on the fuel dock to be used quickly and effectively by staff to sweep and mop the water surface if any small spills occur during boat fueling.

The disposal of used oil absorbent material depends on what type of product it is and how it was used. Standard absorbents that are saturated with gasoline may be air dried and reused. Standard absorbents saturated with only oil or diesel may be wrung out over oil recycling bins and reused. Alternatively, they should be double bagged with one plastic bag sealed inside of another and tossed in the regular trash. Bioremediating bilge booms may be disposed in the regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.

## **12. Have staff pump fuel during regular operating hours.**

Marina staff who are fully educated and trained on all of the environmental management practices used at a marina and most familiar with the equipment will not only become skilled at preventing spills, but will also present the image of an environmentally proactive marina. By their actions and their conversations, they will encourage environmentally-friendly behavior among the patrons of your facility.

Ideally, fuel handling facilities should be operated **ONLY** by trained marina employees. This practice would account for fewer spills, eliminate carelessness, and be safer for marina employees and patrons. If this is the practice at your marina, be sure to post signs that specify "Fuel Pumping by Employees **ONLY**". All staff members should know the location of absorbent materials and how to use them to remove the fuel immediately from the water or the ground. Regular practice drills ensure that staff are familiar with the proper use of these materials.



## Section 3 Solid Waste and Petroleum Recycling/ Disposal

*“Never dispose of any hazardous substance by dumping it into a sink, floor drain, storm drain, or onto the ground.”*



### Background

The purpose of this management measure is to prevent solid and liquid waste from polluting reservoirs. Solid waste from boat cleaning, maintenance, and repair might contain harmful substances such as antifouling paint chips or solvents used to clean or polish metal or wood parts. Solid waste from general activities and marina use, such as plastic bags, cups, cigarette butts, and food containers also pollutes surface waters and degrades the habitats of aquatic animals and plants. The simple act of picking up and properly disposing of trash goes a long way toward preventing this form of nonpoint source pollution.

Liquid waste can also pollute streams and reservoirs unless it is properly handled. Small quantities of many liquid wastes, including antifreeze, waste oil, pesticides, cleaners, solvents, and paints, can be harmful or deadly to people, wildlife, pets, fish and other aquatic organisms. Discharge of these materials into marina waters is not only environmentally damaging, but also destroys the overall clean, healthy environment that a marina can provide to its patrons.

#### **1. Store, use, and dispose of non-recyclable hazardous waste in accordance with state and federal regulations.**

Liquid materials for sale or use at the marina, such as fuels, oils, solvents, and paints, should be stored in a manner that minimizes the chance of a spill and contains a spill should one occur. Liquid wastes, such as waste fuel, used oil, spent solvents, and spent antifreeze, should be similarly stored until they can be recycled or disposed of properly.

Build curbs, berms, or other barriers around areas used for liquid material storage and permanently close any drains present to contain spills. Storage and disposal areas for liquid materials should be located in or near repair and maintenance areas, undercover, and away from flood areas and fire hazards.

Provide clearly labeled, separate containers for the disposal of waste oils, fuels, and other liquid wastes.

#### **2. Provide trash cans, bins, and dumpsters that are covered, well marked, and convenient.**

Many people don't want to put their trash anywhere except in a trash receptacle. For these people, and to encourage those who might otherwise consider dropping trash on the ground to use trash receptacles, locate waste

disposal facilities near repair and maintenance areas, in parking lots, on docks, and in heavy-use areas. Trash receptacles placed on the dock should have lids and be emptied regularly to keep trash from blowing into the water. A well lighted trash receptacle area that is safe and easy to use after dark encourages liveaboards to manage their waste effectively.

Boaters can be encouraged to bring all of the trash they generate while boating back to shore by providing them with a plastic bag or other suitable trash container. Imprinted with the marina's logo, the bag will carry the clear message that your marina cares about the environment.

### **3. Minimize the use of hazardous products and replace them with more environmentally protective alternatives at your marina.**

Products that carry safety warnings about the harm they can cause to people can harm the environment as well. One way to help ensure that fewer of these hazardous products end up in surface water is to purchase these products in small quantities. Storing these products safely is easier when the quantities are manageable.

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. There are now many biodegradable, environmentally friendly products on the market to replace hazardous materials. Effective nontoxic and "phosphate-free" cleaners and solvents are readily available. Adopt alternatives to solvent-based parts washes such as bioremediating systems that take advantage of microbes to digest petroleum. Bioremediating systems are self contained; there is no effluent. The cleaning fluid is a mixture of detergent and water. Microbes are added periodically to "eat" the hydrocarbons. Or use soy-based solvents and other similar products with no or low volatility. If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of the volatile organic compounds. Reuse the solvent. Once the solvent is totally spent, recycle it.

### **4. Have and enforce a policy for handling polluters.**

While educating patrons on the ways they can reduce their impacts on the environment will certainly limit the number of polluters a marina operator has to deal with, there may still be a few patrons who continue to pollute. Confronting a polluting patron requires a great deal of tact so that at the end of the conversation the patron sees an alternative to polluting that he or she is willing to consider and still feels welcomed at the marina. Having a written plan for handling polluters can make encounters less stressful and ensure that marina staff are consistent in dealing with polluters. The plan might include suggested language marina staff can use when approaching patrons so that the patrons do not feel offended or unwanted, and a list of polluting behaviors and their alternatives.

*“Encourage boaters to add stabilizer in the winter to prevent fuel from becoming stale or an octane booster in the spring to rejuvenate it.”*



#### **5. Provide materials needed for spill-proof oil changes.**

Invest in a non-spill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop or, if you do not have a boat shop and/or allow boaters to perform their own oil changes, require that the non-spill pump be used.

Slip a plastic bag over used oil filters prior to their removal to capture any drips. Hot drain the filter by punching a hole in the dome end and draining for 24 hours. Recycle the collected oil. Recycle the metal canister if practical. If not, dispose in your regular trash.

#### **6. Provide facilities for collecting recyclable liquids (e.g., oil).**

Where liquid recycling is available through the municipality, it can be a cost-effective way to decrease trash disposal costs. Public education is necessary if a recycling program is to be effective, though today many people recycle at their homes and already have a “recycle” consciousness.

**CHECK WITH YOUR RECYCLER TO LEARN WHAT MATERIALS MAY BE MIXED.** Generally speaking, engine oil, transmission fluid, hydraulic fluid, and gear oil may all be placed in a waste oil container, but this varies in different locales. **DO NOT** allow patrons to pour gasoline, solvents, paint, varnishes, or pesticides into the oil or antifreeze recycling containers. The introduction of these materials creates a hazardous waste which must then be disposed of as hazardous waste: a very expensive undertaking!

Although recycling is a preferred disposal method for reusable liquid materials, not all municipalities provide the service free of charge. Recycling can be performed in-house, but private service providers are often costly. In such a case, the quantity of waste produced can be lessened by reusing materials and sharing leftover cleaning and maintenance supplies (e.g., excess varnish and paint) among customers. You can encourage boaters to exchange excess liquids by providing a bulletin board where boaters can post notices that they are seeking particular materials or have an excess of a substance.

#### **7. Provide facilities for collecting solid recyclables.**

Recycling of non-hazardous solid waste such as scrap metal, aluminum, glass, wood pallets, batteries, paper, and cardboard is recommended wherever feasible. When recycling is available through the municipality, it can be a cost-effective way to decrease trash disposal costs.

Placing recycling receptacles for commonly recycled material such as glass, plastic, aluminum, tin, cardboard, and newspaper near trash receptacles makes it just as convenient for patrons to recycle as it is for them to dispose of trash. Recycling containers should be marked with the specific types of material accepted and tightly covered. Use green receptacles or in some

way make them appear "different" so patrons will easily distinguish them from trash receptacles.

Reduce waste in daily operations at your marina. Although a reduction in the amount of waste a single marina produces during one day may not seem significant, producing less waste each day adds up over time to make a real difference. There are many relatively simple ways to reduce the waste produced in each facet of operation. Here are some examples: make double sided copies, use recycled paper, recycle toner cartridges from copiers and printers, use a reusable coffee filter instead of disposable filters, bring a reusable mug to work, use cloth towels and sponges instead of paper towels, repair durable goods instead of throwing them away when they fail, buy products with minimal packaging, and stop receiving unwanted mail (call the organizations sending the mail and ask to be taken off their mailing lists).

**8. Conduct routine trash pick-up within your marina and along your shoreline.**

Even if waste and recycling receptacles are available, some trash is bound to end up loose on the marina grounds. Having regularly scheduled trash pick-ups helps to ensure that this trash does not end up in the water.

**9. Confine fish scrap disposal to areas and methods that do not impair water quality.**

Fish waste can create water quality problems at marinas where a lot of fish are landed. The waste from fish cleaning shouldn't be disposed of into a marina basin because of the chance of overwhelming the natural ability of the waterbody to assimilate and decompose it.

Fish cleaning stations located away from the water provide convenient places for marina patrons to clean fish and dispose of their waste material, and help keep the rest of the marina clean. They typically have a cutting table large enough to accommodate a few to many people, a hose or other form of running water, and a receptacle for the waste. Marina managers often find that once a good fish cleaning station is available, patrons gladly use it because gutting fish at a fish cleaning station avoids the mess created on a boat or dock.

The fish waste collected at the cleaning station can be treated as waste like any other and deposited in trash containers or be composted. A local extension service can be contacted for information on locally applicable composting procedures and equipment and where supplies can be purchased.

*"Consider printing clear trashbags with your marina name or logo for distribution to your patrons, to emphasize the importance of solid waste management."*





## Section 4 Vessel Operation, Maintenance and Repair

### Background

Any debris that is on the ground and light enough to be swept away by flowing rainwater or snowmelt can end up in reservoirs, rivers, and streams. Sanding dust, paint chips, metal filings, and other such solids that might be carelessly or inadvertently allowed to drop to the ground while maintaining or repairing a boat can be swept up by the runoff of the next rainstorm. Oils, grease, solvents, paint drippings, and fuel spilled or dripped onto the ground can also be carried away in the runoff.

Chemicals, petroleum products, and other toxic materials used in maintaining and repairing boats can contribute to pollution if not controlled. Cleaning products and solvents are typically toxic and harm aquatic life. Many cleaners also contain nutrients that, if washed into waters, cause excess algae growth which reduces the amount of dissolved oxygen necessary for aquatic life.

Maintaining boat hulls by sanding and pressure washing has the potential to release heavy metals. If they reach the water, heavy metals can affect the entire food chain of a reservoir, including humans who consume fish caught in polluted waters.

#### 1. Ensure that the boats in your harbor meet the TVA regulations for navigability.

Navigable houseboat, as defined in Title 18, Code of Federal Regulations, subpart 1304.201 means any self-propelled houseboat having maneuverability which is (a) built on a boat hull or on two or more pontoons; (b) equipped with motor and rudder controls located at a point on the houseboat from which there is forward visibility over a 180 degree range; and (c) in compliance with all applicable State and Federal requirements relating to watercraft.

Existing nonnavigable houseboats may remain in TVA reservoirs if they have approved flotation devices, are properly moored and are numbered by TVA. These houseboats may not be structurally modified or expanded, nor may they be replaced, rebuilt, or returned to the reservoir when they have been abandoned, destroyed or removed from the reservoir or have deteriorated or been damaged so as to be unusable and unrepairable.

#### 2. Restrict engine maintenance activities to designated work areas where pollutants are contained and properly disposed.

*“Call your county or state for locations of recycling centers and information about hazardous waste collection days”.*



At the very least, boats should be removed from the water for maintenance activities. One of the simplest and most effective ways to prevent pollutants from boat repairs from entering storm water runoff is to perform as much maintenance work as possible on an impervious surface under a roof.

Where feasible, consider performing maintenance work and storing engine parts in a fully enclosed building to contain potential pollutants. The inside of a building provides the most protected space, protecting the work area from wind and containing the spills and debris produced during the work, so it is much easier to clean up afterward. Employing a dry cleanup method for petroleum waste using absorbent materials is recommended over use of hazardous solvents.

### **3. Contain dust from sanding. R**

If a large enough interior space is not available, a suitably sized outdoor area, preferably covered and with an impervious surface, should be designated for sanding and protected with tarps. Tarps, screens, and filter cloths can be used to capture and filter pollutants. Tarps can be placed on the ground, before a boat is placed in a cradle or stand for sanding and painting. Semipermeable filter cloths can be more effective than solid cloth or plastic tarps for collecting debris where wind is a problem, where tarps are not always cleaned each day after work is completed, or where work is continued during light rains. The filter cloths hold onto debris better and allow water to pass through while retaining debris for later disposal.

Consider using vacuum sanders to remove paint from hulls and to collect paint dust. Vacuum sanders have proven very effective at capturing paint dust during boat hull and bottom sanding. Immediate capture prevents paint dust from entering the marina basin, makes cleaning up the work area easier, and increases the speed at which a boat bottom can be completely sanded.

### **4. Contain debris from blasting. R**

Tarps will help prevent residue from abrasive blasting and sanding from drifting to non-work areas of the marina and into surface waters. Scheduling work on calm days will help ensure that wind won't carry debris and pollutants to other area of the marina property and the marina basin.

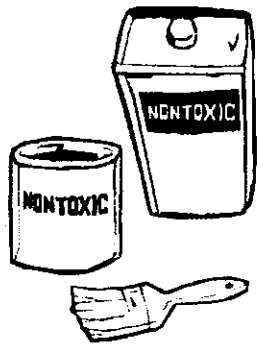
If a facility is large enough, one section of the yard, well away from the shore, can be designated for boat sanding, blasting, and painting. Mark the area well with signs, post a list of boat owner responsibilities, indicate the rules for use of the work area, and do not permit work outside of the designated areas.

Largely for environmental liability reasons, an increasing number of marina owners are restricting do-it-yourself boat repair work of the "dirty" kind, such as exterior sanding and painting.





“Avoid detergents that contain ammonia, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates, and lye.”



**5. Buy and use detergents and cleaning compounds that will have minimal impact on the aquatic environment.**

Many cleaning solvents contain harsh chlorine, ammonia, phosphates, and other caustic chemicals that can harm fish and other aquatic life. When possible, use “nontoxic” and “phosphate-free” cleaners, such as water-based solvents with low volatility, in place of more toxic products. Although “biodegradable” sounds good, it does not mean that a product is nontoxic. Biodegradable products are those which can be broken down by bacteria, other organisms, or natural processes. The degradation of “biodegradable” products in water uses dissolved oxygen, and therefore these products can lower dissolved oxygen levels. Also, some products might not biodegrade in aquatic environments, whether freshwater or marine.

Using the smallest amount of solvent possible can help prevent the solvent from reaching surface waters. Solvents used for vessel maintenance should be stored in covered, approved containers and, when appropriate, reused until solvents are spent. Used solvents should be disposed of appropriately.

**6. Minimize the impacts of wastewater from pressure washing by providing an area with pervious surface or drain wastewater to sewer system.**

One of the preferred methods for managing wastewater from pressure washing is to perform this maintenance activity on a pervious surface such as pervious concrete, pervious asphalt or pervious formed concrete mats, sited as far from the water’s edge as is feasible. Wastewater will then filter through the surface into the underlying gravel and soil, eliminating most of the runoff and allowing bacterial action to breakdown the pollution into less harmful components. After drying, paint chips and particles left on the surface can be vacuumed.

There are several other ways to treat the wastewater from pressure washing:

- *Settling.* Trap the water in a container and allow it to sit long enough after washing to permit any particles to settle out of the water. This method will remove only the particles large enough to settle out of solution.
- *Filtration.* Wastewater can be passed through one or more filters that screen out particles. A filter cloth used at the sash site can be effective for straining out visible particles. Additional filtration is achieved by using a series of filters with smaller and smaller mesh sizes.
- *Treatment.* Chemical or biological cleaning technologies can be used to treat the wastewater and remove contaminants. Treatment can remove oil and grease, metals, or other contaminants. Once wastewater has been treated, it can be discharged into marina waters or a sanitary sewer.

**7. Use long-lasting and low-toxicity or nontoxic antifouling paints.**

Antifouling bottom paints that contain pesticides such as cuprous oxide or tributyl tin harm fish and other non-target species, such as shellfish, as the pesticides leach out. Considerable progress has been made in antifouling

paint technology in recent years, and more improvements are expected that will reduce and effectively eliminate the toxicity of hull paints and increase their ability to keep hulls free of fouling growth for longer periods.

Nontoxic coatings such as teflon, polyurethane, and silicone paints are now available. All deter fouling with hard, slick surfaces which reduce the need to repaint boat bottoms as often as the older, more toxic products. There are also several water-based ablative paints on the market that are up to 97% solvent free. As a result, levels of volatile organic compounds are substantially reduced as compared to solvent-based paints. The use of nontoxic, high-bonding, low volatile organic compound (VOC) content, easily cleaned coatings can be encouraged among marina patrons.

**8. Change engine oil using non-spill vacuum-type systems for spill-proof oil changes and suctioning oily water from bilges.**

Purchase a no-spill pump system that draws crankcase oils out through the dipstick tube. Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter, and discharge the clean water. Use the system in the boat shop and rent it to those that perform their own oil changes.

Oil is easily discharged during bilge pumping. Encourage boaters to avoid pumping any bilge water that is oily or has a sheen. Promote the use of materials that either capture or digest oil in bilges. Marina operators can advertise the availability of bilge socks and other oil-absorbing materials or can include the cost of installation of such material in yearly dock fees. A clause can be inserted in leasing agreements that requires boaters to use oil-absorbing materials in their bilge. Bioremediation pads and biosocks with natural oil-eating bacteria are available. See the Resource List for more information.

**9. Use antifreeze and coolants that are not hazardous (pink) and less toxic to the environment.**

Winterize safely. When antifreeze is needed, use propylene glycol antifreeze for all systems instead of the very toxic ethylene glycol antifreeze, and use the minimum amount necessary for the job. Add stabilizers to fuel to prevent degradation. Stabilizers are available will protect gasoline and diesel fuels as well as crankcase oil. These products protect engines by preventing corrosion and the formation of sludge, gum, and varnish. Also, the problem of disposing of stale fuel in spring is eliminated. Be sure fuel tanks are 85-90% full to prevent flammable fumes from accumulating and to minimize the possibility of corrosion due to condensation. All gas and oil caps should be closed tightly to prevent leakage.



