

Clean Texas Marina Guidebook

A product of the Clean Texas Marina Program

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The Advisory Board members freely volunteered their time and effort to review and discuss the *Guidebook*. They are truly a knowledgeable and dedicated group.

Draft copies of the *Clean Texas Marina Guidebook* were also



reviewed by other marina industry personnel, including the entire Board of Directors of the Marina Association of Texas, Texas state agency personnel and many additional subject area experts.

The *Guidebook* was designed and published by the Marine Information Services staff of the Texas Sea Grant College Program.

Introduction


The Clean Texas Marina Program is a proactive partnership designed to encourage marinas, boatyards and boaters to use simple, innovative solutions to keep Texas coastal and inland waterway resources clean. The Program these operators in protecting the resources that provide their livelihood — clean water and fresh air. The Program is distributing a comprehensive pollution prevention guidebook for marinas, recognizes “Clean Marinas” through a designation and incentive awards program, and conducts outreach activities to further promote environmentally responsible marina and boating practices. The basic goal of the Program is pollution prevention by making marinas, boatyards and boaters more aware of environmental laws, rules and jurisdictions, and to get as many marinas as possible to follow best management practices and to be designated “Clean Marinas.”

Clean Texas Marina Guidebook

The *Clean Texas Marina Guidebook* provides an overview of actions that marine industry professionals can take to protect water and air quality. It is written for managers of all types of boating facilities, but full-service marinas with boatyards are the major target audience. The recommendations in this manual are equally applicable to marinas with limited services, independent boatyards and marine contractors. The goal is to encourage informed decision making that leads to a reduction in boating-related pollution. The *Guidebook* provides advice on the following topics.

- Siting considerations for new and expanding marinas
- Marina design and maintenance
- Stormwater management
- Vessel maintenance and repair
- Petroleum control
- Sewage handling
- Waste containment and disposal
- Marina management
- Laws and regulations

By adopting the best management practices recommended throughout this *Guidebook*, you will demonstrate your commitment to environmental stewardship. Those marinas that adopt a significant proportion of the best management practices suggested within the *Guidebook* will be recognized and designated as Clean Texas Marinas. They will receive a certificate acknowledging their environmentally responsible actions, authorization to use the Clean Texas Marina logo on letterhead and in advertising, a burgee to fly from their property,



and promotion in the Clean Texas Marina Program publications and web site and at public events. You can also be proud that you are doing your share to protect the natural resources of Texas upon which we all depend. Additionally, your marina or boatyard will be a safer, healthier place to work. You may be able to save money by reducing your costs for materials and for waste cleanup and disposal. You may increase your income by renting out equipment such as vacuum sanders and by selling recyclable materials such as batteries and reusable oil spill kits. Cleaner, more efficient equipment will increase your staff's productivity. Your liability associated with waste handling may also be reduced, and your facility will be more attractive to those who care about the health of our water, land and air.

How to use this guidebook

The *Clean Texas Marina Guidebook* is intended to be used as a reference document. Refer to selected chapters as needed. For example, all the oil spill control information would be under the chapter heading, *Petroleum Control*.

Clean Boating Tip Sheets are included in the *Guidebook*. They address vessel cleaning and maintenance, petroleum control, vessel sewage, and waste containment and disposal. These tip sheets are meant to be photocopied and distributed to boaters. There is some space on each sheet to include your marina's name and logo.

Throughout the *Guidebook* you will find references to additional sources of information. Contact information and brief descriptions of services offered by each agency is listed at the end of the regulatory section along with web sites for specific services offered.

Who is involved?

The Texas Sea Grant College Program developed the Clean Texas Marina Program in partnership with the Texas General Land Office, Texas Natural Resource Conservation Commission, Marina Association of Texas, the Marina Advisory Board and others listed in the Acknowledgement Section of the document. Financial support for the Clean Texas Marina Program was provided by grants from the National Oceanic and Atmospheric Administration awarded through the Texas Coastal Coordination Council and the State of Texas and through the National Sea Grant Office.

What about the boaters?

The support and patronage of boaters is key to the success of the Clean Texas Marina Program. The Program has incorporated educational materials for boaters into the *Guidebook* in order to promote environmentally responsible boating.

Steps to Being a Clean Texas Marina

1. Learn about the Clean Texas Marina Program

Attend a workshop, call the Clean Texas Marina office or visit our web page at www.cleanmarina.org/ to obtain a copy of the *Clean Texas Marina Guidebook*, the designation checklist, pledge and other program information.

2. Take the Clean Texas Marina Pledge

By signing the pledge, you commit to “do your part to improve the environmental quality of Texas waterways, encourage voluntary participation, support the regulatory process, create a strong environmental ethic, and promote individual responsibility through public education.”

Send us a photocopy of the signed pledge and then display the original in a public area so that your customers will be aware of your commitment to clean water. We will prepare a news release acknowledging your participation in the Clean Texas Marina Program and will include your facility’s name on our web page and in public displays. The pledge expires one year from the date you sign it. If you are unable to achieve the goal in one year, you may renew the pledge by contacting the Clean Texas Marina office.

3. Conduct a self-assessment of your property


Assess your own facility using the Clean Texas Marina Checklist and the *Clean Texas Marina Guidebook*.

4. Call upon a mentor or Clean Texas Marina staff to answer any questions.

Do not be discouraged if you initially have difficulty meeting the minimum scores. We want to help you become a Clean Texas Marina. Please call either the Marina Association of Texas at (871) 451-8870 or the Clean Texas Marina office. If we cannot answer your questions directly, we will put you in touch with one of the marina operators who have helped to develop the Clean Texas Marina Program.

5. Schedule a confirmation visit

Once you are satisfied that your facility meets the designation standard described on the Clean Texas Marina Checklist, call the Clean Texas Marina office to schedule a confirmation visit. A representative from the Texas Natural Resource Conservation Commission’s Small Business and Environmental Assistance Division, Clean Texas Marina



office and a marina operator from the Clean Texas Marina Advisory Board will visit your facility to verify the items checked on the Checklist.

6. Enjoy your rewards!

As a Clean Texas Marina, you will be authorized to use the Clean Texas Marina logo on your letterhead and in your advertising. You will receive a certificate, a burgee to fly from your property and a free online business card on the Clean Texas Marina web site. Your facility will also be included in Clean Texas Marina publications and public displays. Furthermore, Clean Texas Marina staff will help you prepare a news release recognizing your demonstrated commitment to environmental stewardship.

7. Maintain your Clean Texas Marina status

Annually, confirm in writing that you continue to meet the designation standards described on the Clean Texas Marina Checklist. At least every third year, a Clean Texas Marina representative will contact you to set up a meeting at a mutually convenient time to reaffirm Clean Texas Marina status.

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Siting

Siting Considerations for New and Expanding Marinas

Environmental Concerns

- Environmental Review
- United States Army Corps of Engineers
- State Water Quality Certification

Site Selection Guidelines

- Redevelop Existing Sites
- Characterize Project Site
- Identify Rare and Endangered Species
- Avoid Submerged Aquatic Vegetation
- Minimize Disturbance to Wetlands
- Avoid Shellfish Beds
- Avoid Critical Migration, Nesting, and Spawning Periods
- Avoid Colonial Waterfowl Nesting and Staging Areas
- Avoid Geographic and Hydrographic Impediments
- Consider Bottom Configuration
- Follow Natural Channels
- Reflect desired capacity, services and access

Information Sources





Siting Considerations for New and Expanding Marinas

Environmental Concerns

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

United States Army Corps of Engineers

The majority of marina development and expansion projects, including dredging, will require a permit from the Army Corps of Engineers. Section 10 of the Rivers and Harbors Act of 1899 gave the Army Corps authority to regulate all work and structures in navigable waters of the United States. Section 404 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act) regulates discharges of dredged or fill materials into navigable waters, including wetlands.

State Water Quality Certification

If an Army Corp Section 404 permit is required, the TNRCC will also review the project plans submitted to the COE prior to construction. The TNRCC will evaluate the potential for adverse effects on water quality or living resources caused by marina siting and construction. The Water Quality Certification process certifies that federally permitted activities will not violate Texas's water quality standards. The Water Quality Certification issued by TNRCC is then incorporated into the federal permit.

For a preliminary review of your proposed project, contact your local USACE office.

Site Selection Guidelines

Site selection and design have a tremendous impact on a facility's potential for water quality problems. Redevelop existing sites rather than disturbing pristine areas and place new facilities in previously developed waterfront sites.



Characterize Project Site.

Implement measures that ensure that marinas and auxiliary structures do not cause direct or indirect adverse water quality impacts to fish, shellfish and wildlife habitat during and after marina construction.

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

Identify Rare and Endangered Species.

- Rare and endangered species may not be disturbed (Federal Endangered Species Act, Natural Resources Article §4-2A-01 et seq., and Natural Resources Article §10-2A-01 et seq.).
- All proposed development sites must be assessed by the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Dept. (TPWD) for endangered and threatened species and habitat protection areas.
- If protected species are identified, you must implement an approved protection plan prior to project approval.

Avoid Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) provides habitat for shellfish and finfish and food for waterfowl. It is an indicator of good water quality.

- Permits generally are not granted for any new or expanded construction that impacts existing SAV beds.
- Site new or expanded marinas such that navigation over SAV beds is not necessary.

Minimize Disturbance to Wetlands.

- Minimize disturbance to wetlands and indigenous vegetation in riparian areas.
- It is the goal of the State to preserve tidal wetland acreage and function.
- Any construction that does extend into tidal wetlands may require authorizations, licenses, or permits from the TNRCC, Army Corps of Engineers, and the Texas General Land Office (TXGLO).
- Mitigation is required in cases where loss of wetlands is unavoidable.

Avoid Shellfish Beds.

New or expanded marinas should not be built in areas that may adversely impact shellfish beds.

Avoid Critical Migration, Nesting, and Spawning Periods.

- Schedule construction to avoid critical migration, nesting, and spawning periods of important species of finfish, shellfish, and wildlife.
- Consult with Texas Parks and Wildlife for site-specific determinations of the potential effects of activities on wildlife populations.

Avoid Colonial Waterfowl Nesting and Staging Areas.

Regional waterfowl populations converge in certain areas to breed and feed during specific times of year. The preservation of historic nesting and staging areas is vital to the continued existence of many waterbird species. Marinas must be such that the increased boating activities associated with new or expanded marinas do not deter waterfowl from using historic staging and concentration areas.

Avoid Geographic and Hydrographic Impediments.

Water circulation and flushing characteristics are key determinants for location and favorable hydrographic characteristics with the fewest modifications can reduce potential impacts. Flushing is impeded at the head of tide and in areas where salinity or temperature differences produce variations in water density. Variations in density cause the water column to separate into distinct layers that do not readily mix.


Consider Bottom Configuration.

- A continuous, gradual downward slope from the berthing area into deeper water is ideal.
- Avoid canals, irregular pockets, and sumps that are deeper than adjacent channels.
- Avoid dead-end channels to the greatest extent possible.

Follow Natural Channels.