### **10. Discourage in-water maintenance such as pressure washing or hull scraping.**

Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed. For boats that are in the water, cleaning operations should be performed to minimize the release to surface waters of harmful cleaners and solvents and paint from in-water hull cleaning. If work is done sensibly, chemicals and debris from washing boat topsides, decks, and wetted hull surfaces while boats are in the water can be kept out of the water.

Management practices associated with this management measure are easily implemented, practiced by boat owners and marinas alike, and they do not interfere with the need to keep boats clean. The key is:

- Avoiding in-the-water hull scraping or any abrasive process that is done underwater that could remove paint from the boat hull,
- Using “nontoxic” and “phosphate-free cleaners”,
- Washing boat hulls above the waterline by hand, and
- Properly disposing of the containers of wash and rinse water on shore when the cleaning is completed.

### **11. Clean hull maintenance areas immediately after any maintenance activity to remove debris, and dispose of collected material properly.**

Frequently vacuuming hull maintenance areas can effectively prevent pollutants from reaching the marina basin and non-maintenance areas of the marina property. Scheduling vacuuming and adhering to the schedule make this a particularly effective management practice.

### **12. Establish and enforce no-wake zones in your harbor limits to decrease turbidity, shore erosion and damage to marinas.**

No wake zones, motorized craft restrictions, and sign and buoy placement are proven, widely used practices for protecting marinas and shallow-water habitats. Important aquatic vegetation should be protected from damage due to boat and personal watercraft propellers, because of its ecological importance and value in preventing shoreline erosion. Boat traffic (including personal watercraft) through shallow-water areas and in nearshore areas at wake-producing speeds can resuspend bottom sediment, uproot submerged aquatic vegetation, erode shorelines, and harm some animals.

Resuspended sediment and erosion along shorelines increases turbidity, blocking photosynthesis and limiting aquatic plant growth, which leads to less dissolved oxygen being produced. The sediments also continually coat plant leaves and bottom-dwelling organisms, degrading fish habitat and choking out aquatic insects and other important fish foods. Resuspended sediment can also contain harmful chemicals trapped in the sediment which can be ingested by fish and shellfish, and work their way up the food chain, possibly to someone’s dinner table.

To protect these habitats, shallow-water areas can be established as “off limits” to boat traffic of any type, including personal watercraft (PWCs). Signs or buoys in the water around the edges of these areas can help the public comply with shallow habitat protection efforts. Distribution of flyers with maps that show shallow areas and indicate permanent landmarks, so boaters can easily determine whether they are near shallow areas, is another effective tool.

No wake zones are more effective than speed limits in shallow surface waters for reducing turbidity and erosion caused by boat passage. Hull shape strongly influences wake formation, allowing some boats to go faster than others without producing a wake.



## Section 5 Marina Siting, Design, and Maintenance

### Background

Marina siting and design play important roles in determining how good water quality within a marina basin will be. Marina location affects circulation in a marina basin, and, therefore, how well it flushes. Marina design, especially the configuration of the basin and its orientation to prevailing winds, waves, and currents, affects the retention of pollutants in the marina and the movement of pollutants out of a basin.

Existing marinas can improve water and habitat quality in the marina basin through application of BMPs. A marina designed with the important points of the management measures in mind will probably have better water quality and fewer water-pollution-related problems during its life of operation, and economic benefits may result from making such improvements. Simple yet effective forms of monitoring that provide valuable information about the conditions in the water can be done by someone knowledgeable of the marina and the surrounding waterbody. Visual inspections of the abundance and appearance of aquatic plants in and around the marina, use of the marina and surroundings by ducks and geese, the appearance of bottom sediments, the general clarity of the water near docks, and the abundance of fish can provide all the information necessary to judge the health of the water. All of these characteristics are indicators of the health of the waters.

Water quality assessments are generally done as a part of marina development or significant expansion. The widespread use and proven effectiveness of water quality assessments in determining the suitability of a location for marina development, the best marina design for ensuring good water quality, and the causes and sources of water quality problems make this management measure broadly applicable to marina management.

This management measure also includes assessments of how marinas can incorporate natural habitats into their siting and design. If a marina is properly designed and located, aquatic plants and animals should be able to continue to use the marina waters for the same activities that occurred in the waters before the marina's presence.

#### **1. Have accessible, current, written emergency response plans for likely threats.**

Assess hazards, and then plan what should be done and who will do it.

Consider:

- Fuel spill
- Holding or water tank filled with gas

*“Check with your appropriate federal, state, and local agencies BEFORE any site work begins and make certain you have all the permits required.”*

- Spill at the storage area of used oil, antifreeze, solvents, etc.
- Fire
- Health emergency
- Tornado, etc.

Develop emergency response plans for the hazards you identify. Plans should be clear, concise, and easy to use during an emergency. Each emergency response plan should contain the following information:

- *Where* – include a site plan of your facility showing valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations, and telephones; and describe where the appropriate response material is located.
- *Who* – identify who is responsible for taking what action, e.g., deploying equipment, contacting emergency agencies, being the official spokesperson, etc.
- *Emergency Phone Numbers* – include U.S. Coast Guard’s National Response Center 1.800.424.8802, your state and local Emergency Response Division, local fire and police departments, TVA Police, owner, neighboring marinas that have emergency response equipment, and spill response contractors in your area.
- *What* – create a sequential plan of the specific actions to be taken, what equipment should be deployed from your site and where other needed equipment will come from if needed. Characterize the marina’s waterfront and vessels and describe the type, amount, and location of hazardous materials stored on site.
- *How* – explain how the equipment should be used and disposed.
- *When* – Indicate when additional resources should be called for assistance.

Review and update the plans annually to include new technology or equipment and to confirm phone numbers.


Train your employees to implement these plans and review the plans and response procedures with them at the beginning of each boating season.

Note: A Spill Prevention, Control, and Countermeasures (SPCC) plan is a first line of defense against petroleum pollution and should be developed by all marinas, whether required by regulations or not. Maintain enough oil spill response equipment to contain the greatest potential spill at your facility or to encircle the largest vessel in your facility (vessel length X 3 = required length of boom). Store the equipment where the greatest threat of an oil spill exists: fuel receiving and fuel dispensing areas. Mark the storage site with a sign reading “Oil Spill Response Kit”, include instructions for use and the USCG and local notification numbers.




*“Carefully read TVA lease and contract agreements to assure you are in compliance.”*




**2. Maintain files of material safety data sheets as required by the Occupational Safety and Health Act (OSHA) for any chemicals kept on site? **

OSHA requires that a file of material safety data sheets for chemicals used and stored at your marina be maintained away from material storage areas and in an easily accessible location. Signs should be posted identifying the location of this information and encouraging periodical review of the potential hazards and correct emergency responses in case of an accident.

**3. Comply with TVA and other federal flotation devices and material regulations. **

Flotation for all docks, boat mooring buoys, and other water use facilities shall be of materials commercially manufactured specifically for marine use. Any flotation within 40 feet of a line carrying fuel should be 100 percent impervious to water and fuel. Use encased styrofoam flotation. Reuse of plastic, metal, or other previously used containers for encasement or flotation is prohibited.

**4. Keep boats, marina facilities, and other moored craft within harbor limits designated by TVA at times when the reservoir is at or near summer pool. **

The outward reservoir limits of marina harbors are developed on the basis of size and extent of facilities, navigation and flood control requirements, optimum use of lands and environmental considerations. Land rights of the dock operator determine the landward limits. These limits must be observed even during times of heavy use.

**5. Keep marina structures and facilities in good condition, repairing or removing dilapidated facilities. **

TVA 26a and other documents routinely contain language requiring that all structures and facilities be maintained in a good, safe, substantial condition. TVA requires that unsafe and dilapidated structures on lands in the custody or control of TVA be removed or repaired within ninety (90) days of written notice.

**6. Have TVA permits for all structures and facilities in your harbor. **

Please contact the TVA Watershed Team in your area if you cannot document that this requirement has been met.

**7. Have a clean environmental record with all applicable agencies (no pending citations or Notices of Violation)? **

**8. Use environmentally neutral materials that will not leach toxins into the water for new marina construction and additions.**

Additions to existing marinas and new marinas should be constructed with materials for docks and pilings that not will leach toxins into the water. Exotic woods for docks, pilings, and other building should also be avoided.

**9. Minimize adverse effects to aquatic life and habitats during construction and expansion by maintaining a vegetation buffer and using appropriate BMPs such as silt booms.**

Unnatural erosion often occurs where soil, streambanks, or shorelines have been disturbed. Elimination of vegetation from any shoreline exposes soil to the erosive energy of waves and currents. Many processes important to the health of aquatic systems occur in vegetated riparian areas adjacent to rivers and reservoirs, including the following:

- Large quantities of nutrients are absorbed by the vegetation as runoff passing through.
- Eroded soils and other pollutants are filtered out of the water by water-front vegetation.
- As it moves through the vegetation, runoff is slowed down and the impacts of the runoff on the shoreline are reduced.
- Native grasses and shrubs shade the water and keep water temperatures cooler in the shallow areas along the shoreline. Oxygen in the water is reduced as temperatures rise.

Vegetation is a relatively low-cost means to stabilize a shoreline, and it can add a natural, attractive element to an otherwise engineered environment. Protect and maintain existing vegetation during construction and expansion, and then enhance its attractiveness by planting wildflowers, native grasses and flowering shrubs. Costs of mowing will be reduced and ducks and geese find these areas less attractive.

The use of silt booms in the water, hay bales and silt fences on land, and temporary cover crops all play an important part in keeping sediment out of the water during active construction.

**10. Maximize the flushing effects of currents to renew water regularly.**

Water quality with a marina basin depends largely on how well the basin is flushed, which depends in turn on how well water circulates within the marina. Studies have shown that adequate flushing improves water quality in marina basins, reduces or eliminates water stagnation, and helps maintain biological productivity and aesthetic appeal. Flushing can reduce pollutant concentrations in a marina basin by anywhere from 70 percent to almost 90 percent over and 24-hour period.



In a poorly flushed marina, pollutants tend to concentrate in the water and/or sediments. Pollutants and debris can collect in poorly flushed corners or secluded or protected spots. Stagnant, polluted water—with little biological activity, lifeless shorelines, and offensive odors—can be the consequence. Flushing rates in marinas can be improved by using an open design instead of a semi-enclosed design. Wave attenuators such as a sloping beach or a natural wetland dissipate wave energy and filter pollutants out of the water and stormwater. Establishing two openings at opposite ends of the marina promotes flow-through currents.

**11. Maintain your marina basin during the drawdown to remove hazards, accumulated litter, and potential pollutants.**

The winter drawdown provides you with the opportunity to remove stumps, logs, metal drums, tires, and other debris that have washed into the shallow areas of your marina and create a potential hazard to boats and boaters. It's also a good time to remove bottles, cans, and other solid waste which is visually displeasing and can sometimes entrap fishes and other wildlife.

It also allows you to inspect your shoreline, place riprap along areas of shoreline which are eroding, and perhaps plant water willow or other native aquatic plants to dissipate wave action and provide fish habitat.

**12. Use mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing.**

Mechanical aerators add oxygen to the water, and by doing so, speed up decomposition of organic material and wastes which can sometimes accumulate. They also help cool the water and, if incorporated into a fountain effect, are visually attractive to patrons.

**13. Practice water conservation.**

Even a very slight leak in a marina water system can waste a lot of water if not fixed within a reasonable amount of time. Regularly inspecting for leaks and repairing them immediately ensures that water and money is not being wasted. Low-flow faucets, shower heads, and toilets can be installed for extra savings in water use. Some equipment needs only a simple alteration to reduce the amount of water used, such as installing automatic shutoff nozzles on hoses.

**14. Use upland and inland areas for storage and maintenance.**

Designating and operating a hull maintenance work area with a focus on pollution prevention is an excellent way of preventing dangerous pollutants from reaching the marina basin. Refer to Section 4 of this guide, Vessel Operation, Maintenance, and Repair, for more information on this management measure.

**15. Use environmentally friendly lawn and garden products or avoid chemicals altogether.**

Planting or conserving existing hardy native plants along the marina shoreline makes the use of pesticide and fertilizers far less necessary than planting nonnative species, which typically need more care since they are often not adapted to the Tennessee Valley climate. Toxic pesticides and fertilizers are especially worth avoiding. If chemicals become absolutely necessary, only the smallest amount possible should be used.



## Section 6 Stormwater Management and Erosion Control

### Background

The best way to minimize the polluting effects of stormwater is to use pollution prevention activities and proper design of hull maintenance and mechanical repair and maintenance areas, and otherwise reduce, as much as possible, the amount of pollution that gets on the ground in the first place.

Any debris that is on the ground and light enough to be carried in flowing rainwater can end up in the reservoirs and streams of the Tennessee Valley. Sanding dust, paint chips, metal filings, and other solids created during boat maintenance and repairs can be swept along by runoff and end up in the water. Oil, grease, solvents, and fuel spilled or dripped onto the ground can also be carried away in the runoff. When they reach the marina basin, they create unsightly surface films or float until they adhere to surfaces like boat hulls or docks. Some of these pollutants sink with the eroding soil to the bottom, are eaten by bottom-feeding fish or filter-feeding shellfish, or settle onto the leaves of aquatic vegetation and clog their pores. Stormwater that is treated in some way to remove these pollutants before they can reach the marina basin will not result in these problems.

**1. Have a general National Pollutant Discharge Elimination System (NPDES) permit for (stormwater runoff) discharges from marinas related to sanding, painting, repairing or maintaining boats. ®**

EPA's management measure for stormwater runoff is to reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. The 80 percent removal of TSS is applicable to hull and engine maintenance areas only because runoff from these areas contain higher levels of toxic pollutants than runoff from other parts of the marina property. The goal is achieved by eliminating, through source reduction and pollution prevention, 80 percent of the total annual load of suspended materials produced in an average year of work. Most marinas use some management practices already and are already collecting some or all of this 80 percent.

Visit the EPA website at <http://www.epa.gov/owm/npdes.htm> for more information. Your state or local environmental agency can be contacted for additional stormwater guidance and for information pertaining to stormwater regulation and permits.

**2. Use native herbs and grasses, wetlands, and aquatic vegetation wherever possible to protect shorelines, dissipate wave energy, filter pollution, and provide wildlife habitat. where space allows.**

*"Get creative... Harbour Towne Marina in Florida modified its yard storm drains to hold an ordinary air conditioner filter, which effectively stops suspended solids from passing through."*



Vegetative plantings and wetland enhancements or preservation of existing vegetation can be the most effective means of protecting shorelines and filtering pollution from stormwater.

### **3. Have a stormwater management system in place.**

There are a number of BMPs to prevent pollution and reduce the sources of pollution that are carried in stormwater. Many of these are listed in Section 4, Vessel Operation, Maintenance, and Repair. These BMPs, if well implemented, should significantly reduce the load of total suspended solids in your stormwater runoff and should be included as part of your stormwater management system.

Wastewater can be chemically treated by the addition of certain chemicals that cause small solid particles to adhere together to form larger particles, which are then filtered from the water. This type of treatment system can remove more than 90 percent of the suspended solids and 80 percent of most toxic metals associated with pressure washing. The degree of treatment is determined by how much of the chemical is added and the porosity of the filter used, and can be altered to meet municipal standards. Since the chemicals used require disposal themselves, this method of pollutant removal should only be considered where other methods prove ineffective.

### **4. Use riprap revetment or biostabilization instead of a solid vertical bulkhead where shorelines need structural stabilization and where space and use allow.**

Where shorelines need structural stabilization and where space and use allow, riprap revetment is preferable to a solid vertical bulkhead. Riprap is a common and economical revetment that can withstand substantial wave energy. Natural rock is the best material. Gabions and sloping revetments also dissipate incoming wave energy and usually reduce the scouring effect of bulkheads. Vegetation can often be added at the edges of these structural elements to control erosion from runoff and to serve as a landscaping element. Some concrete revetments have open areas which allow vegetation to reestablish along the shoreline.

### **5. Plant grass, herbs, or shrubs between impervious areas and the marina basin to retain and filter pollutants.**

Directing stormwater to a grassed area instead of to drains, pipes, or cement channels is an effective way to prevent the pollutants in runoff from reaching the marina basin, whether the runoff originates from parking lots, maintenance areas, rooftops, or any other impervious surface.

The technical term for a channel or ditch planted with grass and used for stormwater treatment is "grassed swale". Grassed swales are low-gradient channels that can be used in place of buried storm drain pipes. To effectively remove pollutants, grassed swales need to have only a slight slope and

*"All types of filters will need periodic maintenance, cleaning or replacement."*



should be long enough to filter out all of the pollutants. Because some storms in the Tennessee Valley are occasionally strong, erosion-resistant vegetation such as deep-rooted native grasses works best. The vegetation filters out pollutants and absorbs nutrients while the runoff infiltrates into the ground as it is slowed by the grass in the swale.

**6. Have limited areas of impervious pavement and use pervious pavement or pavement tile where feasible.**

Pervious pavement has a coarse, permeable top layer covering an additional layer of gravel. Runoff infiltrates through the porous layer and into the ground. As storm water passes through the pavement, the gravel, perhaps through a perforated underground pipe system, and on into the underlying soil, pollutants are naturally filtered out. Porous pavement helps recharge ground water and provides excellent pollutant removal (up to 80 percent of sediment, trace metals, and organic matter).

**7. Have oil and grit separators installed in storm drains to capture petroleum spills and coarse sediment.**

Some storm drain designs will permit a filter to be inserted in them to screen solid materials out of runoff. If oil is typically contained in runoff, an oil absorption pad can be inserted into the water pool or trap beneath the filter as well, where it can remove much of the oil and grease contained in runoff. Absorbent material products can remove 10 to 25 times their weight in oil.

**8. Use catch basins where stormwater flows to the marina basin in large volumes.**

Catch basins with flow restrictions are used to keep large pulses of stormwater from entering the marina basin at one time. Particulates and soil settle to the bottom of a catch basin, in which the bottom of the basin is typically 2 to 4 feet below the outlet pipe (the pipe through which the trapped water moves out of the basin). The traps in catch basins require periodic cleaning and maintenance, but if properly maintained, a catch basin should last about 50 years.