- Align entrance channels with natural channels to increase flushing.
- Boat lanes should progressively widen toward the seaward end and narrow toward the inland end to allow water to flow freely and maintain its velocity within the marina.

Debris and silt tend to collect in poorly flushed areas and will eventually settle to the bottom. As the debris is decomposed by bacteria, oxygen is removed from the water. Water quality may suffer if oxygen is not replaced as quickly as it is removed

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- Avoid locating the entrance channel perpendicular to the natural channel as shoaling (and, therefore, dredging) is a potential problem.
 - Avoid long winding channels connecting marinas to open water.
 - Where possible, establish two openings at opposite ends of the marina to promote flow-through currents.

Reflect Desired Capacity, Services and Access.

Compromise in the design to reflect the desired capacity, services and access, while minimizing environmental impacts.

Information Sources

Appendix

Texas Natural Resource Conservation Commission

U.S. Fish and Wildlife Service

Texas Parks and Wildlife Department

Texas General Land Office

U.S. Army Corps of Engineers

Marina Design and Maintenance

Environmental Concerns

Best Management Practices for Marina Facilities and Structures

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

Best Management Practices for Protecting Sensitive Areas

- Minimize Impervious Areas
- Use Upland and Inland Areas
- Expansion Considerations
- Practice Water-wise Landscaping
- Adopt Integrated Pest Management Practices

Best Management Practices for Creating Habitat Areas

- Maintain and/or Develop Vegetated Areas

Information Sources





Marina Design and Maintenance

Environmental Concerns

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

Best Management Practices for Marina Facilities and Structures

Use Fixed or Floating Piers to Enhance Water Circulation.

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

- Select an open design for new or expanding marinas. Open marina designs have no fabricated or natural barriers to restrict the exchange of ambient water and water within the marina area.
- Install wave attenuators to reduce the force of incoming water, if protection is necessary. Wave attenuators do not restrict water exchange nor do they interfere with bottom ecology or aesthetic view. Furthermore, they may be easily removed and do not significantly interfere with fish migration and shoreline processes.
- Design new or expanding marinas with as few segments as possible to promote circulation within the basin. The fewer the segments, the better the circulation.
- Use an aerator system (fountain-type or air-jet) to aerate areas with poor circulation.



Use Environmentally Neutral Materials.

- For new pilings and other structures that are in or above the water, use materials that will not leach hazardous chemicals into the water and that will not degrade in less than ten years time, e.g., reinforced concrete, coated steel, recycled plastic, plastic reinforced with fiberglass.
- Be sure to contain shavings when field cutting plastic pilings and timbers.
- Avoid using wood treated with creosote for pilings and similar structures that are in or above the water. Wood pressure treated with chromated copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA), or ammoniacal copper arsenate (ACA) is a better option. There is some concern that these pressure treated timbers may contribute to water pollution.
- Use naturally durable timbers conservatively. Black locust, cedar, chestnut and white oak are naturally durable but expensive and may be hard to find.
- Avoid exotic timbers. Some tropical trees, such as greenheart and bongossi, are also naturally durable. Their harvest, however, may be harmful to tropical forests.
- Purchase floatable foams that have been coated or encapsulated in a plastic cover so that as these floats age, degraded foam is contained by the covering.

Limit Shaded Areas Over the Water.

- Nearshore bottom-dwelling organisms require sunlight. Limit the number of covered slips in order to provide them with as much sunlight as possible.

Minimize the Need for Dredging.

Marina concepts that require extensive dredging both in the construction stage and for maintenance during its operation, should be avoided, whenever possible. There should be concern over disposal of contaminated dredge materials and negative effects on critical habitats. New marinas must be located in areas where deepwater access can be obtained with a minimum of excavation, filling, and dredging. Existing marinas that require maintenance dredging more frequently than once every four years should investigate practicable options to increase circulation or reduce sediment accumulation.

- Extend piers and docks into naturally deep waters.

- Locate slips for deep draft boats in naturally deep water.
- Dredge channels to follow the course of the natural channel.
- Provide dry storage for smaller boats.

Minimize the Impacts of Dredging.

A minimum amount of excavation, filling and dredging to reduce the water quality impacts of construction and maintenance dredging is desirable.

- Be certain that your dredging contractor selects an appropriate disposal site and containment design. The disposal site must have minimal impact on public safety, adjacent properties, and the environment.
- Use dredging methods, like hydraulic dredging, that minimize environmental impacts.
- Use turbidity curtains to contain suspended sediments.

Employ Nonstructural Shore Erosion Control Measures.

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


Conserve Drinking Water and Keep It Pure.

- Equip all freshwater hoses with automatic shutoff nozzles.
- Fix leaks and drips.
- Install “low-flow” faucets, toilets, and showerheads.
- Require members to utilize anti-siphon devices on all water hose connections to prevent contamination.

Maintain Structures Using Clean Marina Practices.

- Scrape, sand, and paint in-water and land-side structures accord-

Both a USACE Waterway Construction Permit and a Clean Water Act Section 404 Permit are required for all dredging projects. Environmental concerns are evaluated before these permits are issued.



ing to the same management principles as for vessels (refer to the Vessel Maintenance and Repair chapter).

- If feasible, move floating structures to shore for scraping, painting, and major repairs. See Vessel Maintenance and Repair chapter.

Best Management Practices for Protecting Sensitive Areas

Minimize Impervious Areas.

Keep paved areas to an absolute minimum, e.g., just designated work areas and roadways for heavy equipment.

Use Upland and Inland Areas.

- Locate buildings, workshops, and waste storage facilities in upland areas, away from fragile shore side ecosystems, to the greatest extent possible. Upland areas also provide a measure of protection against floods.
- Locate parking and vessel storage areas away from the water where feasible.
- Consider inland areas for boat repair activities and winter storage. Use proper methods to quickly and easily move boats to inland storage locations.
- When establishing repair areas, comply with all local, state and federal regulations and provide systems that allow the execution of good management practices for repair facilities.

Expansion Considerations.


- As an alternative to adding wet slips, consider expanding storage capacity by adding dry stack storage.
- Dry-stacked boats do not accumulate marine growth. Consequently, toxic anti-fouling paints are not necessary and the associated need to wash, scrape, and paint is eliminated.
- Dry-stacked boats are less likely to accumulate water in their bilges and, therefore, less likely to discharge oily bilge water.
- Encourage the use of hoists and lifts in wet slips to achieve most of the same benefits described above.
- Control stormwater runoff from dry-stack areas as well as from any expanded parking areas.
- Keep forklifts well-tuned to prevent grease or oil from dripping onto staging areas or into the water.

Practice Water-wise Landscaping.

Save on water bills, reduce your maintenance activities, and protect water quality by minimizing your water use. Landscape with native or adoptive plants that require little care in terms of water, fertilizer, and pesticides.

- Water only when plants indicate that they are thirsty: shrubs will wilt and grass will lie flat and show footprints. Water in the early morning or early evening as temperatures generally are cooler. Plants will not be shocked and water loss to evaporation will be minimized.
- Select plants that are suited to the existing conditions (i.e., soil, moisture, and sunlight) so that they will require little care in terms of water, fertilizer, and pesticides. Check with your local county extension agent on suitable plants for your area.
- Water deeply and infrequently rather than lightly and often. Deep watering promotes stronger root systems, which enable plants to draw on subsurface water during hot spells and droughts.
- Select equipment that delivers water prudently. Sprinklers work well for lawns.¹ Soaker hoses or drip irrigation systems deliver water directly to the roots of shrubs, flowers, and vegetables with minimal loss to evaporation.
- Place mulch (wood chips, bark, grass clippings, nut shells, etc.) to a depth of 3-4" around plants to keep water in the soil, prevent weeds, and reduce the amount of sediment picked up by stormwater. Planting groundcovers at the base of trees serve the same function.
- Group plants with similar water needs together. This practice will ease your maintenance burden, conserves water, and benefit the plants.
- Replace lawn areas with native, drought tolerant wildflowers, groundcover, shrubs, and trees.
- Recycle "gray water". Gray water is water that has been used once — maybe for dishwashing or in a washing machine — but is not overly contaminated. It can be filtered and used to water landscaped areas. Because regulations vary, be sure to check local ordinances for permit requirements and written approval before pursuing this option.

¹For best results, water grass to a depth of 1 inch.

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- Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.
 - In areas not served by a public sewer system, consider the use of an aerobic system in lieu of a septic system. The treated water may be used for landscape watering and this prevents the contamination of ground water.

Adopt Integrated Pest Management Practices.

Because of your proximity to the water, it is important to avoid toxic lawn and garden chemicals to the greatest extent possible. Instead, deter unwanted plants or animals with Integrated Pest Management practices. Integrated Pest Management employs preventive, cultural, biological, and chemical methods to control pests while minimizing impacts to non-target species, wildlife, and water quality.

- Select plants that are disease and insect resistant, that will out-compete common weeds, and that can thrive on your property. Refer to a list of native plants and consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations, and other environmental factors.
- Mow lawn areas properly to suppress weeds. Varieties of grass that grow better in cooler weather should be mowed to no less than 2.5 inches in height. Grasses that grow better in warm weather should be mowed to no less than 1.5 inches.
- Pull weeds by hand to reduce reliance on herbicides.
- Boost your own tolerance for weeds and other pests. If it is not actually harming anything, leave it alone.
- Foster natural predators such as praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and certain snakes and toads.
- Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesticides, apply them directly to problem areas.
- Treat only serious or threatening intolerable pest infestations.
- Purchase the least toxic chemical in the smallest amount practical.
- Do not use pesticides just before a rainfall or on a windy day.
- Apply insecticides during the evening when honeybees and other beneficial insects are less active.

- Do not apply pesticides near water, e.g., shore, wells, streams, ponds, bird baths, swimming pools, etc.

Best Management Practices for Creating Habitat Areas

Maintain and/or Develop Vegetated Areas.

Vegetation filters and slows the flow of surface water runoff, stabilizes shorelines, and provides wildlife habitat, flood protection, and visual diversity.

- Maintain vegetated buffers (grassy or wooded) between all impervious areas (e.g., parking lots and boat storage areas) and the water.
- Plant vegetated areas with “beneficial” plants: those plants that require minimal care in terms of trimming, watering, and applications of fertilizer and pesticides. Native, or indigenous, plants demand little care since they are adapted to the local climate and soil types. Also, many horticultural varieties and imported plants may be considered beneficial if they have few maintenance requirements and if they do not displace naturally occurring vegetation (that is, if they are not invasive). Check with your county extension agent for suitable plants.
- Select perennial plants instead of annuals. Perennial plants need only be planted once, tend to shade out most weeds, and few require additional water or maintenance.
- Choose plants that bear flowers, fruit, nuts, and seeds to attract birds, small mammals, and other wildlife.
- Maintain proper soil pH and fertility levels. Fertility describes the presence of nutrients and minerals in the soil. Acidity and alkalinity levels are indicated by pH. These two measures together tell you which plants your soil can support. Soil pH may be adjusted by adding lime (base) or gypsum (acid). Add organic matter such as compost, leaf mold, manure, grass clippings, bark, or peat moss to improve fertility.
- Periodically, submit a soil sample to the Texas Agricultural Extension Service through the local county agent to determine fertility, pH, and application rates for soil amendments.
- Compost leaves, branches, grass trimmings, and other organic matter. Use the mature compost to nourish your soil. Alternatively, chip branches and leaves and use as mulch to discourage weeds and to conserve moisture.



Information Sources

Texas Natural Resource Conservation Commission
U.S. Fish and Wildlife Service
Texas Parks and Wildlife Department
Texas General Land Office
U.S. Army Corps of Engineers
Texas Agricultural Extension Service
Local River Authorities
Local Bay and Estuary Programs

Stormwater Management

Environmental Concerns

Legal Setting

- General Permit for Discharges from Marinas
- State Law: Sediment Control and Stormwater Management

Best Management Practices to Control Stormwater Runoff

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

Information Sources





Stormwater Management

Environmental Concerns

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

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

Legal Setting

Permit for Discharges from Marinas

All marinas or other facilities that conduct boat repair, painting, or maintenance (including washing) are required to obtain an Industrial Permit for Discharges from the TNRCC. The permit covers stormwater waste water discharges from:

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

The control of pollutants that may be carried by stormwater runoff from vessel maintenance areas is addressed in the Vessel Maintenance



Section. Please refer to Laws and Regulations for more information about the Industrial Permit for Discharges from Marinas.

State Law: Sediment Control and Stormwater Management

Consult TNRCC on NPDES program and permit requirement. Boatyard and other facilities that include outdoor boat cleaning or repair operations must obtain a federal National Pollutant Discharge Elimination System (NPDES) stormwater permit from EPA. This permit requires, as a minimum, the implementation of a stormwater pollution prevention plan. (Title 40 Code of Federal Regulations Part 122.26)

Best Management Practices to Control Stormwater Runoff

Practice Low Impact Development.

The goal of low impact development is to develop a site without altering the existing hydrologic cycle. The approach takes advantage of a site's natural features -including vegetation – to minimize the need to build expensive stormwater control devices. It is counter to traditional stormwater management that uses structures such as curbs, gutters, and storm drains to move water off-site as efficiently as possible. Traditional structures cause unnatural volumes of runoff to move into receiving waters at high velocity.

- Capture and treat stormwater on site.
- For example, direct the runoff from your parking lot to a bioretention area rather than toward a storm sewer pipe. A “rain garden” is an example of a bioretention area. It is an area planted with native vegetation and sited such that it collects stormwater. Water, nutrients, and pollutants are taken up by soil and plants within 24 to 48 hours after a storm. Rain gardens have the added advantage of being attractive areas that can provide shade and wildlife habitat, act as wind breaks, and muffle noise.

Cultivate Vegetated Areas.

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

- Plant environmentally-sensitive landscapes at the edge of parking lots and within islands in parking lots.
- Plant vegetated buffers between your upland property and the water's edge.
- Position downspouts so that they drain to vegetated areas avoid draining to concrete or asphalt.

- Construct wetlands to remove pollutants, shelter the coast from storms, and provide habitat for aquatic species and birds.
- Use grassed swales to direct stormwater on your property. Grassed swales are low gradient conveyance channels planted with erosion-resistant vegetation. They improve water quality by filtering out particulates, taking up nutrients, and promoting infiltration. Also, water generally moves more slowly over a grassed swale than it would in a pipe. Grassed swales are not practical on very flat land, on steep slopes, or in wet or poorly drained soils.

Minimize the Amount of Impervious Area.


The less impervious area on site, the less runoff you will have to manage.

- Pave only those areas that are absolutely necessary.
- Minimize the length of new roadway required to serve new or expanding marinas.
- Plan roads so they do not cross sensitive areas such as tidal wetlands.
- Consider alternatives to asphalt for parking lots and vessel storage areas, e.g., dirt, gravel, seashells, engineered porous pavement.
- Investigate a non-toxic, organic soil binder derived from the Plantago plant family. When this binder is combined with crushed aggregate (e.g., gravel, shells) and soil, it creates a somewhat permeable surface that will not erode. For less than or equal to the cost of asphalt, it is a resilient material that will not crack during winter freeze/thaw cycles, can be repaired by adding more material and tilling the surface, and can be dug up with a shovel to plant trees and shrubs.

Use Structural Controls as Necessary.

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

- Stormwater pond systems capture and slowly release storm flows. Ponds may be permanent (retention ponds) or may hold water only temporarily (detention ponds). A Dry Extended Detention pond is an example of a stormwater pond system. Dry Extended Detention Ponds hold runoff for up to 24 hours after a storm. Water is slowly released through a fixed opening. The



pond is normally dry between storms. This type of structure is effective for sites that are 10 acres or greater in size.

- Stormwater wetland systems are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows. A Pocket Wetland is created by excavating to the high water table elevation. Pocket wetlands can serve drainage areas of 5 to 10 acres.
- Infiltration systems are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics. A Dry Well is an infiltration system designed to treat roof top runoff. Water is collected in downspouts and directed into a filter composed of crushed stone and fabric. Rain gardens and porous pavement are other examples of infiltration systems.
- Filter systems "strain" runoff to remove pollutants. Conventional Sand Filter Systems are constructed of layers of sand, from most coarse on top to most fine below. The sand overlies either a gravel bed (for infiltration) or perforated underdrains (for discharge of treated water).

Oil Grit Separators are another form of filter system. Water from parking lots and other areas likely to have hydrocarbons should be directed through Oil Grit Separators (or oil absorbent fabric) before entering any other management structure.

- All stormwater management structures must be maintained in order to be effective.
- Contact TNRCC's Water Quality Infrastructure Program for information about grant funding to local governments for the installation of stormwater management structures in existing developed areas.

Control Sediment from Construction Sites.

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

Stencil Storm Drains.

- Stencil storm drains with the words such as "Don't Dump" and/or "Galveston Bay Drainage" (if appropriate).

Information Sources

Appendix

Stormwater hot line number (512) 239-3700.

Stormwater website: <http://www.tnrcc.state.tx.us/permitting/waterperm/wwperm/tpdes.html>

Vessel Maintenance and Repair

Environmental Concerns

Legal Setting

- Industrial Permit for Discharges from Marinas

Best Management Practices to Control Pollution from Vessel Maintenance and Repair Activities

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

Information Sources

Clean Boating Tip Sheet: Vessel Cleaning and Maintenance





Vessel Maintenance and Repair

Environmental Concerns

Vessels require a great deal of attention. They must be scraped, painted, and cleaned. Their engines need to be lubricated and otherwise tended. They need to be prepared to withstand the cold of winter. Each of these activities has the potential to introduce pollutants into the environment.

Sanding, blasting, and pressure washing are meant to remove paint and marine growth. In the process, toxic heavy metals such as copper and tin may be released. If heavy metals find their way into the water, they may be consumed by mussels, worms, and other bottom-dwelling creatures and passed up the food chain to fish, birds, and humans. Heavy metals that are not incorporated into living tissue will remain in the sediments where they will substantially increase the cost of dredge soil disposal.

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

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


Legal Setting

Industrial Permit for Discharges from Marinas

As described previously, all marinas that perform vessel maintenance and repair (including washing) must obtain an industrial permit from the Texas Natural Resources Conservation Commission (TNRCC). The permit requires marina operators to control pollutants from vessel maintenance and wash areas.

Best Management Practices to Control Pollution from Vessel Maintenance and Repair Activities

The BMP's noted in this chapter are meant to assist marinas in



reducing the amount of pollutants discharged or released from the facility. Complying with these practices/recommendations does not necessarily place a marina in full compliance with all Texas environmental regulations. Marina owners should be aware that additional air regulations may apply to their facility if certain activities are conducted on-site. Some of the more common activities that are regulated include painting (spray or brush), sandblasting, fiberglass work, degreasing and oil water separation. Some of the larger operations may require a state permit or authorization to operate under a Standard Exemption which may be found in 30 TAC Chapter 116 (Texas Administrative Code). In addition, certain activities that create VOC emissions may also have to comply with 30 TAC Chapter 115. For further assistance with any activity that is believed to create air contaminants, or to obtain a copy of the pertinent regulations that apply to your marina, please contact your regional TNRCC air program. In addition, the generation of waste materials such as paint chips, spent sandblasting material or hydrocarbon/solvent contaminated waste may fall under the TNRCC's hazardous waste regulations. Marina owners should again contact their TNRCC regional office for further assistance in disposing of this waste material.

Designate Work Areas.


One of the easiest ways to contain waste is to restrict the area where maintenance activities may be performed. Wastewater from the maintenance and repair area may contain highly toxic materials resulting from the removal and application of anti-fouling paints, small quantities of glass fibers, chemicals, metals, grease, fuel and oils. This wastewater should not be allowed to flow into the marina or coastal waters. A curbed, concrete surface should prevent this and contain the liquid which drains to the catch basin, or the wastewater can be pumped to a storage tank to allow for the toxic materials to settle out over time.

- Perform all major repairs - such as stripping, fiberglassing, and spray painting — in designated areas.
- Collect all maintenance debris. Clean work areas after completing each operation or at the end of the day - whichever comes first. Remove sandings, paint chips, fiberglass, trash, etc.
- Locate the maintenance area as far from shore as possible.
- Vessel maintenance areas should have an impervious surface (e.g., asphalt or cement) and, where practical, a roof. Sheltering the area from rain will prevent stormwater from carrying debris into surface waters.

- If asphalt or cement is not practical, perform work over filter fabric or over canvas or plastic tarps. Filter fabric will retain paint chips and other debris yet — unlike plastic, or to a lesser extent, canvas — filter fabric will allow water to pass through. Tarps may potentially be re-used multiple times.
- Surround the maintenance area with a berm or retaining wall. If possible, the surface of the maintenance area should have a gentle slope towards drains that can be filtered with hay, or other filtration methods, rather than “sheet draining” into the neighboring body of water.
- Use vegetative or structural controls cited in Stormwater Management to treat stormwater runoff.
- Establish a schedule for inspecting and cleaning stormwater systems. Remove paint chips, dust, sediment, and other debris. Clean oil/water separators.
- Prohibit extensive maintenance or repair work outside of the designated maintenance areas.
- Clearly mark the work area with signs, e.g., “Maintenance Area for Stripping, Fiberglassing and Spray Painting.”
- Post signs throughout the boatyard describing best management practices that boat owners and contractors must follow, e.g., “Use Tarps to Collect Debris.”
- Develop procedures for managing requests to use the work space, to move boats to and from the site, and to insure the use of best management practices.

Contain Dust from Sanding.

- Invest in vacuum sanders and grinders. These tools, when operating efficiently, will collect dust as soon as it is removed from the hull. Vacuum sanders allow workers to sand a hull more quickly than with conventional sanders. Additionally, because paint is collected as it is removed from the hull, health risks to workers are reduced. Vacuum sanders, like any other equipment, is subject to variables in performance. New technology should improve the performance of these sanders.
- Require tenants and contractors to use vacuum sanders. Rent or loan the equipment to tenants and contractors.
- Post signs indicating the availability of vacuum sanders and grinders.
- Bring vacuum sanders to tenants if you see them working with non-vacuum equipment.