Catch basins can have a separate chamber filled with sand. With this design, runoff first enters an open chamber where coarse particles that could clog the sand filter out. The runoff then flows into a second chamber where it filters through the sand. These catch basins with sand filters work well in areas with a high percentage of impervious surface, where other BMPs would be ineffective. The top layer of sand will need to be removed periodically and replaced with fresh, clean sand.

## Section 7 Public Education

### Background

Public education is one of the most effective ways to reduce pollution in and around marinas. A boating public that understands the causes and effects of pollution is more likely to want clean waters and healthy aquatic environments. If the public is told about the simple and effective ways that they can reduce their impacts on the environment, they are usually willing to do their part. One of the primary factors in the success of any pollution prevention program is widespread support for the program by an educated public.

Public education is a low-cost, effective, proven method to improve and reinforce environmentally conscious behavior in all segments of the public, including the boating public. The availability of a variety of public education materials on virtually all environmental issues and for all segments of the public makes this management measure easy to implement.

#### **1. Have bulletin boards for environmental education messages and idea sharing.**

Bulletin boards are convenient places to post notices about the availability of dustless sanders for rent, environmentally friendly cleaners and antifouling paints, new practices and programs at the marina for reducing pollution, water quality monitoring results, engine maintenance to keep emission output low, or any other positive clean boating message. It can also provide a mechanism for patrons to communicate availability of free leftover paints and other products. If it is attractive and regularly updated, boaters will become accustomed to checking it out when visiting your facilities.

#### **2. Educate and train marina staff to do their jobs in an environmentally conscious manner and to be a good role model for marina patrons.**

Marina staff who are fully educated and trained on all of the environmental management practices used at the marina can set an example for patrons, and with your encouragement, become friendly, courteous advocates for needed changes in boater behavior. An informed staff also presents the image of an environmentally proactive marina and will make casual visitors to your marina more aware and appreciative of what your marina has to offer.

#### **3. Use signs and/or hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how your patrons can protect the environment and practice clean boating behavior.**

Interpretive and instructional signs placed at marinas and boat-launching sites are a key method of providing information to the boating public. Boater cooperation can be substantially increased at modest expense by using

*“Encourage marina staff to pass along pollution prevention information in conversations with patrons and contractors.”*



signs. Common topics for marina signage include solid waste disposal, pumpout locations and instructions, and spill response instructions.

**4. Have language in customer contracts to ensure that tenants use designated areas and clean boating techniques when maintaining their boats and will comply with the marina's best management practices.**

When a marina has established procedures for keeping the grounds and waters clean, cooperation from patrons is absolutely essential.

**5. Have signs posted that require proper usage of your pumpout system or dump station (or have signs posted directing them to the nearest pumpout facility).**

**6. Teach boaters how to fuel boats to minimize fuel spills and have easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.**

Boaters need to understand that whenever they spill even a few drops of oil or fuel, the environment is harmed. There are simple steps boaters can take to prevent fuel loss. Teach them with a sign and staff encouragement:

- Don't top off the tank when fueling,
- Use an oil absorption pad to catch drops when the fueling nozzle is removed from the boat,
- Install a fuel/air separator on the air vent line, and
- Place an oil-absorbing pad in the bilge.

Have your staff explain to boaters that when they top off a fuel tank from an underground storage, the cool fuel expands as it heats up, and will overflow through the air vent into the water because there is not enough expansion space in the fuel tank.

**7. Have signs on storm drains instructing patrons not to dump waste in or around the drains.**

Storm drains painted with phrases like "Dump no waste—Drains to reservoir" grab people's attention at a marina and help control disposal of solid and liquid wastes in inappropriate places. Inexpensive stencils can be purchased for use with road marking paint. With a little ingenuity, this can be incorporated into a enjoyable activity for the marina's boating families. It is something that kids REALLY have fun doing.

**8. Educate boaters about good fish cleaning and disposal practices.**

Some boaters need to be educated about the problems created by discarding fish waste into marina waters and the importance of using good disposal practices at your marina. Teach boaters about the ecological advantages of cleaning fish offshore, freezing fish parts to reuse then as bait or chum, and practicing catch and release fishing. Make it fun by involving your marina



*“Get free copies of clean boating materials from organizations such as the Center for Marine Conservation and Boat US/ Clean Water Trust, from agencies with jurisdiction over boating and marina activities, and from numerous websites available through use of appropriate key words.”*

fishermen in a “show and tell” demonstration at the beginning of a marina fish fry.

**9. Recommend vessel bottom coatings with minimal environmental impacts.**

People learn best by demonstration and example. If there are boaters in your marina utilizing the newer, more environmentally friendly coatings, ask them to share their experience with others at a marina gathering or through your newsletter. Or expose several appropriately prepared coating samples placed on typical boat surfaces to the water over time and let patrons observe the results for themselves.

**10. Sell a full line of environmentally sound products in your company store, and educate/encourage your marina users to select them over products that have greater potential for harm.**

As acceptance and usage increases, discontinue availability of the more harmful products.

**11. Hold Clean Boating Campaigns at your marina, or offer fun-directed contests, quizzes, etc. for marina patrons which reinforce desired behavior, and award prizes such as absorbent pads, MSD chemicals, etc. which encourage the behavior you seek.**





## **Programs to Control Nonpoint Source Pollution**

### **Background**

This chapter highlights federal and state agencies and regulations as they apply to boaters and marina operators. One goal of the Tennessee Valley Clean Marina Initiative is to provide marina operators with the opportunity to demonstrate their commitment to improving water quality and addressing water quality issues. If successful, it could help the marine industry avoid new regulations. The discussion of laws and regulatory agencies in this chapter is not intended as a comprehensive clearinghouse for local, state and federal laws and regulations affecting marina operators. Complying with applicable laws and regulations is ultimately in the hands of the marina owners and management.

#### OVERVIEW OF SELECTED FEDERAL AGENCIES

##### **Environmental Protection Agency (EPA)**

The Environmental Protection Agency (EPA) is responsible for environmental protection and pollution control in the United States as it relates to economic growth, energy, transportation, agriculture, industry, international trade and natural resources. Of particular interest to marina operators, the EPA is responsible for administering the Clean Water Act, Clean Air Act, Oil Pollution Act, Resource Conservation and Recovery Act and Marine Plastics Pollution Research and Control Act.

##### **National Oceanic and Atmospheric Administration (NOAA)**

The National Oceanic and Atmospheric Administration (NOAA), an agency of the U.S. Department of Commerce, is charged with the mission of describing and predicting changes in the earth's environment and conserving the nation's coastal and marine resources. NOAA has developed a wide range of strategies to address marine issues in coastal and inland waters.

##### **United States Army Corps of Engineers (USACE)**

The United States Army Corps of Engineers (USACE) is made up of civilian and military men and women who work hand in hand as leaders in engineering and environmental matters including flood control, hydropower production, navigation, water supply storage, recreation, wetlands, and fish and wildlife habitat. Biologists, engineers, geologists, hydrologists, natural resource managers and other professionals meet the demands of changing times and requirements as a vital part of America's Army. On the Tennessee River system USACE operates locks for commercial and recreational use.

### **United States Coast Guard (USCG)**

The United States Coast Guard (USCG), a branch of the U.S. Department of Transportation, is responsible for maritime safety and law enforcement, marine environmental protection, maintaining federal navigation aids and regulating recreational and commercial vessels and waterfront facilities.

### **Tennessee Valley Authority (TVA)**

The Tennessee Valley Authority (TVA) was created by an act of congress in 1933 with the charge of building a series of dams along the Tennessee River and its major tributaries to provide flood control, improve navigation and generate hydroelectricity. TVA's responsibilities have broadened since 1933 to include the areas of land use, water quality and recreation. In carrying out its activities, TVA cooperates and consults with the public and environmental regulatory agencies at the local, state and federal level.

## **OVERVIEW OF SELECTED FEDERAL LAWS**

### **Clean Water Act (CWA)**

The Clean Water Act (CWA) is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants into waters of the United States. The law gives EPA the authority to set effluent standards on an industry basis and continues the requirements to set water quality standards for all contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the Act. The 1977 amendments focused on toxic pollutants. In 1987, the CWA was reauthorized and again focused on toxic substances, authorized citizen suit provisions, and funded sewage treatment plants under the Construction Grants Program. The CWA provides for the delegation by EPA of many permitting, administrative and enforcement aspects of the law to state governments. In states with the authority to implement CWA programs, EPA still retains oversight responsibilities.

### **Clean Air Act (CAA)**

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from area, stationary and mobile sources, including marine vessels. This law authorizes the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The goal of the act was to set and achieve NAAQS in every state by 1975. The setting of maximum pollutant standards was coupled with directing states to develop state implementation plans (SIP) applicable to appropriate industrial sources in the state. The act was amended in 1977 primarily to set new goals for achieving attainment of NAAQS since many areas of the country had failed



to meet the deadlines. The 1990 amendments to the CAA in large part were intended to meet unaddressed or insufficiently addressed problems such as acid rain, ground-level ozone, stratospheric ozone depletion and air toxins. Part of the 1990 amendments established manufacturer emission standards for new spark-ignition gasoline marine engines. Outboard engines and gasoline marine engines used in personal watercraft and jet boats are included in the rule.

### **Oil Pollution Act of 1990 (OPA)**

The Oil Pollution Act (OPA) of 1990 streamlined and strengthened EPA's ability to prevent and respond to catastrophic oil spills. A trust fund financed by a tax on oil is available to clean up spills when the responsible party is incapable or unwilling to do so. The OPA requires oil storage facilities and vessels to submit to the federal government plans detailing how they will respond to large discharges. EPA has published regulations for aboveground storage facilities; the Coast Guard has done so for oil tankers. The OPA also requires the development of Area Contingency Plans to prepare and plan for oil spill response on a regional scale.

### **Resource Conservation and Recovery Act (RCRA)**

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites. HSWA – The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that required phasing out land disposal of hazardous waste. Some of the other mandates of this strict law include increased enforcement authority for EPA, more stringent hazardous waste management standards and a comprehensive underground storage tank program.

### **Marine Plastic Pollution Research and Control Act (MPPRCA)**

The Marine Plastic Pollution Research and Control Act (MPPRCA) of 1987 restricts the overboard discharge of refuse, specifically plastics. It is illegal for any vessel to dump plastic materials into any navigable U.S. waters. Included in the law is a provision stating that ports, terminals and recreational marinas must have appropriate and convenient garbage "reception facilities" for their customers.

## OVERVIEW OF SELECTED PROVISIONS FROM THE TVA ACT AND TVA REGULATIONS

### **TVA Act - Section 26a**

Section 26a of the TVA Act requires that TVA approval be obtained prior to the construction, operation or maintenance of a structure or construction activity affecting navigation, flood control or public lands along the shoreline of TVA reservoirs or in the Tennessee River or its tributaries. It is designed to ensure that construction along the shorelines and waters of the Tennessee River system and TVA reservoirs does not adversely impact TVA's responsibility for managing the river system. Permit approvals for construction under Section 26a are "federal actions" and therefore subject to the requirements of the National Environmental Policy Act and other federal laws. Typical structures requiring TVA review and approval include: boat docks, piers, boat ramps, bridges, culverts, commercial marinas, barge terminals and mooring cells, water intake and sewage outfalls, and fill or construction within the floodplain.

### **Nonnavigable Houseboats**

All approved nonnavigable houseboats must be equipped with a properly installed and operating Marine Sanitation Device (MSD), or Sewage Holding Tank and pumpout capability. Nonnavigable houseboats moored on "Discharge Lakes" must be equipped with a Type I or Type II MSD. Nonnavigable houseboats moored on "No Discharge Lakes" must be equipped with holding tanks and pumpout capability. If a nonnavigable houseboat moored in a "No Discharge Lake" is equipped with a Type I or Type II MSD, it must be secured to prevent discharge into the lake.

### **Marine Sanitation Device—Requirements at Commercial Marinas and Boat Docks**

This section states that no person operating a commercial boat dock shall allow the mooring of a watercraft or floating structure equipped with a marine sanitation device (MSD) unless such MSD is in compliance with all applicable statutes and regulations, including the Federal Water Pollution Control Act, and where applicable, statutes and regulations governing "no discharge zones". All new slip rental arrangements shall contain a written provision implementing this requirement.

### **No Discharge Zones**

The EPA has designated certain TVA reservoirs as "No Discharge Zones." "No Discharge Zones" are areas of water that require greater environmental protection and where the discharge of treated sewage could be harmful. Whenever a vessel equipped with a Type I or Type II MSD (these types discharge treated sewage) is operating in an area of water that has been declared a "No Discharge Zone," the MSD cannot be used and must be



secured to prevent discharge. Generally, all freshwater rivers and reservoirs not capable of interstate vessel traffic are by definition considered "No Discharge Zones."

TVA No Discharge Zones include:

Appalachia  
Bear Creek Projects  
Beech River Project  
Blue Ridge  
Boone  
Cherokee  
Douglas  
Fontana  
Ft. Patrick Henry  
Hiwassee  
Nolichucky  
Normandy  
Norris  
Nottely  
Ocoee 1, 2, 3  
Tim's Ford  
Watauga  
Wilbur

### **Wastewater Outfalls and Septic Systems**

Applicants for a wastewater outfall may be asked to provide to TVA copies of all Federal, Local, and State permits, licenses and approvals required for the facility prior to applying for TVA approval, or shall concurrently with the TVA application, apply for such approvals. A section 26a permit shall not be issued until other required water quality approvals are obtained. TVA reserves the right to impose additional requirements. Septic tank and sewage disposal systems associated with commercial facilities must be approved by local health department or state agency with regard to site, slope, percolation rate, and soil conditions. The system must be installed with a 2-foot vertical, and 50-foot horizontal setback between all portions of the subsurface disposal field and the normal summer lake elevation.

### **Marina Sewage Pumpout Stations and Holding Tanks**

All new marina pumpout facilities located on TVA reservoirs must meet certain minimum design and operating requirements as designated by TVA. These requirements deal with spill-proof holding tanks, alarm systems, access, disposal methods and other provisions.

## **Flotation Devices and Material**

TVA has established standards for flotation devices on docks, boat moorings and other water-use structures and facilities. Flotation for all docks, boat mooring buoys, and other water use facilities shall be of materials commercially manufactured specifically for marine use. Any flotation within 40 feet of a line carrying fuel shall be 100 percent impervious to water and fuel. Styrofoam flotation must be encased for all applications. Reuse of plastic, metal, or other previously used drums or containers for encasement or flotation purposes is prohibited.

## **Commercial Marina Harbor Limits**

The landward limits of commercial marina harbor areas are determined by the extent of land rights held by the dock operator. TVA designates the outward reservoir limits of marina harbors on the basis of the size and extent of facilities at the dock, navigation and flood control requirements, optimum use of lands, and environmental effects associated with the use of the harbor. Mooring buoys or slips and permanent anchoring are prohibited beyond the reservoir extent of harbor limits. "No Wake Zones" are generally not permissible where marina harbor limits front the commercial navigation channel.

## **Underground and Aboveground Storage Tanks**

An underground storage tank (UST) is any one or combination of tanks used to contain a regulated substance, such as petroleum products, which has 10% or more of its total volume beneath the surface of the ground. The total volume includes any piping used in the system. A UST may be a buried tank or an aboveground tank with buried piping if the piping holds 10% or more of the total system volume including the tank.

An aboveground storage tank (AST) is any storage tank whose total volume (piping and tank) is less than 10% underground.

TVA has developed requirements for installing USTs and ASTs on TVA reservoirs or regulated tailwaters.

For information on specific Section 26a requirements and permitting processes, contact your TVA Watershed Team listed in the introduction.

## **STATE AGENCY CONTACTS**

In addition to federal regulations most states have enacted laws to protect the natural resources within their jurisdiction. State regulations can be no less stringent than federal regulations but can be more restrictive. It is important that you communicate with the appropriate Tennessee Valley state agencies listed below to ensure compliance with federal and state regulations. Please contact your state agencies for help in identifying and complying with applicable laws and regulations for your marina.