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- Conduct shore side sanding in the hull maintenance area or over a drop cloth.
 - Restrict or prohibit sanding on the water to the greatest extent practical.
 - When sanding on the water is unavoidable, use a vacuum sander and keep dust out of the water.
 - Use a damp cloth to wipe off small amounts of sanding dust.
 - Collect debris. Have your waste hauler characterize the waste and take it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time. Refer to TNRCC manual on Industrial and Hazardous Waste: Rules and Regulations for Small-Quantity Generators.

Contain Debris from Blasting.

- Prohibit uncontained blasting (during sand blasting or hydro blasting activities).
- Perform abrasive blasting in the vessel maintenance area within a structure or under a plastic tarp enclosure. Do not allow debris to escape from the enclosure. Refer to Standard Exemption 102.
- Investigate alternatives to traditional media blasting. Hydroblasting and mechanical peeling essentially eliminate air quality problems. Debris must still be collected, however. Consider using a filter cloth ground cover.
- Avoid dust entirely by using a stripper that allows the paint to be peeled off. These products are applied like large bandages, allowed to set, and are then stripped off. When the strips are removed, the paint is lifted from the hull. Dust and toxic fumes are eliminated.
- Invest in a closed, plastic medium blast (PMB) system. These systems blast with small plastic bits. Once the blasting is completed, the spent material and the paint chips are vacuumed into a machine that separates the plastic from the paint dust. The plastic is cleaned and may be reused. The paint dust is collected for disposal. A 50-foot vessel will produce about a gallon of paint dust; substantially less than the many barrels full of sand and paint that must be disposed of with traditional media blasting methods.
- Collect debris. Have your waste hauler characterize the waste

and bring it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time.

Minimize Impacts of Pressure Washing.

- Visible solids must be removed from wash water before it may be discharged. At a minimum, allow large particles to settle out. More thorough treatment involves filtration or chemical or physical techniques to treat the rinse water.
 - filtration uses devices such as screens, filter fabrics, oil/water separators, sand filters, and hay bales to remove particles;
 - chemical treatment relies upon the addition of some type of catalyst to cause the heavy metals and paint solids to settle out of the water; and
 - swirl concentrators are examples of physical structures that can be used to concentrate pollutants. They are small, compact soil separation devices with no moving parts. Water flowing into a concentrator creates a vortex that centralizes the pollutants. Clean water is then discharged.
- Discharge treated wash water to surface water if no detergents or other chemical cleaning agents were used. If detergents were used, the wastewater must be directed into a sewer system.
- Alternatively, reuse the wash water. For example, recycle it through the power washing system (a closed water recycling operation) or use it to irrigate landscaped portions of the marina. The recycled water may be treated with an ozone generator to reduce odors.
- Pressure wash over a bermed, impermeable surface that allows the wastewater to be contained and filtered to remove sediments.
- When pressure washing ablative paint, use the least amount of pressure necessary to remove the growth but leave the paint intact. Where practical, use a regular garden-type hose and a soft cloth.
- Collect debris. Have your waste hauler characterize the waste and take it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time.

Operators must "consider containing all blasting and painting activities to prevent abrasives, paint chips, and overspray from reaching the receiving water or the storm sewer system."

Bottom Paints

Antifouling bottom paints protect hulls from barnacles and other types of fouling organisms that can interfere with vessel performance. Pesticides within them also harm fish and other non-target species. Most paints work by slowly releasing a biocide, generally cuprous oxide (Cu_2O).

Copper-based paints are not used on aluminum hulls; the interaction of copper and aluminum leads to corrosion. Instead, tin-based paints (tributyltin or TBT) are often used on aluminum-hulled vessels. Because tin is extremely toxic, it must be applied cautiously. Concentrations of TBT as low as a few parts per trillion have caused abnormal development and decreased reproductive success in oysters, clams, and snails (EPA 1993). Tin is easily absorbed by fish through their gills and accumulates to high levels in sediments. For these reasons, Federal law restricts the use of tin-based paints to aluminum vessels, boats larger than 82 feet (25 meters), and outboard motors and lower drive units. Any boatyard operator wishing to apply TBT paints must obtain a pesticide business license from the Texas Department of Agriculture and employ an applicator certified to apply TBT.

The Industrial Permit for Discharges from TNRCC requires that discharge from pressure washing areas be collected or contained and that visible solids be removed.

Anti-fouling paints can be separated into three general categories:

Leaching Paints. Water soluble portions of leaching antifouling paints dissolve slowly in water, releasing the pesticide. The insoluble portion of the paint film remains on the hull. The depleted paint film must be removed before the boat is repainted. Most leaching paints are solvent based. Consequently, fumes are a concern.

Ablative Paints. Ablative antifouling paints also leach some toxicant into the water. The major difference is that as the active ingredient is leached out, the underlying film weakens and is polished off as the boat moves through the water. As the depleted film is removed, fresh antifouling paint is exposed. There are several water-based ablative paints on the market that are up to 97 percent solvent free. As a result, levels of volatile organic compounds are substantially reduced as compared to solvent-based paints. Ease of clean up is another advantage of water-based paints.

Non-toxic Coatings. Teflon, polyurethane, and silicone paints are nontoxic options. All deter fouling with hard, slick surfaces.

Minimize Impacts of Paints.

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


Minimize Impacts of Painting Operations.

- Use brushes and rollers whenever possible.
- Reduce paint overspray and solvent emissions by minimizing the use of spray equipment.
- Prohibit spray painting on the water.
- Limit in-water painting to small jobs. Any substantial painting should be done on land, in the vessel maintenance area, and/or over a ground cloth.
- If painting with brush or roller on the water, transfer the paint to the vessel in a small (less than one gallon), tightly covered container. Small containers mean small spills.
- Mix only as much paint as is needed for a given job.
- Mix paints, solvents, and reducers in a designated area. It should be indoors or under a shed and should be far from the shore.
- Keep records of paint use to show where too much paint was mixed for a job. Use the information to prevent overmixing in the future.

Reduce Overspray.

In some cases, spray painting is the only practical choice in terms of time and money. Minimize the impact of spray painting by adopting the following recommendations. Refer to TAC Rule 106.433 (previously SE 75).

- Conduct all spray painting on land, in a spray booth, or under a tarp.
- Use equipment with high transfer efficiency. Tools such as high-volume, low-pressure (HVLP) spray guns direct more paint onto the work surface than conventional spray guns. As a result, less paint is in the air, less volatile organic compounds are released, less paint is used, and clean up costs are reduced. Air-atomizer



spray guns and gravity-feed guns are other types of highly efficient spray equipment.

- Train staff to use spray painting equipment properly in order to reduce overspray and minimize the amount of paint per job. To operate a permanent paint spray booth, you must obtain an air permit from the TNRCC. Note — a booth constructed of PVC piping and plastic sheeting is not considered a permanent structure.

Handle Solvents Carefully.

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

- Store open containers of usable solvents as well as waste solvents, rags, and paints in covered and approved containers.
- Hire a licensed waste hauler to recycle or dispose of used solvents.
- Direct solvent used to clean spray equipment into containers to prevent evaporation of volatile organic compounds. A closed gun cleaning system will save you money on cleaning materials.
- Use only one cleaning solvent to simplify disposal.
- Use only the minimal amount of solvent (stripper, thinner, etc.) needed for a given job.
- For small jobs, pour the needed solvent into a small container in order not to contaminate a large amount of solvent.
- Use soy-based solvents and other similar products with no or low volatility.
- Order your spray painting jobs to minimize coating changes. Fewer changes mean less frequent purging of the spray system. Order your work light to dark.
- Allow solids to settle out of used strippers and thinners so you can reuse solvents.
- Keep records of solvent and paint usage so you have a handle on the amount of hazardous waste generated on site. You are required to maintain these types of records if you have a permanent, TNRCC-approved spray booth. Again, refer to 30 TAC 106.433 and Chapter 115 – subchapter E on solvent using processes.

Repair and Maintain Engines with Care.

- Store engines and engine parts under cover on an impervious surface like asphalt or concrete.

- Do not wash engine parts over the bare ground or water.
- Use dry precleaning methods, such as wire brushing.
- Avoid unnecessary parts cleaning.
- Adopt alternatives to solvent-based parts washers such as 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.
- If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of volatile organic compounds. Reuse the solvent. Once the solvent is totally spent, recycle it.
- Use drip pans when handling any type of liquid. Use separate drip pans for each fluid to avoid mixing. Recycle the collected fluid.
- Use funnels to transfer fluids.
- Drain all parts of fluids prior to disposal.
- Clean engine repair areas regularly using dry cleanup methods, e.g., capture petroleum spills with oil absorbent pads.
- Prohibit the practice of hosing down the shop floor.

Winterize Safely.

- Use propylene glycol antifreeze for all systems. It is much less toxic than ethylene glycol antifreeze.
- Use the minimum amount of antifreeze necessary for the job.
- For health reasons, ethylene glycol should never be used in potable water systems; it is highly toxic and cannot be reliably purged come springtime.
- Add stabilizers to fuel to prevent degradation. Stabilizers are available for gasoline and diesel fuels and for crankcase oil. These products protect engines by preventing corrosion and the formation of sludge, gum, and varnish. Also, the problem of disposing of stale fuel in spring is eliminated.
- Be sure fuel tanks are 85 to 90 percent full to prevent flammable fumes from accumulating and to minimize the possibility of condensation leading to corrosion. Do not fill the tank more than 90 percent full. The fuel will expand as it warms in the springtime; fuel will spill out the vent line of a full inboard tank.
- Use the highest rated octane recommended by the engine

The TNRCC requires that marinas prevent or minimize contamination of stormwater runoff from all areas used for engine maintenance and repair. It further requires that spill prevention and response procedures be developed for all areas where spills can contribute to stormwater discharge.

manufacturer; premium fuels are more stable than regular.

- Be sure the gas cap seals tightly.
- Promote reusable canvas or recyclable plastic covers. Some manufacturers will clean and store canvas covers during the boating season.
- Recycle used plastic covers.

Conduct In-water Maintenance Wisely.

- If the impacts of cleaning or maintenance activities (regardless of area involved) cannot be contained or mitigated against, remove the boat from the water. No debris should be allowed to fall into the water.
- Keep containers of cleaning and maintenance products closed.
- Restrict or prohibit sanding on the water. When it is absolutely necessary to sand on the water, use vacuum sanders to prevent dust from falling into the water. Do not sand in a heavy breeze.
- Plug scuppers to contain dust and debris.
- Do not spray paint on the water.
- Prohibit underwater hull cleaning in your facility. Given the concentration of boats, underwater cleaning is dangerous to divers and the heavy metals that are released are harmful to aquatic life. Insurance to cover divers is also expensive.
- Offer incentives, like reduced mid-season haul out rates, so that boaters can have their hulls cleaned on land where contaminants may be contained.

Educate Boaters.

- Copy the following Clean Boating Tip Sheet and distribute it to your tenants. There is room to add the name and logo of your marina.
- Find out about local hazardous waste collection days. Call 1-800-4-RECYCLE or visit www.glo.state.tx.us/Recycling for local recycling contacts. Post notices informing your tenants when and where they can take their hazardous wastes.

Information Sources

Texas Department of Agriculture
Texas Natural Resource Conservation Commission

- Air Quality Permits Program
- Industrial Permits Division

Clean Boating Tip Sheet

Vessel Cleaning and Maintenance

As a boater, you are well aware of the care your vessel requires. In order to keep your boat safe, reliable, and attractive, you must clean and maintain it. As you do so, minimize environmental impacts by following the recommendations listed here.

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


Clean Carefully

- Wash frequently with a sponge or nonabrasive pad and plain water. This approach is very effective at removing salt. Additional “elbow-grease” is required to remove stains.
- When detergents are necessary, use soaps that are phosphate-free, biodegradable, and non-toxic. Any soap should be used sparingly because even non toxic products can be harmful to wildlife. For example, detergents will destroy the natural oils on fish gills, limiting their ability to breathe.
- Wax your boat, if appropriate. A good coat of wax prevents surface dirt from becoming ingrained.
- Clean teak with a mild soap and abrasive pads or bronze wool. This method is safe for the environment and better for the boat than the solvents in standard teak cleaners which tend to eat away at the wood and to damage seam compounds.
- Avoid detergents that contain ammonia, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates, and lye.
- Try some of the alternative cleaning products listed below.

Maintain Mindfully

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

Recycle Regularly

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- Recycle used oil, oil filters, and antifreeze.
 - Bring used solvents and waste gasoline to local hazardous waste collection days.
 - Call 1-800-4-RECYCLE for locations of recycling centers and information about hazardous waste collection days.
 - Visit the TNRCC and GLO web site at www.glo.state.Tx.us/Recycling and www.tnrcc.state.tx.us/exec/sbea/recyclingmain.html for local recycling and hazardous waste contacts. Information is also available at www.1800.cleanup.org

Be a Conscientious Consumer

- Read product labels. Labels convey information about the degree of hazard associated with a particular product. For example, DANGER equates to extremely flammable, corrosive or toxic; WARNING indicates that the material is moderately hazardous; and CAUTION signals a less hazardous product. Select products that contain no warnings or which merely CAUTION consumers.
- Be wary of unqualified general claims of environmental benefit, e.g., "ozone friendly." A better, more meaningful label would read, "This product is 95 percent less damaging to the ozone layer than past formulations that contained chlorofluorocarbons (CFCs)."

Petroleum Control

Environmental Concerns

Legal Setting

- Federal Water Pollution Control Act

Best Management Practices for Preventing Spills at the Source

- Protect Petroleum Storage Tanks
- Avoid Waves and Wakes
- Maintain Transfer Equipment
- Install Environmental Controls at the Pump
- Supervise Fueling: Environmental Recommendations
- Supervise Fueling: Safety Recommendations
- Turn Down the Pressure
- Oil Absorbent Materials
- Advocate the Use of Oil Absorbent Materials
- Provide an Oil/Water Separator
- Offer Spill-Proof Oil Changes
- Minimize Spills and Leaks from Machinery
- Educate Boaters

Best Management Practices for Emergency Planning

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

Information Sources

Clean Boating Tip Sheet: Petroleum Control



Petroleum Control

Environmental Concerns

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

Once petroleum is introduced into the water, it may float at the surface, evaporate into the air, become suspended in the water column, or settle to the sea floor. Floating petroleum is particularly noxious because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the microlayer. The microlayer refers to the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. The abundance of life in the microlayer attracts predators: seabirds from above and fish from below. Pollution in the microlayer, thus, has the potential to poison much of the aquatic food web.

Legal Setting

Federal Water Pollution Control Act (Clean Water Act)

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

The United States Coast Guard and the Texas General Land Office must be notified any time a spill produces a sheen on the water. Call the National Response Center at 1-800-424-8802 and the Texas General Land Office at 1-800-832-8224. Report the location, source, size, color, substance, and time of the spill. Failure to report a spill may result in fines.

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

Best Management Practices for Preventing Spills at the Source

Protect Petroleum Storage Tanks.

Fuel storage tanks at marinas typically hold from 1,000 to 10,000 gallons of fuel. If a tank was to rupture or develop a leak, the consequences could be devastating.

- Install double-walled or vaulted above ground fuel tanks. Tanks should meet the following conditions (NFPA 30).
 - a. The capacity of the tank shall not exceed 12,000 gal (45,420 L).
 - b. All piping connections to the tank shall be made above the normal maximum liquid level.
 - c. Means shall be provided to prevent the release of liquid from the tank by siphon flow.
 - d. Means shall be provided for determining the level of the liquid in the tank. This means shall be accessible to the delivery operator.
 - e. Means shall be provided to prevent overfilling by sounding an alarm when the liquid level in the tank reaches 90 percent of capacity and by automatically stopping delivery of liquid to the tank when the liquid level in the tank reaches 95 percent of capacity. In no case shall these provisions restrict or interfere with the proper functioning of the normal or emergency vent.
 - f. Spacing between adjacent tanks shall be not less than 3 ft. (0.9 m).
 - g. The tank shall be capable of resisting the damage from impact of a motor vehicle or suitable collision barriers shall be provided.
 - h. Where the interstitial space is enclosed, it shall be provided with emergency venting.
- Alternatively, locate above ground fuel tanks within a dike or over an impervious storage area with containment volumes equal to 1.1 times the capacity of the storage tank(s). Design containment areas with spigots to drain collected materials. If possible, cover the tank with a roof to prevent rainwater from filling the containment area. The control of any stormwater that collects in the diked area must be addressed as a condition of your TNRCC Industrial Permit for Discharges from Marinas.

Careless engine maintenance, refueling habits, and improper disposal of oil and contaminated bilge water release more oil into marine water each year than did the Exxon Valdez spill (Clifton et al. 1995a).

- Design and construct all new oil storage tanks (USTs) to the technical standards as stated in TAC 334.45 These standards include but are not limited to corrosion protection, spill and overfill prevention equipment, and leak detection.
- Upgrade existing USTs to the state standards.
- Install a readily accessible shut-off valve on shore to halt, when necessary, the flow of fuel through a pipeline from the oil storage facility to a wharf, pier, or dock.
- USTs must meet financial responsibility requirements (i.e., insurance) for environmental pollution liability.
- Contact the TNRCC for assistance with installation or plan review. All underground storage tanks must be registered with the TNRCC.

Avoid Waves and Wakes.

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

Maintain Fuel Transfer Equipment.

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

Install Environmental Controls at the Pumps.

- Do not install holding clips. The use of holding clips to keep fuel nozzles open is illegal at marina fuel docks.
- Install automatic back pressure shut-off nozzles on fuel pump discharge hoses to automatically stop the flow of fuel into a



boat's fuel tank when sufficient reverse pressure is created.

- Consider installing fuel nozzles that redirect blow-back into vessels fuel tanks or vapor control nozzles to capture fumes.
- Maintain a supply of oil absorbent pads and pillows at the fuel dock to mop up spills on the dock and on the water.
- Place plastic or nonferrous drip trays lined with oil absorbent material beneath fuel connections at the dock to prevent fuel leakage from reaching the water.

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

- Post instructions at the fuel dock directing staff and patrons to immediately remove spilled fuel from the dock and water with oil absorbent material. Indicate the location of the absorbents.
- Place small gas cans in oil absorbent-lined drip pans when filling.
- Secure oil-absorbent material at the waterline of fuel docks to quickly capture small spills. Look for oil absorbent booms that are sturdy enough to stand up to regular contact with the dock and boats.
- Offer your services to install fuel/air separators on boats.

Supervise Fueling: Environmental Recommendations.

- Always have a trained employee at the fuel dock to oversee or assist with fueling.
- Train employees to clarify what the boater is asking for. For example, as your employee passes the fuel nozzle to the boater, have him or her say, "This is gasoline. You asked for gasoline."
- Train employees to hand boaters oil absorbent pads with the fuel nozzle. Request that the boaters use them to capture backslash and vent line overflow.
- Attach a container to the external vent fitting to collect overflow. There are products on the market that may be attached to the hull with suction cups. A rubber seal on the container fits over the fuel vent allowing the overflow to enter the container. Fuel captured in this manner can be added to the next boat to fuel.
- Instruct fuel dock personnel and boaters to listen to filler pipes to anticipate when tanks are nearly full.
- Encourage boaters to fill their fuel tanks just before leaving on a trip to reduce spillage due to thermal expansion and rocking,

i.e., if the fuel is used before it warms up, it cannot spill overboard.

- If boaters prefer to refuel upon their return to port, encourage them to fill their tanks to no more than 90 percent of capacity.
- Instruct boaters to slow down at the beginning and end of fueling.
- Require boaters to stay with their craft during fueling.

Supervise Fueling: Safety Recommendations.

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

Turn Down the Pressure.

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

- Ask your fuel company representative to reduce the pressure. Anybody dispensing more than 10,000 gallons per month must have a delivery rate of less than 10 gallons/minute.

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

Oil Absorbent Material

Oil absorbent pads, booms, and pillows absorb hydrocarbons and repel water. Depending upon the type, they may hold up to 25 times their weight in oil. These types of products are useful for capturing spurts at the fuel dock, cleansing bilge water, and wiping up spills in engine maintenance areas.

There are a number of new twists on basic oil absorbent materials. One new variety of oil absorbent boom captures oil from the bilge and solidifies into a hard rubber bumper. Other types contain microbes that digest the petroleum. The oil is converted to carbon dioxide and water. Because the microbes take 2 to 3 weeks to digest a given input of oil, it is not appropriate to use these types of products for a spill of any significant size. Rather, they are designed to control the minor drips associated with routine operations. Care must still be taken that free floating oil is not discharged overboard.

Yet another type of oil absorbent product is a boom constructed out of oil absorbent polypropylene fabric and filled with dehydrated microbes. These booms hold the petroleum in the fabric until it is digested by microbes. Threats associated with free floating petroleum are thereby minimized.

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

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

Oil absorbent materials, such as pads (left), booms (center), and pillows (right) absorb up to 25 times their weight in oil while repelling water.

Advocate the Use of Oil Absorbent Materials.

- Distribute pads, pillows, or booms to your tenants.
- Require tenants to use oil absorbent materials as part of your lease agreement.

Provide an Oil/Water Separator.

- Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter, and discharge clean water.

Offer Spill-Proof Oil Changes.

- Purchase a non-spill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop and rent it to boaters who perform their own oil changes.
- 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, place in plastic double bag and dispose in your regular trash.
- Encourage the use of spill-proof oil change equipment as a condition of your slip rental agreement.

Minimize Spills and Leaks from Machinery.

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

Educate Boaters.

- Photocopy the Clean Boating Tip Sheet included at the end of this chapter and distribute it to your tenants. There is room to add your marina's name and logo.