## **Alabama**

### **Department of Environmental Management**

PO Box 301463  
Montgomery, AL 36130-1463  
334.271.7710

### **Division of Wildlife and Freshwater Fisheries**

#### **Alabama Department of Conservation and Natural Resources**

64 N. Union Street, Room 584  
Montgomery, AL 36130  
334.242.3465

## **Georgia**

### **Environmental Protection Division**

#### **Department of Natural Resources**

205 Butler Street, SW  
Atlanta, GA 30334  
404.656.3500

### **Georgia Fisheries Management**

Rt. 3 Box 75  
Ft. Valley, GA 31030  
912.825.6151

## **Kentucky**

### **Department for Environmental Protection**

#### **Frankfort Office Park**

14 Reilly Road  
Frankfort, KY 40601  
502.564.2150

### **Department of Fish and Wildlife Resources**

1 Game Farm Road  
Frankfort, KY 40601  
502.564.3596

## **Mississippi**

### **Department of Environmental Quality**

PO Box 20305  
Jackson, MS 39289  
601.961.5000

**Department of Wildlife, Fish and Parks**  
PO Box 451  
Jackson, MS 39205  
601.364.2202

## **North Carolina**

**Division of Environmental Management**  
**Department of Environment, Health and Natural Resources**  
PO Box 29535  
Raleigh, NC 27626  
919.733.7015

**North Carolina Wildlife Resources Commission**  
512 N. Salisbury Street  
Raleigh, NC 27604  
919.733.3391

## **Tennessee**

**Bureau of the Environment**  
**Department of Environment and Conservation**  
401 Church Street, 21<sup>st</sup> Floor  
Nashville, TN 37243  
615.532.0220

**Wildlife Resources Agency**  
PO Box 40747  
Nashville, TN 37204  
615.781.6552

## **Virginia**

**Department of Environmental Quality**  
629 E. Main Street  
Richmond, VA 23219  
804.698.4000

**Department of Game and Inland Fisheries**  
4010 W. Broad Street  
Richmond, VA 23230  
804.367.9231





## Resources

### Information

#### **American Boat and Yacht Council**

3069 Solomons Island Road  
Edgewater, MD 21037  
410.956.1050

Information about holding tank retrofits and vessel standards

#### **Boat/U.S. Clean Water Trust**

880 S. Pickett Street  
Alexandria, VA 22304  
703.461.9550

Clean boating educational materials

#### **Center for Marine Conservation**

1725 DeSales Street, NW  
Washington, DC 20036  
202.429.5609

Marine debris educational material, Storm drain stenciling information and materials

#### **Marina Operators Association of America**

1819 L St., NW, Suite 700  
Washington, DC 20036  
202.721.1630 or [www.moaa.com](http://www.moaa.com)

#### **Marine Environmental Education Foundation**

##### **National Clean Boating Campaign**

214 Hillcrest Drive  
Fredericksburg, VA 22401  
540.891.8181 or e-mail [meef@meef.org](mailto:meef@meef.org)

#### **Maryland Department of Natural Resources**

##### **Waterway Resources Division**

Annapolis, MD 21401  
410.260.8770

*Maryland Clean Marina Guidebook*

#### **Minnesota Sea Grant College Program**

University of Minnesota  
St. Paul, MN 55108  
612.625.1253

Information on composting fish waste

**National Fire Protection Association**

1 Batterymarch Park  
P.O. Box 9101  
Quincy, MA 02269-9101  
800.344.3555  
Copies of NFPA standards (copies may be available from your local fire marshal)

**National Marine Manufacturers Association**

200 E. Randolph Drive, #5100  
Chicago, IL 60601-6528  
Educational materials

**National Technical Information Service**

5285 Port Royal Road  
Springfield, VA 22161  
703.487.4600  
*Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*

**Rhode Island Sea Grant**

Communications Office  
University of Rhode Island  
Narragansett, RI 02882-1197  
*Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island*

**United States Coast Guard**

**National Response Center**

2100 Second Street, SW  
Washington, D. C. 20593  
800.424.8802

**U.S. Environmental Protection Agency**

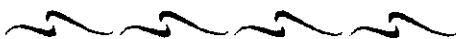
**Nonpoint Source Control Branch**

1200 Pennsylvania Avenue, NW, (4503-F)  
Washington, D. C. 20460  
202.260.7009  
[www.epa.gov/owow/nps/bestnpsdocs.html](http://www.epa.gov/owow/nps/bestnpsdocs.html)

**U.S. Environmental Protection Agency**

**Region IV**

61 Forsyth Street, SW  
Atlanta, GA 30303  
[www.epa.gov](http://www.epa.gov)





**U.S. Fish and Wildlife Service**  
1875 Century Boulevard  
Atlanta, GA 30345  
404.679.7113

## **Docks, Piers, and Flotation Products**

**Dock Operations & Marine Equipment**  
127 River Rd.  
Hendersonville, TN 37075

**Floating Docks Manufacturing Co.**  
6041 Guion Rd.  
Indianapolis, IN 46254  
800.969.3625

**Formex Floats**  
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Lawrenceville, GA 30045  
770.962.3125

**Follansbee Dock Systems**  
State Street, P. O. Box 640  
Follansbee, WV 26037

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931.967.9493

**Redd Team Manufacturing, Inc.**  
6587 S. R. 21  
P. O. Box 658  
Keystone Heights, FL 32656

**Selective Construction, Inc.**  
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Soddy Daisy, TN 37379  
423.332.6312

**Tennessee Docks and Decks**  
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Hendersonville, TN 37076  
615.824.9811

## **Environmental Products**

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### **Petrol Rem, Inc.**

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Pittsburg, PA 15220  
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St. Petersburg, FL 33713  
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## **AL/MS SPRING MARINA WORKSHOP**

### **Increasing Professionalism in Marinas: The Role of the Association**

**Prepared by;  
James L. Frye, CMM  
Executive Director, Marina Operators Association of America (MOAA)**

People join associations for many reasons. Among the most common are desires to advance common interests; to address social, economic, political, and educational needs; and to protect the status of their profession or industry. With roots in ancient civilizations and ties to Old World guilds, associations today have evolved to occupy a unique place in society. Today's association executives confront and meet daily challenges to respond to members' needs, to protect members' interests while promoting the social good, and to preserve the idealism that is so vital to the progress of society.

- Today, more than 140,000 associations exist in the United States, representing nearly every industry, profession, charity, hobby, cause, and interest.
- Nine of 10 adult Americans belong to one association, and one out of four belong to four or more associations, according to a 1998 study by the American Associations of Retired Persons.
- More people work for nonprofit organizations than for the federal government and all 50 state governments combined (8.6 million versus 6.8 million).
- Americans are forming as many as 1,000 new associations each year.

In his publication *The Theory of Associations*, Lee VanBremen, Ph.D., CAE offers some historical perspective on the development of associations.

Historically, what we now know as trade and professional associations have played several important roles in society. One role, that of education, evolved from the guilds of the Old World, which provided an opportunity for craftsman, and later professionals, to band together for training, protection, and dissemination of information.

By the early nineteenth century, associations of emerging American businesses were also beginning to play new roles such as influencing legislation, gathering statistics and credit information, and obtaining standardized insurance rates. Many important American professional associations had been founded by the 1860s. In the twentieth century, the importance of influencing national policy

) government agencies and academics to create and promulgate environmental responsibility in the marine industry. MEEF created the National Clean Boating Campaign, an ongoing educational campaign informing industry and boating consumers about responsible, clean boating practices and best management practices for marina repair work, etc. MEEF has historically partnered with agencies of the federal government like the U.S. Fish & Wildlife Service, the U.S. EPA, the National Park Service and others delivering the values, goals and messages of these agencies in a non-threatening and proactive way to industry and consumers. Education replaces education in these partnerships.

MEEF took a leadership role in helping states develop Clean Marina Initiatives, programs designed to identify and recognize marinas employing environmentally responsible, best management practices and motivating these marinas to “do the right thing at the right time” rather than imposing more stringent regulation and threatening facilities into compliance. Rewarding desired behavior is fundamental to changing behavior and a preferred methodology to penalizing bad behavior. Next on the horizon for MEEF is another partnership with EPA and perhaps NOAA to host a National Clean Marina Workshop to help spread the successes of those states that currently have clean marina programs to states that do not. Industry will have a role at the meeting to endorse what works best about existing programs and suggest productive changes and improvements for consideration.

) Another example of education and cooperation enhancing advocacy or traditional lobbying efforts can be found in a recent training program hosted by MOAA. In December of 2001 MOAA presented “Marina Management 101 – For Agency Lake Managers” to approximately 50 state and federal agency representatives that manage federal lakes and marina concessionaires. The program was sponsored by a grant from one of those federal agencies the Bureau of Land Management. The government invested their resources in learning more about marina businesses so that they could do a better at partnering with industry to better serve American’s recreating on federal lands.

It goes without saying that a product of that training session will be a better informed federal agency representative that will have a different perception of the marina concessionaire or tenant and will make more rational, reasonable, decisions about and demands on that operator. Increasing professionalism on both sides of the exchange. It’s worth noting that the most popular session among participants was a topic on customer service and the focus that operators place on delivering quality boating experiences to boating customers. The fundamentals of customer service were genuinely foreign to many of these folks but they embraced the concepts with enthusiasm.

) Finally, education, certification and accreditation are fundamental to increasing professionalism among marina operators and the association has a key role in creating, organizing and delivering these tools.

CONSTITUTION  
and  
BY-LAWS OF  
Kentucky Marina Association

ARTICLE I - OFFICES

The principal office of the corporation shall be located at the address of the Secretary. The corporation may have such other offices, either within or without this state, as the Board of Directors may determine from time to time.

ARTICLE II - PURPOSE

Section 1. The aims and objectives of the Association are:

- a. To provide an organizational structure for owners and operators of marina enterprises who are helping to meet the public's demand for recreational opportunities through private commercial recreation activities, services, facilities, and areas.
- b. To foster and maintain communications between members for their mutual benefit.
- c. To promote broader public interest in the benefits of recreational boating.
- d. To encourage and promote educational programs aimed at improving marketing, operations and management of marinas.
- e. To establish better communications and liaison with governmental agencies in the formulation and interpretation of marine regulations through representation on advisory boards and commissions, at hearings and educational meetings.
- f. Furnish the General Assembly of KENTUCKY with information pertaining to marine and boating legislation.
- g. To function in any manner that will further the interests of marine enterprises compatible with the public's interest in water recreation.
- h. This Association shall not be operated for pecuniary profit. Upon final dissolution of this Association, any funds or assets remaining after payment of debts shall be distributed by a vote of the membership. No distribution shall inure to the benefit of any individual member.

ARTICLE III - MEMBERS

Section 1. Classes of Members: The members of the corporation shall be divided into two classes: voting members and associate members.

Section 2. Voting members: Any person, organization, or corporation owning or engaged in the operation of a privately owned marina, or engaged in the operation as the sole concessionaire on the body of water they operate providing marina facilities shall be eligible for voting membership. In cases of organizations or separate ownership and operation of single enterprise, only one voting membership per enterprise will be accepted.

Section 3. Associate Members: Any person, organization, government agency, or corporation interested in promoting boating in this state and supporting the purposes and objectives of the corporation shall be eligible for associate membership.

Section 4. Dues: At the Annual Meeting of each fiscal year, the Board of Directors shall recommend and the membership shall vote with a majority of those present the amount of annual dues.



Section 5. Election of Members: Any person interested in becoming a member shall submit a written and signed application, on a form approved by the Board of Directors, to the Secretary of the corporation. The Secretary shall receive and the Board of Directors shall approve or disapprove the application. Applicants whose applications are approved shall become members upon payment of the required annual dues. The Board's decision may be appealed by applicant to the voting members at the next annual meeting.

Section 6. Voting Rights: Each voting member in good standing shall be entitled to one vote on each matter submitted to a vote of the members. Associate members shall not be entitled to vote.

Section 7. Termination of Membership: The Board of Directors, by affirmative vote of two-thirds of all the members of the Board, may terminate the membership of a member for cause after an appropriate hearing; the Board of Directors, by a majority vote of those present at any regularly constituted meeting may terminate the membership of any member who becomes ineligible for membership. Membership shall automatically terminate upon default in payment of dues 60 days after expiration of annual membership.

Section 8. Transfer of Membership: Membership in this corporation shall not be transferable or assignable without the express consent of the Board of Directors.

#### ARTICLE IV - MEETINGS OF MEMBERS

Section 1. Two meetings of the membership shall be held each fiscal year at a central place as the Board of Directors may designate, in writing not less than 30 days prior thereto. One of the meetings shall be held in the Fall of the year and shall be designated as the Annual Meeting.

Section 2. Special Meetings: Special meetings of the members may be called by the President or by a majority of the Board of Directors or upon the written petition signed by 10% of the active membership. Written notice stating the time and place of the meeting and the purpose for which it is called shall be delivered by the Secretary to the members not less than 10 nor more than 35 days before the date of the meeting.

Section 3. Quorum: The quorum for the annual meeting of the members shall consist of the number of voting members (excluding those of the Board of Directors) present at the meeting.

#### ARTICLE V - BOARD OF DIRECTORS

Section 1. General Powers: The affairs of the Association shall be managed by its Board of Directors, who shall be elected at the Annual Meeting of the membership.

Section 2. Number and Tenure: The number of Directors shall be nine (9). At the first Annual Meeting of the membership, three (3) Directors shall be elected for a period of one year, three (3) Directors shall be elected for a period of two years, and three (3) Directors shall be elected for a period of three years. At each Annual Meeting thereafter, three directors shall be elected for a term of three years. Except in the initial one-year terms, no Director may hold successive terms of office.

The determination of the term of the initial Board shall be according to the number of votes cast. The three nominees who receive the first, second and third highest number of votes will serve three year terms. The three nominees who receive the fourth, fifth and sixth highest number of votes will serve two-year terms. The three nominees who receive the

seventh, eighth and ninth highest number of votes will serve one-year terms. In case of a tie, all determinations shall be made by lot.

Section 3. Any vacancies on the Board of Directors occurring during the year shall be filled by the President, with the approval of the majority of the remaining members of the Board, for the unexpired term of office.

Section 4. Board members shall notify the Secretary in advance of absence at Board Meetings. Any Board Member having two consecutive unexcused absences at regular Board meetings shall be removed from the Board and a replacement named at per Article V, Section 3.

Section 5. Regular Meetings: The Board of Directors will meet quarterly during each fiscal year.

Section 6. Special Meetings: Special meetings of the Board of Directors may be called by the President or any four (4) Directors upon three days notice.

Section 7. Quorum: A majority of the Board of Directors shall constitute a quorum.

Section 8. Minutes of any meetings of the Board of Directors may be sent to the membership, and shall be sent to Board Members within 30 days from the date of the meeting.

#### ARTICLE VI - OFFICERS

Section 1. Officers: Officers of the association shall be a President, a Vice-President and a Secretary-Treasurer, whose duties will be such as are normally consistent with those offices.

Section 2. The officers shall be elected by the Board membership for a term of one year at the first Board Meeting following the annual meeting of membership. Officers may succeed themselves in office, except that the President may not serve more than two successive years.

Section 3. The Board of Directors shall have the power to fill vacancies of any of said offices for the unexpired terms.

Section 4. Except as provided in Article V, Section 2, for the initial nominations and elections, the President, with the approval of a majority of the Board of Directors, shall appoint for his term of office a Nominating Committee and designate its Chairman. ✓The Nominating Committee shall each year contact the entire membership at least 60 days before the Annual Meeting inviting suggestions for nominations for membership on the Board of Directors.

Section 5. The Nominating Committee shall have prepared a slate to be voted on as provided in these By-Laws and shall mail the slate, signed by all members of the Committee, to the Secretary at least twenty (20) days before the Annual Meeting. No person shall be nominated by the Committee without first obtaining his or her consent.

Section 6. The Secretary shall prepare a ballot carrying the names of the candidates listed alphabetically by group. There shall be left blank lines for additional names to be written in by the voters if desired. These ballots shall be marked by the qualified voters and returned to the Secretary at the Annual Meeting. The three persons receiving the highest number of votes shall be declared elected to the Board of Directors. In case of a tie vote on the last vacancy to be filled, the Voting Members in good standing shall decide by secret ballot at the Annual Meeting which of the candidates with a tie vote shall be elected.

Section 7. Resident Agent: The Secretary Treasurer will serve as the resident agent of the Association.

#### ARTICLE VII - FISCAL YEAR

The fiscal year of the Corporation shall be from November 1 through October 31 of each year.

#### ARTICLE VIII - SURETY BOND

Persons handling funds of this Organization shall be required to furnish bond with sufficient surety, the expense of which shall be paid for by the corporation.

#### ARTICLE IX - AMENDMENTS

The By Laws may be amended by a two-thirds majority vote of the members voting by mail ballot. Proposed revisions or additions and a space to vote for each revised section or article shall be sent to the membership with the notice of the Annual Meeting. To be valid, the ballot must be received by midnight of the date marked on the ballot. If a majority of the voting members of the Association are present at the Annual Meeting, the By-Laws may be amended by the affirmative vote of two-thirds of said majority.

#### ARTICLE X - RULES OF ORDER

Roberts Rules of Order shall govern all questions of parliamentary procedure of this Corporation.

## **Some of the Benefits and Incentives Clean Marinas Experience**

Adoption of Clean Marina Practices may contribute to:

- ✓ Making your marina a safer and healthier place to work
- ✓ Saving money by reducing the amount of materials purchased
- ✓ Saving money for waste cleanup and disposal
- ✓ Increasing income by renting equipment such as vacuum sanders
- ✓ Increasing income by selling recyclable materials such as reusable oil spill kits
- ✓ Increasing income by selling less harmful detergents for cleaning or “green” products
- ✓ Decreasing liability associated with waste handling
- ✓ Adoption of Clean Marina Practices can improve water quality around your Marina.

State Clean Marina Programs in Florida, Texas, South Carolina, North Carolina, Delaware, Virginia, New Jersey, California and Rhode Island acknowledge and market Marinas which practice environmentally responsible actions and use of Clean Marina practices.

### **Available Technical Resources**

Sample Spill Prevention, Control and Countermeasure Plans are available through the TVA Clean Marina Program, the Texas Clean Marina Program, the Florida Clean Marina Program and Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island.

Model Stormwater Pollution Prevention Plan is available from the Mississippi Department of Environmental Quality.

### **Grants and Loans**

Clean Vessel Act provides funds to US F&WS and is administered by Mississippi Department of Marine Resources provides grants to Marinas to install pump out systems for marine sewage disposal.

US F & WS also provides competitive funding through the Boating Infrastructure Grant Program. States and local governments can apply, and funds are to be used to improve docking facilities for transient, non-trailerable boats at marinas.

Mississippi Tidelands Funds, administered by Mississippi Department of Marine Resources can be used by local governments to improve, expand and build public marinas.

**NOTE: In addition to the Financial Incentives and Opportunities presented to you today, a booklet is under development that will spell out the specifics of these programs – some available to all marinas and some specifically available to those pledging to become a designated clean marina. This booklet will be mailed to all attendees upon its completion.**

## MARYLAND CLEAN MARINA INITIATIVE

### It Pays to be Clean

Managers of certified Clean Marinas were asked in November 2001 how they have benefited from their Clean Marina status. Here are their responses:

- 90 percent have had fewer problems with customers and/or contractors leaving messes for marina staff to clean up,
- 90 percent benefited from free publicity,
- 57 percent attracted new customers because of their Clean Marina status,
- 29 percent received special consideration when applying for permits,
- 29 percent increased revenue, and
- 24 percent saved money.

Marina operators attributed other benefits to the Clean Marina Initiative, as well. For instance, the new fueling rules at one facility have resulted in fewer spills. At another marina, employees now pick up trash without being asked.

### In their own words. . .

The Clean Marina certification makes a statement about your entire philosophy of doing business. You will be perceived as a company that treats customers and their property in the same fashion that you treat the environment.

- Art Willis, The Sailing Emporium

I believe customers are willing to pay a little more for a clean facility and our Clean Marina status helps to attract the type of customer we prefer.

- Trevor Richards, Spring Cove Marina (Solomons)

Our fueling operation is much cleaner. Many customers have given positive feedback on the use of absorbents and spill collectors. . . . This is a good project to keep someone busy during the off-season. Much of the material covers things we should be doing anyway.