Best Management Practices for Emergency Planning

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

- The Environmental Protection Agency's Oil Pollution Prevention Regulation requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the Facility:
 - has an above ground oil storage capacity greater than 660 gallons in a single container,
 - an aggregate above ground storage capacity greater than 1,320 gallons,
 - or a total underground storage capacity greater than 42,000 gallons.

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

- The plan must address:
 - operating procedures implemented by the facility to prevent oil spills,
 - control measures installed to prevent a spill from entering navigable waters or adjoining shorelines, and
 - countermeasures to contain, cleanup, and mitigate the effects of an oil spill that impacts navigable waters or adjoining shorelines.
- The SPCC plan must be certified by a professional engineer and kept onsite for EPA review. If a single spill of greater than 1,000 gallons occurs or two discharges of harmful quantity occur within one year, a copy of the SPCC plan must be submitted to EPA Region VI.

Assess Hazards.

- Consider and plan for likely threats:
 - fuel spill
 - holding or water tank filled with gas
 - spill at the storage area: used oil, antifreeze, solvents, etc.
 - fire
 - health emergency
 - hurricane, etc.

Develop Emergency Response Plans.

- Develop written procedures describing actions to be taken under given circumstances. The plans should be clear, concise, and easy to use during an emergency, e.g., use a large type size. Each emergency response plan should contain the following information:

Where:

- In the very front of the plan, insert a laminated 11 by 17 inch site plan of the facility showing valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations, and telephones.
- Describe where response material is located.

Who:

- Identify who is responsible for taking what action, e.g., deploying equipment, contacting emergency agencies, etc.
- Designate one person on the marina staff as the official spokesperson for the facility.
- Include a list of emergency phone numbers: for marine spills, U.S. Coast Guard's National Response Center (800) 424-8802, Texas General Land Office (800) 220-5005; for spills in a non marine environment, Regional TNRCC Office (713) 767-3563 M – F, 8:00 am – 5:00 PM, (512) 463-7727 after hours; local fire and police departments, owner, neighboring marinas that have emergency response equipment, and spill response contractors.
- Include a brief description of each agency's jurisdiction and information about what type of equipment and services are available from neighboring marinas and spill response firms.

What:

- State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on site and what its characteristics and capabilities are.
- Characterize the facility's waterfront and vessels.
- Describe the type, amount, and location of materials stored on site, e.g., petroleum and hazardous materials.

How:

- Explain how the equipment should be used and disposed.

When:

- Indicate when additional resources should be called for assistance.

- Update the plans annually to include any new technology or equipment and to confirm phone numbers.

Make Plans Accessible.

- Keep copies of all Emergency Response Plans in a readily accessible location.
- Place a second copy of the Oil Spill Response Plan (SPCC) in the oil spill response kit.

Train Employees.

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

Share Your Emergency Response Plans.

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

Maintain Oil Spill Response Equipment.

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

Store Oil Spill Response Equipment Smartly.

- Store the equipment where the greatest threat of an oil spill exists: fuel receiving and fuel dispensing areas.
- Store materials in an enclosed container or bin that is accessible to all staff — especially those who handle the fueling operations. Mark the storage site with a sign reading “Oil Spill Response Kit”. Include instructions for deploying pads and booms and notification that all spills must be reported to the USCG at (800) 424-8802 and Texas GLO (800) 832-8224 for marine spills; TNRCC (512) 463-7727 for non marine spills.
- Consider leaving the storage container unlocked so that it is available to patrons, as well as to staff. If leaving the bin un-

Fuel Spill

What do you do when oil, gas, or diesel is spilled?

1. Stop the flow.
2. Contain the spill.
3. Call the U.S. Coast Guard's National Response Center at (800) 424-8802 and Texas GLO (800) 832-8224 for marine spills; TNRCC (512) 463- 7727 for non marine spills.

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

If less than a gallon is spilled and you clean it up immediately, the Coast Guard will probably not send anybody to your facility. The spill is still a violation, however.


Call the Coast Guard if a slick floats into your marina from an unknown source. The Coast Guard will clean up the spill with their own resources. They will also investigate and try to eliminate the source of the spill. You will not be held liable for a slick that did not originate at your facility.

locked at all times is not palatable, try leaving it unlocked just on weekends and holidays when both activity and risk are greatest.

- If the bin is left unlocked, check the inventory regularly.

Be Prepared for a Fire.

- Meet the National Fire Protection Association's standards for marinas: NFPA 303, Fire Protection Standards for Marinas and Boatyards; NFPA 302, Fire Protection Standards for Pleasure and Commercial Motor Craft; NFPA 30A, Automotive and Marine Service Station Code; NFPA 307, Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves; and NFPA 33, Standard for Spray Application Using Flammable and Combustible Materials.
- Be sure hydrants are available to allow for fighting fires throughout your facility.
- Install smoke detectors.
- Provide and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near fueling stations.
- Inspect and test all fire fighting equipment and systems regularly. Test fire extinguishers annually.
- Train personnel on fire safety and response: who to call, location



of hydrants, use of portable extinguisher, etc.

- Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.
- Invite the local fire marshal to visit your marina annually to train employees. These annual visits will also help the fire department to become familiar with your facility.

Maintain Material Safety Data Sheets.

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

Information Sources

Appendix

Texas Natural Resource Conservation Commission

- Hazardous Waste Program
- Oil Control Program

Texas General Land Office

National Fire Protection Association

United States Coast Guard

United States Environmental Protection Agency, Region VI

Clean Boating Tip Sheet

Petroleum Control

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

The Law

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

Fueling Practices

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

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

- Slow down at the beginning and end of fueling.

Bilge Maintenance

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

- Keep your engine well tuned to minimize the amount of oil that is released. Be sure there are no leaking seals, gaskets, or hoses.
- Place oil absorbent materials or a bioremediating bilge boom in the bilge.
- Place an oil absorbent pad under the engine.
- Replace oil absorbent materials regularly.
- Look for contractors or marinas that offer a bilge pumpout service.
- Do not treat oily water with detergents. Soaps pollute and make clean up impossible. You may be fined up to \$25,000 for using soaps to dissipate oil.

Disposal of Oil Absorbent Materials

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

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

Emissions Control

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

- Use the gas to oil ratio recommended by the engine manufac-

turer. Too much oil can foul spark plugs and too little can lead to increased engine wear or even failure.

- Use premium two-cycle engine oil (TC-W3 or TC-W4). Premium oils improve engine performance and reduce pollution because they burn cleaner, contain more detergents, and prevent formation of carbon deposits.
- Use gasoline with the octane level recommended by the engine manufacturer.

Preventive Equipment

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

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

In Case of a Spill

- Stop the flow.
- Contain the spill.
- Call the U.S. Coast Guard National Response Center at (800) 424-8802.
- Call the Texas GLO (800) 832-8224 for marine spills; TNRCC for non marine spills at (713) 767-3563 and after hours, call (512) 463-7727.



Sewage Handling

Environmental Concerns

Legal Setting

- Marine Sanitation Devices
- No Discharge Areas

Best Management Practices to Control Sewage

- Install a Pumpout System
- Discourage Discharge from Type I and Type II MSDs at the Slip or Mooring
- Provide Shore side Restrooms
- Design and Maintain Septic Systems to Protect Water Quality and Public Health
- Provide Facilities for Liveaboards
- Offer MSD Inspections
- Encourage Compliance
- Educate Boaters

Information Sources

Clean Boating Tip Sheet: Vessel Sewage





Sewage Handling

Environmental Concerns

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

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

Legal Setting

Marine Sanitation Devices

For all of the reasons stated above, it is illegal to discharge raw sewage from a vessel within U.S. territorial waters, i.e., anywhere other than three or more miles out into the open ocean. 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 marine sanitation device (MSD):

- Type I systems 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. The fecal coliform bacteria count of the effluent 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 IIs treat the sewage to a higher standard; 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. Type IIs also require more space and have greater operating energy requirements.
- Type III systems are total containment with optional discharge means. The most common form of a Type III system is a holding

While not required, it is a good idea to include information about the MSD law in your contracts for slips, transients, and liveaboards too.

tank. Other forms include re-circulating and incinerating systems.

Vessels 65 feet and under may have any of the three types of MSDs. Vessels over 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

State law allows a vessel operating on a navigable water way with an installed toilet to have a "Y" valve or other means to bypass the MSD. Within State waters, including rivers and coastal waters, however, all pathways for overboard discharge of raw sewage must be secured. The "Y" valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

Portable toilets are considered a Type III MSD. Portable toilets should be properly emptied on shore. In zero discharge areas (inland lakes, rivers and some coastal areas) the portable toilet must be plumbed and installed to allow for pump out. The overboard discharge pump must be disabled (i.e. remove handle of manual pump or key on electric pump). The thru hull must be closed and secured with a tie wrap or the sea cock handle removed (CFR 40).

Remember, it is illegal to discharge raw sewage to any State waterway. Most pumpout facilities have wand attachments to empty portable toilets. Some marinas have portable toilet dump stations.

No Discharge Areas

A No Discharge Area (NDA) is an area of water that requires greater environmental protection and where even treated sewage may not be discharged from a boat. When operating in a NDA, Type I and Type II systems must be secured to prevent discharge. All freshwater lakes, reservoirs, and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as No Discharge Areas. States, with the approval of the U.S. Environmental Protection Agency, may establish NDAs in other State waters. However, Clear Lake has been designated as a NDA by the State of Texas.

Best Management Practices to Control Sewage

Install a Pumpout System.

Help boaters to meet the requirements of the law by providing a convenient, reliable marine sewage disposal facility, i.e., a pumpout station. You, as a marina operator, may benefit from the installation of a pumpout in several ways. The presence of the pumpout facility pro-

motes a public perception that you are environmentally responsible. More tangibly, the need for holding tanks to be pumped out regularly will draw a steady stream of customers to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware, repair services, etc.

Any public or private marina in Texas may apply for grant funds to install boat pumpout and dump facilities. To apply for a grant contact the Texas Parks and Wildlife Department. Please be aware that the grants are strictly reimbursable. In exchange for grant funding, marina owners agree to maintain the grant-assisted facilities for a minimum of 10 to 15 years and not charge more than \$5 per pumpout. The pumpout system must be able to accept waste from portable toilets as well as from holding tanks and must be available to the general public during reasonable business hours. Although most marinas choose to use grant funding, there is no requirement to do so.

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

- **Select an Appropriate System.** Select a system that best meets the needs of your clients and that can move the expected volume of sewage over the required distance. Ask the manufacturer for a written assurance that their system will operate effectively given the specific conditions at your marina. There are several types of pumpout systems available:
 - systems permanently fixed to a dock,
 - mobile systems mounted on a golf cart or hand truck,
 - direct slipside connections, and
 - pumpout boats.

Please note that grant funding is not available for direct slipside connections as these types of systems generally are not available for public use. Also, grant funding for pumpout boats is available only to government agencies.