- Steve Kilmon, St. Michaels Marina

By reducing our overall trash collection through recycling, we have saved 20%. We now use all waste oil as fuel to heat our shops. . . . If you want to attract

higher-end customers and be competitive in this market you need to have a "clean facility." It is not just an "edge" anymore, it is the way you need to operate in order to stay in business.

- Jonathan Jones, Haven Harbour Marina

The type of clientele we have begun to attract has more than paid for what we had to invest to become a Clean Marina.

- Clark Lutz, Coltons Point Marina

The Clean Marina program is helping the environment, hence the water quality and hence the maritime industry.

- Steuart Chaney, Herrington Harbour Marinas

The value of increasing awareness for employees as well as slip holders is excellent. It [the Clean Marina Initiative] is a valuable advertising tool.

- Nancy Bray, Mears Marina Annapolis

Recreational boating thrives on clean water! We should all do our part.

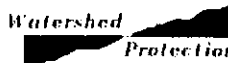
- Phil Young, Young's Boat Yard

Most people are becoming more aware of the environment and their surroundings. They recycle at home, they conserve energy and tend to look for products safe for the environment. The Maryland Clean Marina Initiative shows a proactive movement of the marine industry. I feel people notice when industry controls and maintains the environment.

- Scott Tinkler, Port Annapolis Marina

It is the right way to run your business.

- Tom Gannon, Mears Yacht Haven



United States  
Environmental Protection Agency

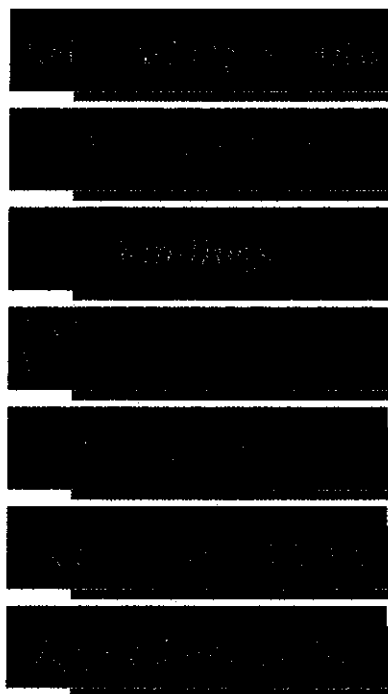
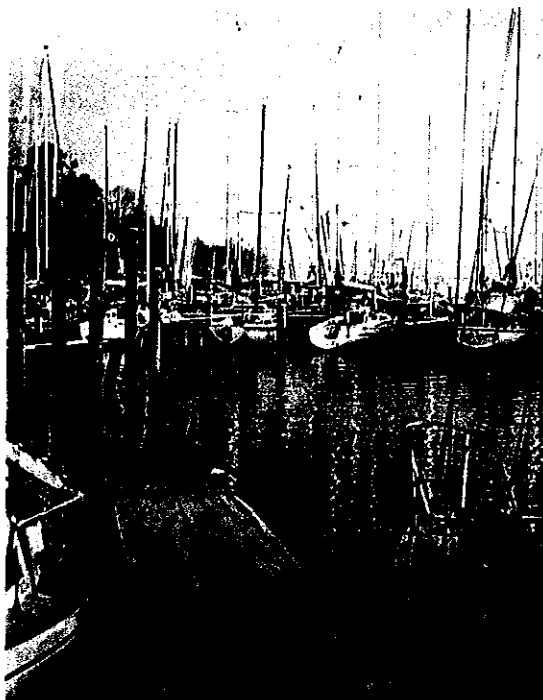
Office of Water  
(4503F)  
Washington, DC 20460

EPA 841-R-96-003  
August 1996

## Clean Marinas Clear Value

### Environmental and Business Success Stories

August, 1996



This study focuses on the economic benefits realized by marina managers who have implemented management measures at their marinas.

### Acknowledgments

While the number of marina facilities nominated and volunteering for this Clean Marinas--Clear Value project far exceeded the scale of this project and not all could be included, Neil Ross Consultants (NRC) recognizes and thanks the following people for helping to identify the best clean marinas in the nation: Duncan Amos, Armin Cate, Al Davidson, Kevin Fitzpatrick, Peter Foote, Ric Golding, Frank Herhold, Clay Huntress, Mike Keyworth, Ted Lotz, Nathalie Peter, Mark Razny, Mike Stenberg, Jay Tanski, Bob White, and Julie Wright.

Funding for this project was made available by the U.S. Environmental Protection

Agency. NRC expresses its thanks to Geoffrey Grubbs and Ed Drabkowski at EPA for their guidance and encouragement, and to Sam Pett at Tetra Tech, Inc., for his calm advice and support.

Any project of this scope always has individuals who give extra cooperation in planning, gathering information, and assisting, and NRC thanks Mark Amaral, Maureen Devitt, Larry Innis, Mike Keyworth, Robert Pacific, Captain Richard Permenter, Tim Tyrrell, and Julie Wright. Cooperating federal agencies included EPA, NOAA, U.S. Fish & Wildlife Service, U.S. Coast Guard, and individual State Sea Grant Programs. Cooperating marina industry organizations included International Marina Institute, Marina Operators Association of America, American Boat Builders & Repairers Association, and Marine Industries Association of South Florida.

Special appreciation goes to all the 25 marina/boatyard managers and owners who endured persistent questions and requests for data, and to those visited for enthusiastically showing their great facilities. Their high level of professionalism and creativity in operating some of the cleanest marinas is exciting. Together, they are truly the bow wave of modern marina management for the 21st Century.

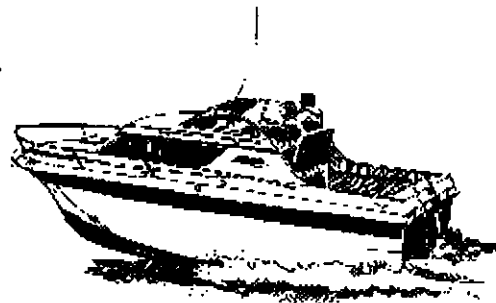
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## Introduction

Marinas and recreational boating are very popular uses of coastal waters. The growth of recreational boating, along with the growth of coastal development in general, has led to a growing awareness of the need to protect the environmental quality of our waterways. Because marinas are located right at the water's edge, there is a strong potential for marina waters to become contaminated with pollutants generated from the various activities that occur at marinas, such as boat cleaning, fueling operations, and marine head discharge, or from the entry of storm water runoff from parking lots and hull maintenance and repair areas into marina basins.

When Congress passed the Coastal Zone Act Reauthorization Amendments of 1990, known as CZARA, it required EPA to describe sets of management measures to be used for the control of pollution from various nonpoint sources, including marinas and recreational boating. States will incorporate these measures into their own nonpoint source pollution control programs to help achieve water quality standards. One of the stipulations that Congress made in the law was that the management measures be economically achievable so as not to impose any unnecessary financial hardship on those who will be required to implement the management measures. EPA, therefore, did complete economic analyses that demonstrate the economic achievability of the management measures for marinas and recreational boating in its Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal





Waters.

This study focuses on the economic benefits realized by marina managers who have implemented management measures at their marinas. The following sections

**This study focuses on the economic benefits realized by marina managers who have implemented management measures in their marinas.**

describe how the study was done, the findings of the study, and each of the marinas selected to demonstrate how application of one or more of the management measures can result in economic benefit to a marina. The study was limited to 25 marinas, but during the

course of the study, many more outstanding examples of how environmentally sound marina management can result in economic benefits were discovered.

It is noted that many of the marinas discussed in these case studies also have obtained NPDES permits for stormwater discharge management as well as other permits as the individual states may require. The objective of both CZARA and the NPDES stormwater permit programs is the same, which is to achieve improved water quality and a reduction in runoff pollution.

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## Findings of the Study

Clearly, the marina industry has begun to embrace the need to promote clean boating, clean facilities, and clean operations. The case studies presented highlight good examples of clean marinas that have found clear value in their environmental improvements. Each of the 25 case studies in this report illustrate different lessons learned from implementation of many of the 14 coastal management measures applicable to marinas, \*

**Every marina has active solid waste management and public education programs.**

\* -- US EPA "Management Measures for Marinas and Recreational Boating," chapter 5 in *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* [Washington, DC: US Environmental Protection Agency, 1993, EPA 840-B-92-002]. The management measure for boat operation, also included in the EPA guidance, is not intended to be applied by marinas

but with interesting variations on best management practices (BMPs).

Table 1 shows the management measures used in the marinas reported. Note that the "O"s on the table represent the management measures highlighted in the discussion of each marina. These marinas were chosen for their differences to illustrate the range of approaches to common problems.

- Every marina has active solid waste management and public education programs.

- All but one have pumpout stations and are promoting their use. Most have issued marina no-discharge regulations. Eight were highlighted here for the way they promote or use pumpout service.
- Nearly 90 percent have been involved in shoreline stabilization, storm water runoff control, liquid material management, and petroleum control.
- Over 70 percent have improved their fuel docks and boat-cleaning practices.
- Four marinas are actively involved in aquaculture or restocking programs -- Cedar Island (scallop farming), Deep River (Atlantic salmon release), Oak Harbor (Coho and Chinook salmon rearing and release), and Puerto del Rey (sea turtle rescue). They illustrate the very interesting potential for widespread habitat enhancement and fish farming in marinas. And they demonstrate that marina basins can indeed be healthy and productive ecosystems.
- Surprisingly, only 28 percent found sport fishing activity high enough to need cleaning stations.
- Two marinas met or exceeded the requirements for all 14 of the federal coastal management measures applicable to marinas -- Elliott Bay and the Hammond Marina. Both are America's newest megamarinas, \*\* opened within the past 5 years, and were required to contend with environmental requirements that did not exist when most of the nation's marinas were built between 1950 and 1980.

\*\* -- Megamarinas are defined by NRC as marinas having 1,000 or more boat slips.

Some of the examples are very simple and inexpensive, whereas others are complicated and costly. All of them, once understood, make common sense. That is not to imply that all will work well everywhere -- because they won't.

Any marina manager who reads this report will find one or several very practical practices well worth trying, perhaps with some adaptation for his or her site and operation.

### **Marinas Going Clean**

Every marina included in this study, as well the many others contacted that do not appear here, is demonstrating innovation, determination, and an almost missionary zeal for clean operations. It seems that once facility owners and managers take the first few steps to protect the environment, they quickly take many other steps toward facility improvement. And the process continues as they strive to become even better after seeing the positive reaction of their customers following environmental progress.

To understand the range of best management practices used by the facilities in this report, look at all of the narratives. Each one tells a different story. Each story describes one major practice in some depth, and mentions others, but this report does not describe everything done in every marina. (If it did, it would quadruple in size.)

Interestingly, the majority of marinas in this report made environmental changes voluntarily because they wanted both to improve their service to boaters and to stay ahead of the regulations. Three marinas, however, did so as a direct result of being told to do so by a local or state regulatory agency, but in every case they exceeded the minimum and went on to make enhancements well beyond their instructions. Not one regretted making environmental changes. All felt good that their business activities were also better, and they have plans to continue making headway toward cleaner marinas and clean boating.

### *Benefits clear*

All of the managers were pleasantly surprised with the results when asked to determine the benefits derived from the environmental changes they have made. Table 2 lists the general benefits from environmental changes.

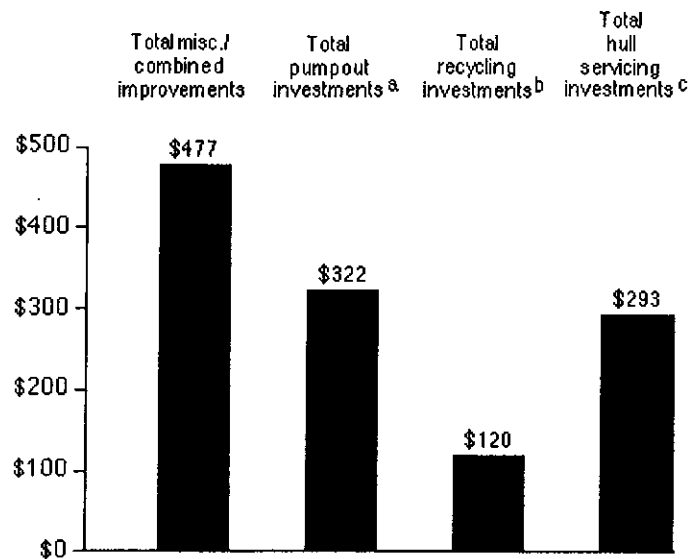
When asked to describe costs/benefits, some managers easily found accounting figures to demonstrate an economic advantage. For many others, the request required digging, analysis, and in many cases best estimates. When their numbers were set to paper, all were very pleased with their cost-to-benefit comparisons. The case studies in this report make clear that real, measurable bottom-line benefits can result from cleaner operations. Table 3 and Figure 1 show costs/benefits for the clean marina examples.

### *Clean is not cheap*

One caution while reading this report: Do not assume that all environmental improvements and changes result in measurable benefits. They don't, according to the managers. However, each manager quickly added a statement that "environmental protection is just part of the cost of doing business today along the waterfront. We've got to do what we can to have good water quality for the sake of our business."

Many environmental and regulatory compliance costs are not directly billable to boats, such as manager's planning time, staff training, permits, consultants, physical changes, landscaping, restroom modernization, traps, filters, and supplies. To counter those costs, some full-service marinas are adding an environmental surcharge on all sales, slip charges, and billable service work. The rates generally range from 1 to 2.5 percent, with the revenues going into dedicated accounts for environmental improvements. It is particularly noteworthy that both chains in this study -- Brewer Yacht Yards and Westrec Marinas -- are using surcharges. It is likely that similar surcharges will soon be a common practice in the marina industry. Several managers use the income from recycled cans and metals for end-of-year cash bonuses for staff. One boatyard spends that money for landscape flowers.

### **Figure 1: Net Benefits from Environmental Improvements**



a -- Pumpout investments have in some cases been covered by state and federal grants.

b -- Recycling of trash, water, and fuel have saved many firms money.

c -- There are a variety of hull servicing improvements, including dustless sanders, closed-loop systems, and special screen tarps to trap debris.

### ***Environmental contracts work***

Environmental contracts between the marina and its customers, outside contractors, and staff have apparently worked well where they have been used. The contracts were demonstrated to be a key element in the education process and displayed the very serious intention of managers to make their marinas more environmentally compatible. Contract language was consistent with the facilities' best management practices (BMPs) or storm water pollution prevention plans (SWPPPs).

Most of the managers with such contracts have used them to enforce their rules. Many report the loss of a few customers at slip renewal time, but those were soon replaced with customers who supported clean operations. Contracts resulted in tighter control on and reduction in the number of outside contractors doing boat repairs on the marina property. All the managers indicated that their operations are much cleaner after "banging a few heads." The marinas prospered with the customers who remained and were happier with the clean marina philosophy.

### ***Rates higher, occupancy higher***

During the interviews, marina managers and owners were asked how their occupancy and rates compared to those of other facilities nearby in their boating market area. All but one said, "Our rates and occupancy are higher."

They generally believed that their visible efforts to operate clean marinas translated into customer confidence that management would also give extra care to the boats. Plus, an increasing percentage of the public today wants to use only

nice, clean, service-oriented facilities. And it seems that a growing percentage of the boating public, according to these managers, is willing to pay a higher slip cost for a better and cleaner facility.

### *Permits easier to get?*

"Not so," responded most marina managers when informally asked that question. "But now that we are recognized as an environmentally proactive facility, the regulators are easier to talk with and give us fewer hassles," they usually added. Several managers proudly reported that their facilities have been used by state regulators as showplaces for visitors or for training purposes.

The benefits of becoming environmentally compliant may be somewhat limited, although positive, when it comes to dealing with coastal and environmental regulators.

### *Marina owner/managers are leaders*

All of the owners and managers interviewed strongly advocate environmental protection as an essential everyday part of their boating business. They each started the change process for different reasons over the past 4 to 6 years, but all discovered that successful marinas and clean water go hand in hand. By the range of ways they responded to the clean marina challenge, they illustrated the creativity and problem-solving genius so widely found in the marina and boatyard industry. They were innovators who succeeded.

Nearly all of these owners and managers are active in state and/or regional marine trade association. The majority belong to multiple national organizations that have been proactive on environmental issues, including the International Marina Institute (IMI), Marina Operators Association of America (MOAA), and American Boat Builders & Repairers Association (ABBRA). Several have achieved professional recognition as IMI Certified Marina Managers (CMMs). There seems to be a positive relationship between industry activism and environmentalism.

### *Recognition spreads the good word*

State and federal agencies could develop positive incentives and recognition for those marinas and boatyards that are doing their best to reduce their environmental impacts. Without some clear benefits from the regulations, many other managers will continue to say "What's the use of complying?"

A few federal and state agencies have given public recognition to several of the marinas interviewed, and the certificates are proudly displayed where customers can see them. The boating industry -- particularly national trade associations and magazines -- has started to highlight clean marinas as outstanding examples for others to follow.

Each of the 25 marinas and boatyards in this report have been recognized with a certificate from the U.S. Environmental Protection Agency as a nationally outstanding clean marina.

### *Job done yet?*

Are any of these marinas finished making environmental improvements? Not likely.

"When we started to clean up the yard several years ago," Mike Keyworth (General manager, Brewer's Cove Haven Marina, RI) explained, "our customers gave us many compliments. So we kept on cleaning up and making improvements. And they complemented us more and more, which made us feel good. The thing about this process is that once we started, the more we wanted to do."

Without realizing it, Keyworth spoke for everyone in this report.

### ***Predictions***

Considering the relatively short duration of this study, the number and range of cases studied were but the bow of the clean marina movement. There are undoubtedly hundreds of other marinas with stories as good as, or better than, those found in Section III.

It is more than likely that sometime in the future:

- 75 percent of the estimated 8,000 to 10,000 marina facilities in the United States will make significant environmental improvements, with the rest making some changes more slowly.
- Environmental surcharges will be common nationwide.
- Marina professionals will promote national or regional no-discharge adoption.
- Clean marinas will quickly become the norm.
- Those marinas which do not clean up will probably not be in business as the 21st Century dawns.

Sometime in the future marina managers and coastal authorities will look back at this report, read the examples, and say "What's so different about these practices? Isn't everyone in boating doing these as a natural part of their business?" That's the point.