- **Choose an Accessible Location.** Consider where the pumpout will be placed (if you select a fixed system). It should easily accommodate the types of boats that frequent your marina. Fuel docks are often good locations. Try to locate the pumpout system such that a vessel being pumped out does not prevent another boat from fueling.
- **Dispose of Collected Waste.** The best option for disposing of the collected waste is to connect directly to a public sewer line. If sewer is not available in your area, you will need a holding tank. The contents of the tank must be pumped periodically and

Marinas may apply for grant funding to install pumpout systems.

Be careful how you word your signs! Shortly after installing one of the first pumpout systems in Annapolis, MD, a marina owner hung a large sign declaring the availability of his new facility. Over the course of the next week, he noticed a significant drop in fuel sales. One evening he watched one of his regular customers head to a competitor's fuel dock. The marina manager called out to ask

trucked to a treatment plant. Holding tank size and location is generally determined by the local health department.

- **Handle Collected Waste with Care.** For health reasons, workers should take precautions to avoid coming into direct contact with sewage. Workers should wear rubber gloves and respirators when maintaining or repairing MSDs.
- **Decide if the Pumpout will be Staffed.** It is a good idea to have an attendant operate the pumpout. Consider installing a buzzer or paging system so that boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.
- **Decide Whether a Fee Will be Charged.** If a fee is charged, how much will it be? Will tenants and liveaboards be charged? Or just transients? Remember, no more than \$5 may be charged if grant funds were accepted for the purchase and/or installation of the system. If the pumpout system is not regularly staffed, you will have to make arrangements to collect the fee.
- **Post Signs.** Provide information about use and cost of the pumpout station, hours of operation, and where to call for service if the system is out of order. Also, post signs that are visible from the channel so that passing boaters are aware of the facility. If you do not have a pumpout system, post directions to the closest public pumpout.
- **Maintain the Pumpout System.** You should inspect the system regularly and keep a log of your observations. Contact the pumpout manufacturer for specific maintenance and winterization recommendations. During the boating season, test the efficiency of the pump weekly by measuring the length of time required for the system to empty a 5-gallon bucket of water. In order to quickly address any malfunctions, establish a maintenance agreement with a contractor qualified to service and repair pumpout facilities.
- **Do Not Allow Waste to Drain into Receiving Waters.** Do not allow rinse water or residual waste in the hoses to drain into receiving waters. Keep the pump running until it has been re-primed with clean water.
- **Educate Staff.** The Texas Parks and Wildlife Department is aware of several incidents involving rude dockhands, inconvenient procedures and boaters being told that the pumpout system was broken when in fact it was not reported. If boaters are going to use the pumpout systems, the experience must be as pleasant and conve-

nient as possible. As the manager of a marina with a pumpout, you are demonstrating your commitment to clean water. It is imperative that your staff exhibit this same level of care.

Discourage Discharge from Type I and Type II MSDs at the Slip or Mooring.

Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It probably contains pathogens as well. While many pass-through systems are capable of treating sewage to much higher levels, recall that the standard for Type I systems is a fecal coliform bacteria count of 1,000 per 100 milliliters. Bathing beaches may be closed at levels of 200 per 1,000 milliliters (30 TAC 307). Thus, discharges from Type I and Type II systems in crowded, protected areas — such as marinas — pose a real threat to human health and water quality. Adopt the following recommendations to discourage discharge within your facility.

- Prohibit discharge of head waste in your marina as a condition of your lease agreements.
- Post signs prohibiting the discharge of head waste and directing people to use shore side restrooms.

Provide Shoreside Restrooms.

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

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

If you have a septic system, be alert for signs of trouble: wet areas or standing water above the absorption field, toilets that run slowly or back up, and odor. Septic failures can contaminate drinking water and shellfish. The following tips will help you to avoid the health risks and nuisance associated with an overburdened system (Miller and Eubanks 1992). Post signs in the restrooms informing patrons not to place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins or tampons in the toilets. These items can clog the septic system.

- Post signs in the laundry room encouraging patrons to use

why the boater was bypassing his marina. The boater gestured toward the sign hung over the dock shared by the pumpout system and the fuel pumps. It read, "Pump Out." The boater thought "pump out" meant that the fuel pumps were out of order! A better choice for signs might be "Pumpout Station," "Sewage Pumpout" or simply show the national pumpout symbol.

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



- minimal amounts of detergents and bleaches.
- Do not dump solvents such as paint thinner or pesticides down the drain and post signs prohibiting customers from doing the same.
- Do not pour fats and oils down drains.
- Do not use a garbage disposal. Disposals increase the amount of solids entering the system. Capacity is reached more quickly. As a result, more frequent pumping is necessary.
- Use small amounts of drain cleaners, household cleaners, and other similar products.
- Do not use "starter enzyme" or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.
- Direct downspouts and runoff away from the septic field in order to avoid saturating the area with excess water. For stormwater management reasons, do not direct the flow toward paved areas.
- Do not compact the soil by driving or parking over the infiltration area.
- Hire a licensed professional to pump the tank every 2-5 years.

Provide Facilities for Liveaboards.

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

- Provide a portable pumpout system or require that liveaboards contract with a mobile pumpout service.
- Reserve slips closest to shore side restrooms for liveaboards. Be sure that the dock and route to the bath house are well lit at night.
- Stipulate in the lease agreement that vessels used as homes may not discharge any sewage.
- Offer to board their vessels and demonstrate the proper way to

secure the “Y” valve.

- As a condition of the lease agreement, require that liveaboards place dye tablets in holding tanks to make any discharge clearly visible.
- Install direct sewer hookups for liveaboards.

Offer MSD Inspections.

- Service patrons’ MSDs annually to ensure that their Type I and II systems are functioning properly.
- Encourage boaters to run dye tablets through their Type I or Type II systems outside of the marina. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.

Encourage Compliance.

- Include information about MSD requirements and sewage laws in contracts for slips rentals, transients, and liveaboards.
- State that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.
- If a customer fails to observe the law or honor your contract: 1) discuss the matter with him or her, 2) mail a written notice asking that the offending practice stop immediately and keep a copy for your records, and 3) evict the boater.
- If a tenant is discharging raw sewage, report him or her to the appropriate natural enforcement agency.

Educate Boaters.

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

- Photocopy the following Clean Boating Tip Sheet and distribute it to your tenants. There is room to add your marina’s name and logo.

Information Sources

Texas Natural Resource Conservation Commission
Texas Parks and Wildlife Department
U.S. Coast Guard
Local Marine Patrol

Sewage and gray water from bath houses and laundry facilities may be discharged to a publicly owned treatment works or to an approved septic system.

Clean Boating Tip Sheet

Vessel Sewage

Is Sewage a Problem?

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other micro organisms contained in sewage discharge. Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to water reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die they create another problem; the algae are decomposed by bacteria which further reduce levels of dissolved oxygen.

What Does the Law Say?

According to Federal and State law, it is illegal to discharge raw sewage. All vessels with installed toilets must have a Marine Sanitation Device (MSD):

- Type I systems mechanically cut solids and disinfect waste. They must bear a U.S. Coast Guard certification label.
- Type II systems are similar to Type I systems. The difference is that Type IIs treat sewage to a higher standard and generally require more space and energy. Type II systems must also have a Coast Guard certification label.
- Type III systems do not discharge sewage. Holding tanks are the most common Type III system. Incinerating systems are another option. A Coast Guard label is not required. Vessels 65 feet and under may have any of these three types of MSDs. Vessels over 65 feet must have a Type II or III system.

What Can You Do?

Holding Tanks

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

the number of connections to a minimum and insure that seals are tight.

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

Avoid holding tank products that contain quaternary ammonium compounds (QACs) and formaldehyde. These products may disrupt sewage treatment plants.

Type I and II MSDs

Maintain your Type I or II MSD. Establish a regular maintenance schedule based on your owner's manual to remind yourself when chemicals need to be added, electrodes need to be cleaned, etc.

Do not discharge your Type I or II MSD while in a marina, in a swimming area, over an oyster bar, or in a poorly flushed area. Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It may contain pathogens as well.

Use shoreside restrooms when in port.

Waste Containment and Disposal



Environmental Concerns

Legal Setting

- Marine Plastic Pollution Research and Control Act
- Resource Conservation and Recovery Act and State Hazardous Waste Laws

Best Management Practices to Properly Contain and Dispose of Waste

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

Information Sources

Pollution Report and Action Log

Clean Boating Tip Sheet: Waste Containment and Disposal

Waste Containment and Disposal





Environmental Concerns

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

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

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

Legal Setting


Marine Plastic Pollution Research and Control Act

The Marine Plastic Pollution Research and Control Act of 1987 (MPPRCA), Title II of Public Law 100-220, restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to discharge plastic materials into any waterbody. The disposal of other types of garbage is restricted according to how far a vessel is out to sea (The important thing to remember is that within the coastal bays, along rivers, and on inland lakes, the discharge of any garbage into the water is illegal. Fish guts are an exception. The discharge of fish waste is not desirable, however. The law also requires that marinas be able to accept garbage from vessels that normally do business with them).

Resource Conservation and Recovery Act and State Hazardous Waste Laws

The Federal Resource Conservation and Recovery Act (RCRA) of 1976 was established to improve the collection, transportation, separation, recovery, and disposal of solid and hazardous waste. Both RCRA and the State hazardous waste law govern the management of hazardous waste in the State of Texas. See the TNRCC publication, "Industrial and Hazardous Waste: Rules and Regulations for Small-Quantity Generators."

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. A list of controlled hazardous wastes can be found in the TNRCC publication cited above.



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

- All generators and transporters of hazardous waste must apply to the TNRCC for an Environmental Protection Agency (EPA) identification number. Use EPA Form 8700-12 (available from TNRCC).
- Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations. Refer to 49 CFR 178. Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion and in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.
- Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to TNRCC and local agencies.
- Document all hazardous waste training in each employee’s personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
- Anybody who sends hazardous waste offsite for treatment, storage, or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes “from cradle to grave.” It is your responsibility to ensure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed of.
- Submit a biannual report to TNRCC that summarizes hazardous waste activities during odd numbered years. It is recommended, but not mandatory, to report figures for even numbered years too.
- Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available

for inspection by TNRCC.

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

Best Management Practices to Properly Contain and Dispose of Waste

Reduce Waste.

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

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

Control the Disposal of Fish Waste.

When large amounts of fish guts are deposited in an enclosed area, the resultant, unsightly mess can produce foul odors and a decrease in levels of dissolved oxygen.

Establish fish cleaning areas. Adopt one of the following methods to dispose of the waste.

- Provide a stainless steel sink equipped with a garbage disposal

Never dispose of any hazardous substance by dumping it into a sink, floor drain, storm drain, or onto the ground. (move to hazardous section)

that is connected to a sanitary sewer approved for municipal waste.

- Compost fish waste. Proper composting will control the odor and, over time, will produce an excellent soil conditioner that can be used for your landscaping needs. A Sea Grant booklet provides instructions for composting 25 five-gallon buckets of fish waste per week using sphagnum peat moss and wood chips. Other composting ideas are available from the Texas Agricultural Extension Service.
- Instruct boaters to place fish scraps in plastic bags and dispose in dumpster or at home.
- Instruct boaters to dispose fish scraps off shore over deep water.
- Prohibit fish cleaning outside of designated areas.
- Post signs directing people to clean their fish at a fish cleaning station or at home.