Remember, in 1995 these marinas were the exceptions. The managers and owners were pushing a new, clean marina bow wave of change. They were the leaders of their time who defined, innovated, and demonstrated practices that would become common in 5 to 10 years.

The recognition that clean water is essential to good boating and profitable marina business is spreading rapidly and will not be turned back. Read the stories of how and why 25 leading managers achieved environmental and business success by demonstrating that clean marinas bring clear value.

### **Economics Benefits Summary**

The magnitude of economic returns that clean marinas and boatyards have realized from their investments is illustrated in Table 3 and Figure 1. By totaling the initial outlays and 1995 net returns according to general types of improvements made, the chart shows that on average, owner investments have more than paid for themselves.

- Hull servicing improvements included investments in the following: a closed-loop hull-blasting system that reuses plastic pellets; dustless sanders; screen tarps to catch debris; and installation of filtered pressure wash water systems away from the shore. Net benefits in 1995 ranged from covering cost to earning many times their investment by creating new business.
- Waste management investments included recycling and/or reuse of trash, milfoil seaweed (as mulch), wash water, and waste oil. This approach primarily brought savings from reduced disposal costs. In the case of the Lodge of Four Seasons, use of waste oil to heat a work building created an additional winter repair business. Trash recycling typically cost very little to implement, with significant annual savings particularly for marinas located in communities with active recycling programs.
- All but one of the marinas and boatyards in this study had pumpout facilities in place. These eight pumpout services had benefits ranging from savings on sewer fees and additional fuel sales attributed to their convenient pumpouts to attracting more megayacht visits. Two marinas used the pumpout station as a competitive incentive program for summer employees. In many cases, the costs of new or improved pumpout equipment were covered by grants.
- Two environmentally sound investments actually saved owners a great deal of money on the initial outlay. By purchasing inland acres for boat repair and storage -- away from coastal waters -- Conanicut Marine paid much less for the land than it would have if the boatyard were shoreside. It also saved annually on much lower property tax bills. The innovative owner of Lockwood Boat Works paved the boatyard's parking and work yards with crushed recycled concrete, saving hundreds of thousands compared to blacktop pavement, which would also have created a runoff problem.
- A wide variety of other environmental improvements had been made by the facility owners interviewed. As stated previously, not all changes at each facility were included in this analysis. Some owners and managers had made such facility-wide changes that it was not possible to identify benefits from any one given change. But each of those managers felt strongly that their clean marina efforts had been rewarded by free publicity, recognition, and new business.

As these 25 case studies demonstrate, marinas and boatyards across the United States are voluntarily making environmental improvements to their facilities. These public and private operations have realized that the upgrades are good for both the environment and their bottom line. A variety of operational and physical changes have saved money, brought free publicity, and attracted new business.

As final proof of the clear benefits from clean marinas, all the owners and managers in this study are continuing to make more changes to better their

environment, satisfy their customers, and expand their business. They all feel very good about this progress.

*Economic analysis: The marina sample--apples, oranges, and coconuts*

Marinas that have adopted "best available" environmental measures and practices, and realized positive returns were selected for this study. Every effort was made to represent the widest possible range of marina sizes, geography, operation type, ownership (public and private), and fourteen NPS management measures. However, the set of observations made on these cases did not constitute a random sample, nor was a single statistical population defined. The results could not therefore, be subjected to statistical analysis.

A statistical population can be defined as the totality of all possible observations on measurements or outcomes of an experiment. Like the researcher in physical science, the social scientist would ideally like to generate experimental data. Since experimental data on humans and their business activities is not available, econometricians attempt to adjust for uncontrollable (exogenous) factors in carrying out statistical analyses. But there is always a limit to the adjustments that can be made and the range of observations that can be considered part of the same population.

When a person makes numerical measurements of some objects or actions for the purpose of statistical analysis, the investigator does not measure just a conglomeration of them; rather, has at least previously formulated in mind a reasonably homogeneous group to measure in some respect. For this study as many populations as possible were identified. There was no intent to make an overall measurement on an underlying population.

Furthermore, statistical tests, which are based on the laws of probability, are hard to justify when random samples are not taken from homogeneous populations. Confidence intervals and significance levels have no meaning unless some degree of sample homogeneity can be assumed.

In selecting this set of marina case studies the focus was on non-homogeneity by deliberately selecting illustrations of different practices or variations of them. The only unifying characteristics in these cases were that the businesses were marinas located on recreational boating waterways and earned a positive economic return from new environmental practices. None of these provided sufficient homogeneity to the population.

While one could have calculated means and variances of the economic returns, these results would have characterized only the site-specific cases studied and would not have been easily generalizable to other marinas or other environmental practices. The random sample for these types of findings would have required statistical populations which included marinas where these and other environmental practices were repeatedly tested and those applications which failed to generate benefits.

Further, standardized questionnaires or surveys were not used to gather statistically comparable data for scientific analysis. Mini-case examples were compiled to illustrate how individual marinas were able to adopt environmental practices which also provided positive benefits.



To the degree possible, economic analysis was made within each marina by comparing business cost to benefits with and without the environmental practice adopted. In cases with non-income benefits, such as public education, other types of benefit descriptors were reported. All findings were based on information provided by the facility owner or manager, and where hard numbers were not available, professional estimates were reported.

NOTE: Economic analysis was prepared by Dr. Timothy Tyrrell, Professor of Resource Economics (Coastal Recreation), College of Resource Development, University of Rhode Island, Kingston, RI).

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## How the Study was Done

The process of conducting this study was simple, as was the goal to find and describe examples of clean marinas with measurable benefits from their environmental improvements.

### Purpose and goal

The purpose of this *Clean Marinas--Clear Value* study was to identify marina and recreational boating operations that have adopted best management practices and programs that have resulted in positive economic benefits. The goal was to produce a document that will help convince many in the marina industry to voluntarily make environmental changes.

### Planning the project

A number of marina professionals and technical advisors were contacted for project suggestions, questions to ask, approaches to take, and ways to measure benefits. A program advisory meeting was held in early June 1995 in Washington, DC. It brought together marina industry representatives--MOAA, Boating Industry magazine, Westrec Marinas--and representatives of key coastal environmental agencies--EPA, NOAA, USFWS, U.S. Coast Guard--to launch the project. The participants discussed project purpose, scope, work plan, and selection procedure, and solicited help in promoting clean marina facility nominations. Many excellent suggestions were given and eventually incorporated into the plan.

### Publicity

Getting word out about the project and its need to identify clean marinas took several modes:

- Direct contacts were made, via phone, fax, mail, e-mail, and site visits to facilities known to be using good environmental practices.
- Each of the organizations and agencies attending the June meeting followed up by forwarding a call for clean marina nominations to their members or

regional staff.

- More than 120 press releases were sent to all major marina industry publications, marine trade associations, marinas, boatyards, marina consultants, and Sea Grant specialists, inviting marina nominations and participation. A copy of the press release is provided in Appendix E.
- To solicit case studies and promote good practices, presentations were made at several marina conferences and meetings, including the National Marine Trades Council, June 10, 1995, New Hampshire, and the MRAA/MOAA American Marine Trades Expo, August 18, 1995, New Orleans, Louisiana.

As a result of this effort, more than 75 marinas volunteered or were nominated; several others made contact too late in September to be considered for the project. Clearly, there are many clean marinas around the country with many good stories to be told.

### **Selecting clean marinas for study**

From the large number of facilities identified, about 40 candidate marinas were selected for a wide variety of environmental measures and practices including location, design, operation and maintenance, and special problems that had been overcome. Final marina selection was determined according to these criteria:

- Applied one or more of EPA's 14 management measures and practices for nonpoint source control applicable to marinas.
- Made effective use of best available off-the-shelf pollution control practices, devices, and innovative technology.
- Achieved demonstrated pollution reduction at the facility.
- Realized clear economic returns and other benefits that could be quantified and described.
- Was a credible example for other marinas and boatyards facing similar concerns.
- Had a good story that differed from others in the study.

Each marina faced a selection triage: (1) appropriate for the study, (2) need more information to be included, (3) inappropriate because it does not meet the selection criteria. In the end, 25 marinas were chosen and appear in this report, 8 were deselected, and 7 others were qualified but were not needed for the study.

### **Information gathering**

A before-and-after comparison of each marina was made to verify any real or perceived economic benefits from environmental improvements. The relationship between environmental improvements and economic benefits was intended to support the premise that "clean" marinas generate clear economic values.

To simplify and help standardize the process, three discussion worksheets were used during marina site visits or telephone conversations with managers about their operations. Those discussion worksheets are provided in Appendix D.

To determine economic benefits, information was gathered regarding new income derived from increased sales, services, and slip rentals; cost savings from improved housekeeping procedures; and increased public visitation and participation due to site cleanliness, clean water, and attractiveness. In most cases the marina manager was able to give actual numbers, numbers rounded to the nearest hundred or thousand, or professional estimates.

In a few instances when managers were uncertain what the economic value was, they were asked to compare current business--commonly slip rental rate and occupancy--to that of similar marinas in the same market area that did not make similar environmental changes. In every case the managers estimated that operating as the "competition" did would likely result in lower occupancy rates and income.

### **Analysis**

This project was not a classic economic study because it reported on many marinas with different environmental practices, in sites with wide-ranging sets of variables. Thus each facility's case study had to stand alone economically, but when taken together the case studies did show a definite pattern of positive business benefits from improvements in environmental practices.

To find a way to cope with samples having many variables, NRC asked Dr. Timothy Tyrrell\*

\* -- Professor of Resource Economics (Coastal Recreation), College of Resource Development, University of Rhode Island, Kingston, RI

to help with economic analysis of the costs/benefits for the individual sites included in this report. (Refer to his recommendations in "Economic analysis: The marina sample--apples, oranges, and coconuts," at the end of Section I.) Dr. Tyrrell recommended doing the economic analysis by comparing each marina's business costs to its benefits, with and without the environmental practice adopted. In cases with non-income benefits, such as public education and publicity, other types of benefit descriptors were identified. All findings reported were based on information provided by the facility owner/manager. When hard numbers were not available, professional estimates were accepted.

The economic benefits in this study included new income derived from increased sales, services, and slip rentals; cost savings from improved housekeeping procedures; costs avoided; improved operation and maintenance procedures; and increased public visitation and participation due to site cleanliness, clean water, and attractiveness.

### **Writing each case study**

This report was written in a common style used in professional marina and boating industry trade magazines. Since the target audience was primarily the

owners and managers of marinas across America, a familiar story-telling narrative was used to convey technical information, credible trade logic, and a general positive business sense that "we will do fine" by making environmental improvements. Quotes are used in every case study because the manager's own words do a better job "talking to" other marina managers than could anyone else's. Each of the 25 case studies was reviewed twice by the marina owner or manager for accuracy of data, information, and quotes. Each report was also reviewed to ensure data presentation clarity and economic consistency.

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## Case Study Reports

### Order of Presentation

The 25 clean marina environmental case studies in this section are organized alphabetically by facility name, with the two marina chains appearing after the individual marinas and boatyards.

Some early thinking was to organize this section by region, but it was felt that readers might focus primarily on their region and miss the full range of practices highlighted. Actually, very few of the practices described are limited to one or two regions; most can be used in almost all states--perhaps with small climate--and market-related modifications. Appendix C contains the full list of marinas, organized by state.

Also considered was organizing cases by type of best management practice, but with so much overlap that was not possible.

### Case Study Report Organization

- Facility name and case study title
- Location - address, telephone, fax, person interviewed, owner, waterbody location. This information was supplied to facilitate communication by others considering similar improvements.
- Environmental change - the practice(s) changed and improved.
- The marina - narrative describing the marina business, employment, boat capacity, and services.
- Management measures - list of up to 14 management measures used in the marina. These are also listed by marina in [Table 1](#) in Section I.
- Costs/benefits (not included in the two chain reports) - comparison of the initial start-up/construction/purchase costs and annual costs to revenues, cost savings, avoided costs, or other quantifiable benefits. This comparison is also summarized in [Table 3](#) in Section I.

- Environmental improvements - a detailed description of the selected change made, reasons, results, and costs and benefits, plus short descriptions of other environmental practices adopted. These are also summarized in [Table 2](#) in Section I.
- Other improvements and benefits - other short stories of programs that demonstrate additional benefits from operating a clean marina.
- Equipment sources - name and address for the national supplier of each major product used in the prime enhancement described in the case study.

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## **Links to Individual Case Studies**

[All Seasons Marina, Mamora, NJ](#)  
[Associated Marine Technologies, Dania, FL](#)  
[Battery Park Marina, Sandusky, OH](#)  
[Brewer's Cove Haven Marina, Barrington, RI](#)  
[Cap Sante Marina, Anacortes, WA](#)  
[Cedar Island Marina, Clinton, CT](#)  
[Conanicut Marine Services, Jamestown, RI](#)  
[Deep River Marina, Chester, CT](#)  
[Edwards Boatyard, East Falmouth, MA](#)  
[Elliott Bay Marina, Seattle, WA](#)  
[Green Cove Marina, Brick, NJ](#)  
[Hall of Fame Marina, Ft. Lauderdale, FL](#)  
[The Hammond Marina, Hammond, IN](#)  
[Harbour Towne Marina, Dania, FL](#)  
[Kean's Detroit Yacht Harbor, Detroit, MI](#)  
[Lockwood Boat Works, Perth Amboy, NJ](#)  
[The Lodge of Four Seasons Marina, Lake Ozark, MO](#)  
[Oak Harbor Marina, Oak Harbor, WA](#)  
[Port Annapolis Marina, Annapolis, MD](#)  
[Puerto del Rey Marina, Fajardo, PR](#)  
[Summerfield Boat Works, Fort Lauderdale, FL](#)  
[West Access Marina, Carlyle, IL](#)  
[Winter Yacht Basin, Mantoloking, NJ](#)  
[Brewer Yacht Yards \(15\), Mamaroneck, NY](#)  
[Westrec Marinas \(50+\), Encino, CA](#)

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## **Links to Appendices**

Literature Review and Bibliography  
Amortization Schedule Explanation  
Clean Marina Case Studies Listing  
Discussion Worksheets:

Clean Marina Facility Notes  
Marina's Environmental Improvement  
Clean Marina Cost/Benefit Worksheet

E. Project Press Release

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# Table 1: Management Measures Used in Marinas Reported

## Management Measures for Marinas and Recreational Boating, EPA CZARA 6217 Guidance, Chap. 5

KEY: X = Management Measure used at marina, O = Primary management measure described in case study

Marina Facility, State	Marina Flushing	Water Quality Assess.	Habitat Assess.	Shore Stabilization	Storm Runoff Control	Fuel Station Design	Sewage Facility	Sewage Facility Maint.	Solid Waste	Fish Waste	Liquid Material	Petroleum Control	Boat Cleaning	Public Ed.	MM UseTotal	MM Use %
1. All Seasons Marina, NJ	X			X	X	X	X	X	O		X				X	71
2. Associated Marine Technologies, FL					O				O		X			X	4	29
3. Battery Park Marina, OH				X		X	O	O	X	X	X	X	X	X	10	71
4. Brewer/4s Cove Haven Marina, RI				X	X	X	O	O	X		X	X		X	9	64
5. Cap Sante Marina, WA	X			X	X		X	X	O		O	X		X	9	64
6. Cedar Island Marina, CT	X	O	O	X	X	X	X	X	X		X	X		X	12	86
7. Conanicut Marine Services, RI	X			X	O		X	X	X		X	X	X	X	10	71
8. Deep River Marina, CT		X		X	O	X	O	O	O		X	X	X	X	11	79
9. Edwards Boatyard, MA			X	X	X	X	O	O	O		O	X	X	O	11	79
10. Elliott Bay Marina, WA	X	X	O	X	X	X	X	X	O	X	O	X	X	X	14	100
11. Green Cove Marina,	X			X	X	X	O	O	O		X	X	X	X	11	79





(15), NY																			
25. Westrec Marinas (50+), CA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
Total management measures users	10	10	8	22	22	18	24	24	25	7	24	23	18	25	14	260			
Percent using management measures	40	40	32	88	88	72	96	96	100	28	96	92	72	100	74				
No. of examples as primary management measures described in report	1	1	3	7	7	1	8	8	11	0	4	0	0	1					

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**Table 2: General Benefits from Environmental Changes**

Environmental change	Benefits to marina	Environmental benefits
<p><b>Hull servicing improvements</b></p>	<ul style="list-style-type: none"> <li>• reduced costs for cleanup and disposal</li> <li>• better service to customers</li> <li>• pressure wash pads and filters comply with regulations</li> <li>• tarps and filter cloths beneath boat repairs save on cleanup costs</li> <li>• dustless sanding reduces cost, cleanup and adds rental income</li> <li>• satisfied customers</li> <li>• increased worker productivity</li> <li>• lower material and cleanup costs</li> </ul>	<ul style="list-style-type: none"> <li>• reduces silica/bottom paint residue, which can escape to marine environment</li> <li>• reduces amount of other pollutants that escape into marine environment</li> <li>• recycles wash water, filters out contaminants before entering municipal sewer system</li> <li>• eliminates flying dust for worker safety and cleaner grounds</li> </ul>
<p><b>Providing full pumpout services</b></p>	<ul style="list-style-type: none"> <li>• attracts new customers</li> <li>• satisfied customers when marina staff does pumpout</li> <li>• additional business for other marina profit centers (e.g., fuel, visiting megayachts)</li> <li>• lower municipal sewage system fees (when metered)</li> <li>• improvement of overall business image</li> <li>• state and federal grants available for pumpouts</li> <li>• staff incentives</li> <li>• "free" positive publicity</li> </ul>	<ul style="list-style-type: none"> <li>• reduces sewage discharge from boats in marina</li> <li>• reduces impact on area shellfish and other marine life</li> <li>• water quality perceived by boaters to be cleaner</li> </ul>
<p><b>Recycling of solid wastes at marina</b></p>	<ul style="list-style-type: none"> <li>• seaweed removal improves appearance of water surface</li> <li>• added income, e.g., battery and scrap metal sales</li> <li>• cost savings for disposal services</li> <li>• positive environmental image</li> </ul>	<ul style="list-style-type: none"> <li>• creates natural fertilizer and garden mulch</li> <li>• less litter in water and on shore</li> <li>• less trash sent to landfill</li> </ul>
<p><b>Pet waste management</b></p>	<ul style="list-style-type: none"> <li>• keeps docks and marina cleaner for customers</li> </ul>	<ul style="list-style-type: none"> <li>• reduces fecal contamination of water</li> </ul>

	<ul style="list-style-type: none"> <li>• brings customer good will</li> </ul>	
<b>Recycling liquid materials</b>	<ul style="list-style-type: none"> <li>• reduces disposal costs and long-term liability</li> <li>• burning used oil reduces heating costs and expands repair business in winter</li> </ul>	<ul style="list-style-type: none"> <li>• reduces spills and contamination</li> <li>• converts waste liquids into reusable products</li> </ul>
<b>Improved flushing of enclosed waters</b>	<ul style="list-style-type: none"> <li>• attracts more customers</li> </ul>	<ul style="list-style-type: none"> <li>• improves quality and clarity of enclosed waters</li> </ul>
<b>Aquaculture beneath marina<sup>1/4</sup>s floating docks</b>	<ul style="list-style-type: none"> <li>• additional use of water column under dock space for potential profits</li> <li>• „free<sup>3/4</sup> positive publicity, attracts visitors and recognition</li> </ul>	<ul style="list-style-type: none"> <li>• increases amount of available habitat for aquatic organisms</li> <li>• reintroduction of shellfish to harbor</li> </ul>
<b>Metered pumpout and marina sewer line</b>	<ul style="list-style-type: none"> <li>• cost savings when sewage bill is based on actual water consumption</li> </ul>	<ul style="list-style-type: none"> <li>• monitoring of sewage and water use levels</li> </ul>
<b>Locating boatyard inland</b>	<ul style="list-style-type: none"> <li>• lower-cost land purchase and property tax</li> <li>• coastal permits not required</li> <li>• adds boat moving business opportunity</li> </ul>	<ul style="list-style-type: none"> <li>• eliminates chance of runoff into waterway</li> </ul>
<b>Use of environmental contracts</b>	<ul style="list-style-type: none"> <li>• combines education with control and enforcement</li> <li>• controls outside contractors</li> </ul>	<ul style="list-style-type: none"> <li>• potentially reduces all types of pollutants</li> <li>• increases public knowledge and awareness</li> </ul>
<b>Permeable land surface</b>	<ul style="list-style-type: none"> <li>• less costly than paved blacktop</li> </ul>	<ul style="list-style-type: none"> <li>• reduces runoff pollutants</li> <li>• reduces solids going to landfill</li> </ul>
<b>Fueling management</b>	<ul style="list-style-type: none"> <li>• avoids spills and potentially costly cleanup, fines</li> <li>• special personal watercraft (PWC) dock attracts young customers</li> </ul>	<ul style="list-style-type: none"> <li>• reduces fuel spillage</li> </ul>

**Table 3: Costs/Benefits of Clean Marina Examples.**

Environmental change(s)	Initial investment	Years to amortize	Annualized cost of investment	Change in annual operations costs	Change in annual revenue	1995 net benefits from environ. change	Notes
1. Trash recycling - All Season's Marina, NJ	\$5,000	10	\$648	(\$4,100)	\$0	\$3,452	Net benefit is estimated by avoided trash removal cost less estimated labor costs for recycling.
2. Closed-loop hull-blasting system with reused plastic blasting medium - Associated Marine Technologies, FL	\$25,849	5	\$5,971	\$8,617	\$58,173	\$43,585	Income from entire hull-blasting operation; difference in costs and revenues from conventional system revenues unknown; system installation required by county to continue service.
3. Pumpout service used as staff incentive - Battery Park Marina, OH	\$2,450	10	\$317	\$20	\$12,500	\$12,163	Improved staff morale and productivity.
4. Sewage meter for pumpout station and entire marina - Brewer's Cove Haven Marina, RI	\$6,800	10	\$881	(\$2,603)	\$0	\$1,722	Savings from metered sewage flow; federal and state grants paid for installation of meter; however, initial cost included here to demonstrate benefits even with full cost.
5. Public education and free recycling - Cap Sante Boat Haven, WA	\$0	N/A	\$0	(\$10,800)	\$0	\$10,800	Waste disposal savings, less the cost of renting recycle bins.
6. Habitat assessment and scallop farming under docks - Cedar Island Marina, CT	\$0	20	\$0	\$33,500	\$46,000	\$12,500	Cost of docks no more than conventional docks; operations costs are biologists' salaries; cost savings from extended dredging season; in addition to net benefits, \$5,000 of annual "free publicity" is attributed to improvements.
7. Inland boatyard and repair sites - Conanicut	(\$1,807,000)	20/10	(\$138,688)	(\$72,125)	\$75,000	\$285,813	Initial land savings on buying inland v waterfront, includes permit saving; land

Marine Services, RI								amortized over 20 yrs, trailer over 10 yrs; property tax and land value savings are estimated to demonstrate benefit of inland yard.
8. Overall changes: pumpout service, dustless sanders, ground maintenance - Deep River Marina, CT	\$21,000	10/5	\$3,329	\$13,000	\$86,800	\$70,471		Additional benefits from new slip rentals, winter storage, added fuel sales; additional value was realized from "free publicity"; pumpout amortized over 10 yrs, sanders over 5 yrs.
9. Overall changes: environmental contract, pumpout service, solid waste and liquid materials management - Edwards Boatyard, MA	\$116,400	20/10	\$9,459	\$18,100	\$100,000	\$72,441		Pumpout cost amortized over 10 yrs, other investments over 20 yrs; also attributed the equivalent of \$10,000 of "free publicity."
10. Overall changes: habitat creation, pollution control, water conservation, etc. - Elliot Bay Marina, WA	N/A	1	N/A	(\$3,620)	\$0	\$3,620		Savings from avoided hazardous waste pickup paid for labor time; dog waste bags, distributed free to customers, save labor costs.
11. Overall changes: wash water recycling, trash recycling, portable pumpout station - Green Cove Marina, NJ	\$6,800	10	\$881	(\$750)	\$28,700	\$28,569		Change in costs are added labor and service costs less savings from decrease in disposal services; initial outlay for portable pumpout and recycling setup less permit savings; pumpout partially paid for with state grant but full initial cost included here to demonstrate benefits even with the full cost.
12. Pumpout capabilities at every dock - Hall of Fame Marina, FL	\$16,200	10	\$2,098	\$3,788	\$300,000	\$294,114		Increased revenue due to special dockside pumpout service.
13. Seaweed recycled as garden fertilizer and mulch - The Hammond Marina, IN	\$0	N/A	\$0	(\$800)	\$0	\$800		Expected to save \$17,500 on weed control in 1996.
14. Filtration of pressure	\$46,415	10	\$6,011	\$24,000	\$270,000	\$239,989		Difference in revenues and costs

wash water - Harbour Towne Marina, FL									compared to conventional system unknown; system installation required by county to continue service.
15. Full-service pumpout and fueling - Kean's Detroit Yacht Harbor, MI	\$12,000	10	\$1,554	\$1,040	\$11,000	\$8,406			New revenue from dockside pumpout and fuel services.
16. Recycled crushed concrete controls runoff - Lockwood Boat Works, NJ	(\$360,000)	20	(\$28,888)	\$0	\$0	\$28,888			Initial investment is negative because of savings of using recycled concrete surfacing rather than blacktop.
17. Dustless vacuum sanding - The Lodge of Four Seasons Marina, MO	\$3,724	5	\$860	\$8,643	\$20,000	\$10,497			Net of initial outlay and estimated labor and materials cost; saved 30% of conventional costs; difference in revenues unknown.
18. Floating pumpout and restroom barge to serve transients - Oak Harbor Marina, WA	\$0	N/A	\$0	(\$5,230)	\$0	\$5,230			State grant funded \$58,600 cost of pumpout barge. The city hauls the marina's septic waste for free, which saved an equivalent of \$8,220 in septic hauling cost.
19. Outdoor boat repairs done over screen tarps - Port Annapolis Marina, MD	\$2,000	1	\$2,000	(\$2,000)	\$2,000	\$2,000			Savings on cleanup costs, less the cost of labor and screen tarps.
20. Opening in breakwater to improve flushing - Puerto del Rey Marina, PR	\$30,000	20	\$2,407	\$0	\$50,000	\$47,593			Additional dock rental income attributed to better water quality.
21. Wash water recycled without chemicals - Summerfield Boat Works, FL	\$30,075	10	\$3,895	\$3,300	\$93,750	\$86,555			Savings in water cost.
22. Used oil burner installed to heat boat repair building - West Access Marina, IL	\$7,000	10	\$907	(\$9,894)	\$9,495	\$18,482			Cost savings on disposal and energy, less annual maintenance costs, plus additional boat repair income.
23. Floating personal	\$3,138	10	\$406	\$400	\$6,366	\$5,560			Additional personal watercraft fuel sales

watercraft (PWC) fueling dock prevents spillage - Winter Yacht Basin, NJ										business.
24. Environmental changes at boatyard chain - Brewer Yacht Yards; NY, CT, RI, MA, ME	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	+	No calculations because chain-wide efforts made it difficult to attribute benefits to any one particular change; owners, however, felt strongly that chain-wide improvements made good business sense.
25. Environmental changes at marina chain - Westrec Marinas, Inc.; national	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	+	[Same note as above]

# The Marinas Sector

## Web sites

**Full Title:** Clean Boating Information

**URL:** <http://www.cleanboating.org/>

**Full Work Author:** National Clean Boating Campaign

**Abstract:** This website includes fact sheets and partner tips on sewage control and pumpout, boating litter and fish waste, fuelage and bilge care, boat maintenance, and best management practices. The site also includes relevant websites and a bibliography.

**Full Title:** Clean Vessel Act Pumpout Program

**URL:** <http://fa.r9.fws.gov/cva/cva.html>

**Full Work Author:** US Fish and Wildlife

**Abstract:** Purpose: Provide pumpout and dump stations for boaters to dispose of human waste in an environmentally safe manner. Pumpout stations are used to pump waste out of recreational boat holding tanks. Dump stations are used to empty portable toilets. Appropriate State agencies are the only entities eligible to receive grant funds.

**Full Title:** Florida's Clean Marina and Clean Boatyard Program

**URL:** <http://www.dep.state.fl.us/law/Grants/CMP/>

**Full Work Author:** Clean Boating Partnership

**Abstract:** The Florida Department of Environmental Protection, Division of Law Enforcement, in partnership with the Marine Industries Association of Florida, is committed to improving the health and cleanliness of our waterways. There is a direct link to the future of the marine industry and clean water. To meet both the letter and the spirit of our state's environmental laws, FDEP is in partnership with both private and public entities in the marine industry to develop and implement this program.

**Full Title:** Marinas / Boating EPA Sites

**URL:** <http://www.epa.gov/owow/nps/marinas.html>

**Full Work Author:** US EPA

**Section Author:** US EPA Office of Water

**Full Title:** Marine Pollution Control Programs

**URL:** <http://www.epa.gov/owow/oceans/regs/>

**Full Work Author:** EPA Office of Water

**Section Author:** Oceans and Coastal Protection Division



**Full Title:** Maryland's Clean Marina Initiative

**URL:** <http://www.dnr.state.md.us/boating/cleanmarina/>

**Abstract:** The Maryland Department of Natural Resources' exciting program offers marina operators and boaters the opportunity to participate in efforts to protect Maryland's natural resources. The collective effort of individuals and businesses will improve the quality of Maryland's waters from Deep Creek Lake, to the Chesapeake Bay, to the coastal bays!

**Full Title:** National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating

**URL:** <http://www.epa.gov/owow/nps/mmsp/index.html>

**Full Work Author:** EPA Office of Water

**Abstract:** National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating is a draft technical guidance and reference document for use by State, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.

**Full Title:** NC Clean Marinas

**URL:** <http://dcm2.enr.state.nc.us/Marinas/marinas.htm>

**Full Work Author:** NC Dept. of Environment and Natural Resources

**Section Author:** NC Division of Coastal Management

**Section Title:** Marinas and Recreational Boating

**Full Title:** Nonpoint Source Management Categories

**URL:** [http://h2o.enr.state.nc.us/nps/What\\_is\\_NPS/marinas.htm](http://h2o.enr.state.nc.us/nps/What_is_NPS/marinas.htm)

**Full Work Author:** North Carolina Nonpoint Source Management Program

**Full Title:** Pollution Prevention and Best Management Practices for Marine

**URL:** <http://www.co.broward.fl.us/ppi00400.htm>

**Full Work Author:** Broward County (FL) Pollution Prevention and Remediation Division

**Abstract:** This website provides a detailed list of activities that affect environmental quality at marinas and boatyards and provides pollution prevention and best management practices information related to these activities.

**Full Title:** Sea Grant Extension Program

**URL:** <http://seagrant.ucdavis.edu/>

**Full Work Author:** The University of California

**Section Title:** Virginia Clean Marina Program

**Full Title:** Virginia Coastal Nonpoint Pollution Control Program (CNPCP)

**URL:** <http://www.deq.state.va.us/vacleanmarina/>

**Full Work Author:** Virginia Department of Environmental Quality

**Section Author:** Virginia Coastal Program

**Abstract:** The Virginia Clean Marina Program is designed as a voluntary program to address a broad range of issues related to the potential environmental impacts of marina operations. The Program was initiated as an implementation element of the Virginia Coastal Nonpoint Pollution Control Program (CNPCP). The Clean Marina Program is one of many key activities that allow Virginia to be in compliance with Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990.

## Manuals

**Full Title:** Best Management Practices for Delaware Boat Maintenance Facilities

**URL:** </01/00558.pdf>

**Length:** 30 pages

**Date:** May 1997

**Full Work Author:** Delaware Department of Natural Resources and Environmental Control

**Full Title:** Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters

**URL:** </04/03686.htm>

**Date:** January 1993

**Full Work Author:** US EPA

**Abstract:** Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification.

**Full Title:** Maryland Clean Marina Guidebook

**URL:** </06/05841.pdf>

**Length:** 155 pages

**Date:** 1998

**Full Work Author:** Maryland Department of Natural Resources, Waterway Resources Division

**Section Author:** Valentine, Elizabeth Fuller; et al

**Abstract:** The Maryland Clean Marina Guidebook is intended to be used as a reference document. The guidebook offers technical advice and best management practices for marina design and maintenance, stormwater management, vessel maintenance and repair, petroleum controls, sewage handling, waste containment and disposal, marina management, and laws and regulations.

## Articles and Reports

**Full Title:** Clean Marinas Clear Value

**URL:** </04/03708.htm>

**Date:** August 1996

**Full Work Author:** US EPA

**Abstract:** Marinas and recreational boating are very popular uses of coastal waters. The growth of recreational boating, along with the growth of coastal development in general, has led to a growing awareness of the need to protect the environmental quality of our waterways.

## Fact Sheets

**Full Title:** Managing Nonpoint Source Pollution from Boating and Marinas

**URL:** </05/04757.htm>

**Date:** January 21, 1997

**Full Work Author:** US EPA

**Abstract:** A fact sheet on managing pollution from boating and marinas through boat operation and maintenance, sewage and waste handling, and siting management and design.

**Full Title:** Painting Tips for Your Boat

**URL:** </03/02989.pdf>

**Length:** 2 pages

**Abstract:** Tips on surface preparation and painting boats to obtain a lasting finish.

**Full Title:** Pollution Prevention for Marinas and Boatyards

**URL:** </03/02990.pdf>

**Length:** 4 pages

**Full Work Author:** Virginia Department of Environmental Quality, Office of Pollution Prevention

**Abstract:** One of Virginia's most treasured and alluring natural resources is its rivers and waters. Not only do they play an integral role in maintaining our own prosperity and quality of life, but our waterways are critically important to Virginia's fish and wildlife and their habitats.

**Section Title:** Marinas and Boatyards

**Full Title:** Pollution Prevention Handbook: Marinas and Boatyards Fact Sheet

**URL:** </01/00589.pdf>

**Length:** 9 pages

**Date:** 1992

**Full Work Author:** Department of the Interior

**Abstract:** This fact sheet presents pollution prevention, source reduction, and

) recycling options for marinas and boatyards. A pollution prevention/recycling checklist is included.

## **Video Tapes**

**Full Title:** Reducing Waste and Preventing Pollution in Marinas and Boatyards

**Length:** 2 hours

**Full Work Author:** Virginia Department of Environmental Quality, Office of Pollution Prevention

**Abstract:** This comprehensive video covers site selection and design, implementation of operations to reduce waste and pollution at marinas, and case studies of existing marinas that have successfully implemented waste reduction and pollution prevention programs.

# **Appendix D**

## **Federal Laws Related to Marinas and Recreational Boating**

Table D. Federal Laws Related to Marinas and Recreational Boating

Activity	Permit, License or Title	Authority	Purpose	Requirements
Any construction activity that disturbs 1 or more acres	NPDES Storm water Permit for Construction Activity	Clean Water Act, Section 402, for storm water discharge permits and 40 CFR 122.26	Maintains after development, as nearly as possible, the predevelopment runoff conditions.	All projects that disturb 1 or more acres must submit a Notice of Intent
Discharge of boat and equipment wash water, storm water runoff from boat maintenance areas, noncontact cooling water, and condensate discharges	NPDES General Permit for Discharges from Marinas	Clean Water Act, Section 402, for storm water discharge permits and 40 CFR 122.26	Controls pollution generated from runoff associated with industrial activity.	Any marina or boat yard that conducts boat maintenance activities, including washing, and has wastewater or storm water discharges must apply for coverage under this permit unless they have a valid individual discharge permit or coverage under 97-SW(1). To receive coverage under this permit, applicants must develop and implement a storm water pollution prevention plan
Operate a paint spray booth	Air Quality Permit to Construct	Clean Air Act, Section 110, and Title V, 42 U.S.C. 7401 et seq.	Ensures that any new, modified, replaced, or relocated source of air pollution complies with all air quality requirements. Air quality standards have been adopted to protect public health, vegetation, and forests.	Pre-Approval: Before an air pollution source is constructed or modified, a permit must be obtained from the state environmental agency.  Post-Approval: Periodic emission tests and /or reports may be required depending on the nature of the operation and its emissions.
Any of the following activities in a nontidal wetland or its buffer: grading or filling; excavating or dredging; changing existing draining patterns; disturbing the water level or water table; and destroying or removing vegetation.	Proposed Activities in Nontidal Wetlands and Waterways Permits	Rivers and Harbors Act of 1899, Section 10; Clean Water Act, Section 404  Section 10 of the Rivers and Harbors Act of 1899 gives the Army Corps of Engineers authority to regulate all work and structures in navigable waters of the U.S.  Section 404 of CWA regulates discharges of dredged or fill material into navigable waters, including wetlands. If USACE Section 404 permit is required, the state must investigate the site prior to construction.	Prevents, wherever possible, further degradation and losses of nontidal wetlands due to human activity; and wherever practical and feasible, to offset unavoidable losses or degradations through the deliberate restoration or creation of nontidal wetlands.	Wetland mitigation construction or monitoring requirements may be required in many instances and may extend well beyond construction of an approved mitigation project.
Discharge of sewage and grey water from a marina's private sewage treatment plant to surface water	Surface Water Discharge Permit	Clean Water Act	Maintains water quality standards in the water receiving the discharge.	Must be included in county water and sewer plan. Must meet all effluent limits, monitoring requirements, and other permit conditions

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Apply antifouling paints containing tributyl tin (TBT)	TBT Applicators License	Organotin Antifouling Paint Control Act of 1988 (33 U.S.C. 2401) EPA is required to certify that each antifouling paint containing organotin does not release more than 4.0 micrograms per square centimeter per day.	Prohibits the use of antifouling paints containing organotin (TBT) on vessels that are 25 meters or less in length, unless the vessel hull is aluminum.	It is unlawful for any person other than an owner or agent of a commercial boatyard to possess, distribute, sell, offer for sale, use, or offer for use any paint containing a TBT compound (except for spray can less than or equal to 16 ounces).
Generate 100 kg of hazardous waste in a calendar month or accumulate this amount at any one time	Notification of Hazardous Waste; EPA Identification Number for Generators, Transporters, and Treatment/Storage/Disposal (TSD) Facilities	RCRA, Section 3010; 40 CFR 262.12, 263.11, and 264.11	Ensures proper storage and disposal of hazardous wastes.	A generator may not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received an EPA Identification Number. A generator may not offer hazardous waste to transporters or to a TSD facility that has not received an EPA Identification Number.
Construction where the habitat of an endangered species or the species itself could be affected	N/A	Federal Endangered Species Act, (16 U.S.C. 1531-1543; P.L. 93-205) National Marine Fisheries Service (NMFS) regulations concerning ESA listing procedure are published at 50 CFR Parts 217-227. Joint regulations (USFWS and NMFS) - 50 CFR Parts 402 and 424-453. FWS coordinates ESA activities for terrestrial and freshwater species, while NMFS is responsible for marine species and Pacific salmon.	Provides conservation of species which are in danger of extinction throughout all or a significant portion of their range. All proposed development sites must be assessed by USFWS and USDOC for endangered and threatened species and habitat protection areas.	A species must be listed if it is threatened or endangered - because of present or threatened destruction, modification, or curtailment of its habitat or range - overutilization for commercial, recreational, scientific, or educational purposes - disease or predation - inadequacy of existing regulatory mechanisms - other natural or manmade factors affecting its continued existence.
Fueling, bilge water discharge, oil changing	N/A	Clean Water Act	Prohibits discharge of oil or oily waste into or upon the navigable waters of the U.S.	Prohibits discharge of oil or oily waste into or upon the navigable waters of the U.S. or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water.
Boat cleaning	N/A	Clean Water Act, (33 CFR 153.305)	Prohibits the use of soaps or other dispensing agents.	Prohibits the use of soaps or other dispensing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard.

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Fueling, liquid material management	Spill Prevention, Contaminant, and Countermeasure (SPCC) Plan	EPA, Oil Pollution Prevention Regulation 40 CFR Part 112	Develops and implements plan to prevent discharge of oil into or upon navigable waters of the U.S. or adjoining shorelines.	Requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has: - an above-ground oil capacity storage > 660 gal in a single container - an aggregate above-ground storage capacity of > 1,320 gal or a total underground storage capacity of > 42,000 gal.
Pumpouts, sewage discharge	N/A	Clean Vessel Act of 1992, Subtitle (V)(F) of P.L. 102-587  The Clean Vessel Act is a cost-reimbursable program, i.e., the grantees must spend their money to conduct approved activities and then request reimbursement for up to 75% of the costs. Grantees must provide at least 25% of project funding from a non-federal source.	Allows the Secretary of Interior to issue grants to coastal and inland states for pumpout stations and waste reception facilities to dispose of recreational boater sewage.	Directs the Secretary of Interior to provide grants to states to pay for the construction, renovation, operation, and maintenance of pumpout stations and waste reception facilities; requires each coastal state to conduct a survey to determine the number and location of all operational pumpout facilities and the number of recreational vessels with MSD Type III or portable toilets; requires each coastal state to develop and submit a plan for the construction and/or renovation of an adequate number of pumpout stations and waste reception facilities within the coastal zone of the state.
Pumpouts, boat toilet use, sewage discharge	Marine Sanitation Device Standard	Clean Water Act, Section 312, U.S.C., Title 33, Section 1322, 40 CFR Part 140  The Water Quality Act of 1987 requires EPA to develop standards designed to prevent the discharge of untreated or inadequately treated sewage into the U.S. waters. Section 312 requires the U.S. Coast Guard (USCG) to promulgate and enforce regulations governing the design, construction, installation, and operation of MSDs.	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (within 3 miles of the coast).  It is illegal to discharge raw sewage in U.S. territorial waters.	Requires the installation of a U.S. Coast Guard certified MSD Type I, Type II, or Type III on all vessels with installed toilet systems operating in the navigable waters of the U.S.  Portable toilets are not considered installed toilets; however, direct overboard discharge of portable toilet wastes is a violation of state water quality regulations.
Sewage discharge	Marine Sanitation Device Standard, Complete Prohibition, No Discharge	Clean Water Act, Section 312 (f) (3), U.S.C., Title 33, Section 1322, 40 CFR, Part 140.4  The EPA may allow a state to prohibit all discharges from marine toilets, thus declaring the area a "No Discharge Zone".	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (up to 3 miles).	Part 140.4 indicates that a state may completely prohibit the discharge from all vessels of any sewage, whether treated or not, into some or all of the waters within such state by making a written application to the EPA Administrator and by receiving the Administrator's affirmative determination pursuant to Section 312(f)(3) of the Act.



Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
MSD design	Marine Sanitation Devices; General, Certification Procedures, Design, Construction, and Testing	Clean Water Act, Section 312, U.S.C. Title 33, Section 1322, 40 CFR Part 159  The U.S. Coast Guard will maintain and make available a list that identifies certified MSDs.	Prescribes regulations governing the design and construction of marine sanitation devices and procedures for certifying that the MSDs meet the regulations and the standards of EPA promulgated under Section 312.	Section 159.7 (a) addresses requirements for vessel operators. It states that no person may operate any vessel equipped with installed toilet facilities unless it is equipped with: - an operable Type II or III device that has a label on it under Sec. 159.12 or Sec. 159.12a; or - an operable Type I device that has a label on it under Sec. 159.16 or that is certified under Sec. 159.12, if the vessel is 65 feet or less in length.
Sewage discharge	Marine Sanitation Device Standard, Establishment of Drinking Water Intake No Discharge Zone	Clean Water Act, Section 312 (f) (4) (B), U.S.C. Title 33, Section 1322, 40 CFR Part 140	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (up to 3 miles).  The discharge of sewage from a vessel, whether treated or untreated, is prohibited in No Discharge Zones.	Section 312 (f)(4)(B) provides that "Upon application by a State, the EPA Administrator shall, by regulation, establish a drinking water intake zone in any waters within such State and prohibit the discharge of sewage from vessels within that zone."
Oil discharges from boats	N/A	Oil Pollution Act of 1990 (OPA), Public Law 101-380 (33 U.S.C. 2701 et seq; 104 Stat. 484)  OPA requires FWS consultation on developing a fish and wildlife response plan for the National Contingency Plan, input to Area Contingency Plans, review of Facility and Tank Vessel Contingency Plans, and conducting of damage assessments associated with oil spills.	Establishes new requirements and amended the Federal Water Pollution Control Act to provide enhanced capabilities for oil spill response and natural resource damage assessment by the FWS.  Addresses commercial oil shipping (e.g., tankers must be double-hulled, captains may lose their license if operating vessel under the influence of drugs or alcohol).	Some requirements are applicable to recreational boating. The responsible party for any vessel or facility that discharges oil is liable for the removal costs of the oil and any damages to natural resources; real or personal property; subsistence uses; revenues, profits, and earning capacity; and public services such as providing increased or additional public services.

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Garbage dumping at sea	Chapter 33: Prevention of Pollution from Ships	<p>Marine Plastic Pollution Research and Control Act, 1987, MPPRCA (Title II of P.L. 100-220), U.S.C. Title 33, Chapter 33</p> <p>MPPRCA is the U.S. Law implementing MARPOL Annex V, an international pollution prevention treaty.</p> <p>The U.S. Coast Guard is primarily responsible for enforcement of the law and development of the regulations.</p>	<p>Restrict garbage dumping at sea.</p> <p>Applies to all domestic and international ships operating in the U.S. Exclusive Economic Zone (EEZ) and in U.S. navigable waters.</p>	<p>Prohibits ocean dumping of plastics by ships and restricts the ocean dumping of other types of garbage within 25 miles from any land. Requires ports and terminals to provide garbage reception facilities.</p> <p>It is prohibited to discharge garbage in inland waters or in the ocean within 3 nautical miles of shore. A placard which notifies the crew and passengers of the MARPOL Annex V is required on vessels 26 feet and over. A plan and logbook are required on vessels 40 feet and over.</p>
Ocean Dumping; research	N/A	<p>Marine Protection Research and Sanctuaries Act of 1972, 33 U.S.C. 1441-1445; Title II of P.L. 92-532, as amended</p>	<p>Authorizes research and monitoring related to ocean dumping as well as research on possible effects of pollution, overfishing, and human-induced changes of the ocean system.</p>	<p>Provides for long-range research on the effects of human-induced changes to the marine environment and authorizes research and demonstration activities related to phasing out sewage and industrial waste dumping in marine environment.</p>

# **Appendix E**

## **Web Sites with Information Related to Marinas and Recreational Boating**

## SOME WEBSITES TO VISIT

**U.S. Environmental Protection Agency, Office  
of Wetlands, Oceans, and Watersheds**

*<http://www.epa.gov/owow/>*

Information on the control of nonpoint source pollution, the condition of the water-related environment, and the management and restoration of watersheds.

**U.S. Environmental Protection Agency, Office of  
Solid Waste and Emergency Response**

*<http://www.epa.gov/swerrims/>*

Provides policy, guidance, and direction for the land disposal of hazardous wastes, underground storage tanks, solid waste management, encouragement of innovative technologies, source reduction of wastes, and the Superfund Program.

**U.S. Environmental Protection Agency, Office  
of Wetlands, Oceans, and Watersheds  
Publications On Line**

*[http://www.epa.gov/OWOW/info/PubList/  
publist4.html](http://www.epa.gov/OWOW/info/PubList/publist4.html)*

*<http://earth1.epa.gov/OWOW/info/NewsNotes/>*

A variety of EPA publications related to Nonpoint Source Pollution that can be ordered or read on the Internet.

**U.S. Environmental Protection Agency, Office  
of Wetlands, Oceans, and Watersheds  
Publications On Line**

*[http://www.epa.gov/OWOW/info/PubList/  
publist4.html](http://www.epa.gov/OWOW/info/PubList/publist4.html)*

*<http://earth1.epa.gov/OWOW/info/NewsNotes/>*

A variety of EPA publications related to Nonpoint Source Pollution that can be ordered or read on the Internet.

**U.S. Environmental Protection Agency, Index  
of Watershed Indicators**

*<http://www.epa.gov/surfiwi>*

Maps and information about watersheds nationwide. Locate your own watershed and learn about the quality of the waters in it, sources of pollution, and organizations active in protecting it.

**U.S. Coast Guard Kids' Corner**

*<http://www.uscg.mil/hq/g-cp/kids/kidindx.html>*

Activities and information for kids about safety and clean boating practices; "The Adventures of Captain Cleanwater: An Activity Book for Kids About Clean and Safe Boating" and "The True Story of Inky the Whale."

**National Sea Grant National Depository**

<http://nsgd.gso.uri.edu>

Searchable archive of all Sea Grant-funded documents since 1967, including hundreds of studies on boating, marinas, and the environment, plus many educational flyers, brochures, and fact sheets; well worth the visit.

**National Sea Grant College Program**

<http://www.mdsg.umd.edu/NSGO/>

Information about the National Sea Grant program and links to state Sea Grant programs nationwide.

**U.S. Fish and Wildlife Service, Clean Vessel Act Program**

<http://fa.r9.fws.gov/cva/cva.html>

Information on the CVA program, which provides grants for pumpout and dump stations for boaters to dispose of human waste in an environmentally safe manner.

**Tennessee Valley Authority**

<http://www.tva.gov/river/recreation/index.htm>

Information on the camping and recreation areas operated by the TVA. TVA operates some 100 public recreation areas throughout the Tennessee Valley, including campgrounds, day-use areas, and boat launching ramps. Their opening and closing dates are listed at this site, as well as contact numbers.

**U.S. Army Corps of Engineers**

<http://www.usace.army.mil/inet/functions/cw/cecwo/recrea.htm>

Information about all of the lakeside parks that are administered by the Army Corps of Engineers. The Lakeside Recreation Resource page shows a map. Just click on an area of the country that you are interested in and the maps will show you all the information you need about the USACE park system.

**Canadian Coast Guard**

<http://www.pacific.ccg-gcc.gc.ca/Epages/offboat/pae/pme.htm>

Protecting the Aquatic Environment: A Boater's Guide with valuable information on managing waste, boat maintenance, antifouling paint, batteries, introduced species, tips for protecting the aquatic environment, spill reporting, and more.

**Florida Department of Environmental Protection**

*<http://www.dep.state.fl.us>*

Information and management practices for managing the following types of waste:

- Distress signal flares
- Batteries (lead acid marine/auto and rechargeable)
- Mercury-containing devices: bilge pump float switches, air conditioning thermostats
- Mercury containing lamps: fluor-escent and high-intensity discharge
- Refrigerants and asbestos.

**Maryland Department of Natural Resources**

*<http://www.dnr.state.md.us/boating/>*

Links to a variety of pages with information of interest to boaters, including:

- Boating Regulations
- Boating Safety
- Clean Marina Initiative
- Public Boating Facilities
- Pumpout Program
- Vessel Requirements
- Weather.

**National Safe Boating Council**

*<http://www.safeboatingcouncil.org/>*

The mission of the NSBC is to provide a forum for advancing and fostering safe boating, and for educating the public in safe boating principles, by developing and facilitating an ongoing series of campaigns to promote safe boating principles and practices; facilitating the distribution and dissemination of information on safe boating; promoting the development of research initiatives to support boating education and safety awareness; improving the professional development of boating safety educators; and encouraging the development and implementation of outstanding boating safety programs.

**Marina Operators Association of America (MOAA)**

*<http://www.nmma.org/affiliates/usa/moaa>*

MOAA works for the enhancement of the recreational marina industry through:

- Stimulating a continuing exchange of ideas
- Updating marina operators on new information
- Banding together to maintain a strong national voice
- Encouraging marina operators to institute the best management practices
- Joining to establish a clean marina program
- Encouraging marina operators to be proactive in their customer's boating experience.

**National Marine Manufacturers Association**

*<http://www.nmma.org>*

NMMA members—more than 1,600 companies—produce every conceivable product used by recreational boaters. NMMA provides a wide variety of programs and services tailored to member needs: technical expertise, standards monitoring, government relations avocation, industry statistics, and more. NMMA produces boat shows, including the world's largest marine trade show, the International Marine Trades Exhibit & Convention (IMTEC), in key North American markets.

**International Marina Institute**

*<http://www.inimarina.com>*

IMI is a nonprofit membership organization serving the global marine industry. It offers management training, education, and information about research, legislation, and environmental issues affecting the marina industry. IMI is a marine trade organization that encompasses all segments of the marina business both nationally and internationally.

**Marine Environmental Education Foundation**

*<http://www.meef.org>*

MEEF is a national, nonprofit, tax-exempt, charitable foundation founded to bring together national specialists to develop education programs and research on marine environmental issues. Its goal is to create and present educational programs that will result in cleaner waters for the boating public. MEEF is the creator and sponsor of the National Clean Boating Campaign.

**National Boating Federation**

*<http://outdoorsource.com/nbf>*

The largest nationwide alliance of recreational boating organizations, yacht and boating clubs, and individual members focused on promoting recreational boating activities. The National Boating Federation often appears before congressional committees to testify on boating matters.

**Boat Owners Association of the United States**

*<http://www.boatus.com>*

Provides services including representing the interests of boat owners on Capitol Hill; insuring members' boats; operating an on-the-water towing network; and providing discount boating equipment through the Internet, mail order, and marine centers. BoatU.S. publishes widely circulated publications for boaters, serves as an educator in marine safety and environmental issues, and routinely tests and reports on boating safety equipment and other products.

**Marine Retailers Association of America**

*<http://www.mraa.com>*

MRAA is the nation's largest marine retailers trade association, representing an industry with more than 100,000 employees and nearly \$20 billion in sales annually. The mission of the MRAA—Progress through Participation with Industry Partners—is accomplished by promoting programs and services and helping create an environment that helps marine retailers to operate. MRAA promotes and furthers the interests of all its member companies and the marine industry in general.

**Center for Marine Conservation**

*<http://www.cmc-ocean.org>*

The Center for Marine Conservation is committed to protecting ocean environments and conserving the global abundance and diversity of marine life. Through science-based advocacy, research, and public education, CMC promotes informed citizen participation to reverse the degradation of our oceans.

**BoatFacts Online**

*<http://www.boatfacts.com/home.asp>*

Information on boating products, publications, marinas, classifieds, engines, boats, legislative issues, organizations, discussion forums, and a boating calendar.