Manage Trash.

- Develop your waste management strategy based on the number of patrons, the types of waste generated, the layout of your marina, and the amount of staff time you can devote. Ask boaters specifically what their needs are.
- Promote your image as a responsible business by providing adequate and reasonably attractive trash receptacles, e.g., cans, bins, dumpsters.
- Locate trash receptacles in convenient locations. Select high traffic areas such as at the landside foot of the dock, near bathrooms and showers, alongside vending machines, adjacent to the marina office, or on the path to the parking lot.
- Do not place trash containers on docks as waste may inadvertently be tossed or blown into the water. Also, some types of trash quickly attract nuisance insects and generate unpleasant odor.
- Select containers that are large enough to hold the expected volume of trash. On average, 4 to 6 gallons of reception capacity is needed per person per vessel per day. A cubic yard of dumpster space holds 216 gallons of trash.
- Provide lids or some other means to trap the waste inside and to prevent animals and rainwater from getting in.
- Post signs indicating what may not be placed in the dumpster: engine oil, antifreeze, paints, solvents, varnishes, pesticides, lead batteries, transmission fluid, distress flares, and polystyrene

peanuts (loose peanuts tend to blow away).

- Require all employees to be involved in policing the facility for trash and vessel maintenance wastes. Do not allow litter to mar your grounds or near-shore areas.
- Use a pool skimmer or crab net to collect floating debris that collects along bulkheads or elsewhere within your marina.
- Post signs directing people to trash receptacles if they are not in plain view.
- Provide lights around trash receptacles so that they are easy to find and safe.
- Plant or construct a windscreen around the dumpster to make the area more attractive and to prevent trash from blowing away. Use native shrubs like crapemyrtle as a windscreen.

Recycle Whenever Possible.

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


- Contact a waste hauler or your local solid waste recycling coordinator to learn what materials are collected in your area.

The following materials may be recycled: antifreeze, oil, metal fuel filter canisters, solvents, glass, shrink wrap, type 1 and 2 plastics, aluminum, steel, tin, lead batteries, newspaper, corrugated cardboard, mixed paper, scrap metal, tires, and white goods (appliances).

- Post information about local recycling services if you are not able to provide all of the desired services at your facility. Check with both county and state recycling contacts, or contact TNRCC for the nearest used oil and antifreeze recycling center.

Recycle Solid Waste.

- Provide containers to collect, at a minimum, plastic, glass, alumi-



num, and newspaper.

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

Recycle Liquid Waste.

- Provide containers to collect oil and antifreeze. Also, collect solvents from your boatyard according to hazardous waste regulations.
- Provide separate containers for oil, antifreeze, and solvents.
- Surround tanks with impervious, secondary containment that is capable of holding 110 percent of the volume of each tank.
- Try to shelter tanks from the elements.
- Attach funnels to tanks to reduce chances of spills. Funnels should be large enough to drain portable containers and oil filters.
- Check with your recycler to learn what materials may be mixed. Generally speaking, engine oil, transmission fluid, hydraulic fluid, and gear oil may all be placed in a waste oil container. Some haulers will also take diesel and kerosene. Ethylene glycol and propylene glycol antifreeze are often collected in the same used antifreeze tank. As a precaution though, **CHECK WITH YOUR RECYCLER BEFORE MIXING ANY MATERIALS.**
- Post signs indicating what may and may not be placed in each tank.
- Do not allow patrons to pour gasoline, solvents, paint, varnishes, or pesticides into the oil or antifreeze recycling containers. The introduction of these materials creates a "hazardous waste." The whole tank must be disposed of as hazardous waste: a very expensive undertaking.
- Consider locking the intake to oil and antifreeze recycling containers to prevent contamination. If you do lock the tanks, instruct your patrons to get the key from the appropriate staff person or to leave their oil or antifreeze next to the collection tank. If you select the second option, assign a member of your

staff to inspect the collection site daily for any material that may have been dropped off.

- Be aware that recycling liquid materials is a long-term obligation. Investigate waste haulers to ensure that they do actually recycle the collected material. Maintain shipping manifests for solvents and other hazardous wastes for a minimum of 3 years (manifests are not required for used oil and antifreeze that is being recycled).

Minimize Your Use of Hazardous Products.

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


- Avoid using products that are corrosive, reactive, toxic, or ignitable, to the greatest extent possible. The use of these materials is likely to generate hazardous waste.
- Adopt an inventory control plan to minimize the amount of hazardous material you purchase, store, and dispose of.
- Do not store large amounts of hazardous materials. Purchase hazardous materials in quantities that you will use up quickly.
- Establish a “first-in first-out” policy to reduce storage time. Dispose of excess material every 6 months.

How Do You Know if a Substance is Hazardous?

All waste generators must determine whether or not their refuse is hazardous. Use the following steps to determine if you have hazardous waste.

1. It is listed as a hazardous waste in Title 40, CFR Parts 260-299 or in the TNRCC publications cited under hazardous materials section.
2. The waste exhibits one or more of the characteristics of hazardous materials: ignitability, corrosivity, reactivity, or toxicity. A generator may either test the waste to determine if it exhibits a hazardous characteristic or use knowledge of the waste, e.g., first hand experience or information gathered from a Material Safety Data Sheet. The test for toxicity is called the Toxicity Characteristic Leaching Procedure (TCLP) and is performed by industrial laboratories.

Store Solvents and Hazardous Materials with Care.

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- Store solvents and other hazardous materials in fire-safe containers that are UL listed or Factory Mutual approved. Containers must meet U.S. Department of Transportation standards for protecting against the risks to life and property inherent in the transportation of hazardous materials. Approved containers will carry specification markings (e.g., DOT 4B240ET) in an unobstructed area. Refer to 49 CFR 178 for additional packaging specifications.
 - Plainly label all stored and containerized material. For hazardous waste, mark the date accumulation begins and ends on each container.
 - Store containers on pallets in a protected, secure location away from drains and sources of ignition. Routinely inspect the storage area for leaks.
 - To minimize air pollution, cap solvents and paint thinners whenever not in use. Store rags or paper saturated with solvents in tightly closed, clearly labeled containers.

Separate hazardous chemicals by hazardous class. Call TNRCC at 512-239-6595 to determine which classes the chemicals you have fall into.

Assign control over hazardous supplies to a limited number of people who have been trained to handle hazardous materials and understand the first-in first-out policy.

Routinely check the date of materials to prevent them from outlasting their shelf life.

Follow Recommended Disposal Methods.

Table 1 contains information about recommendations for the proper disposal of wastes typically found at marinas (see TNRCC hazardous waste publication for information on recyclers and hazardous waste haulers).

Track Pollution Incidents.

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

Educate Boaters.


Table 1. Recommended Disposal Methods

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Antifreeze <ul style="list-style-type: none"> • Propylene glycol • Ethylene glycol <i>Contact your waste hauler to confirm that they will accept mixed antifreeze</i>	✓ Recycle <ul style="list-style-type: none"> • Hire a waste hauler to collect and dispose. • Purchase an on-site recovery unit. <i>Distillation systems are more expensive than systems but are more efficient at renewing used antifreeze.</i>
Waste Oil <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Hydraulic oil • Gear oil • #2 Diesel • Kerosene <i>Contact your waste hauler to confirm that they will accept mixed oil.</i>	✓ Recycle. <ul style="list-style-type: none"> • Take small quantities to a household hazardous waste collection day.
Quart Oil Cans	✓ Drain completely and dispose in regular trash. They cannot be recycled.
Non-terneplated Fuel Filters	✓ Puncture and completely hot drain for at least 12 hours. Recycle the oil and the metal canister. <ul style="list-style-type: none"> • If you do not recycle the canister, double bag it in plastic and place it in your regular trash.
Terneplated Fuel Filter (used in heavy equipment and heavy-duty trucks).	✓ Dispose of as hazardous waste (contain lead)
Stale Gasoline	✓ Add stabilizer in the winter to prevent it from becoming stale or an octane booster in the spring to rejuvenate it. Use the fuel. <ul style="list-style-type: none"> • Mix with fresh fuel and use. • Hire a hazardous waste hauler to collect and dispose of gas. A hazardous waste manifest is required. • Take small quantities to a household hazardous waste collection day.
Kerosene	✓ Filter and reuse for as long as possible then recycle.
Mineral Spirits	✓ Filter and reuse.
Solvents <ul style="list-style-type: none"> • Paint and engine cleaners such as acetone and methylene chloride 	✓ Reuse as long as possible and then recycle. <ul style="list-style-type: none"> • Dispose of as hazardous waste.
Sludge Recovered from a Solvent Listed as a Hazardous Waste	✓ Dispose of a hazardous waste.
Sludge Recovered from a Solvent Not Listed as a Hazardous Waste and Which Does Not Exhibit Hazardous Characteristics	✓ Let sludge dry in a well-ventilated area, wrap in newspaper and dispose in garbage.

(continued on page 68)

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Paints and Varnishes <ul style="list-style-type: none"> • Latex • Water-based • Oil-based 	✓ Allow to dry completely. Dispose in regular trash. <ul style="list-style-type: none"> • Use leftover material for other projects, i.e., as an undercoat for the next boat. • Encourage tenants to swap unused material.
Paint Brushes	✓ Allow to dry completely. Discard in regular trash.
Paint Filters	✓ Allow to dry completely prior to disposal. Treat as hazardous waste if paint contains heavy metals above regulatory levels.
Rags Soaked with Hazardous Substances.	✓ Keep in covered container until ready to dispose. Dispose of the solvent that collects in the bottom of the container as hazardous waste. <ul style="list-style-type: none"> ✓ Wring rags out over a collection receptacle and have laundered by an industrial laundry. • If rags fail TCLP test, dispose of as hazardous waste.
Used Oil Absorbent Material	✓ If it is saturated with oil or diesel, double bag it in plastic and discard in trash (as long as no petroleum is leaking). <ul style="list-style-type: none"> ✓ If it is saturated with gasoline, allow it to air dry and reuse.
Used Bioremediating Bilge Booms	✓ Dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.
Epoxy and polyester resins	✓ Catalyze and dispose of as solid waste.
Glue and Liquid Adhesives	✓ Catalyze and dispose of as solid waste.
Containers <ul style="list-style-type: none"> • Paint cans • Buckets • Spent caulking tubes • Aerosol cans 	✓ May be put in trash can as long as: <ul style="list-style-type: none"> • All material that can be removed has been. Be sure no more than one inch or residue is on bottom or inner liner. • Containers that held compressed gas are at atmospheric pressure. • Containers that held acute hazardous waste have been triple rinsed with solvent. Properly dispose of the solvent.
Residue from Sanding, Scraping, and Blasting	✓ Dispose of as solid waste.
Residue from Pressure Washing	✓ Dispose of as solid waste.
Lead Batteries	✓ Recycle or sell to scrap dealers. Store on an impervious surface, under cover. Protect from freezing. Check frequently for leakage. <ul style="list-style-type: none"> • Inform boaters that if they bring their old battery to a dealer, they will receive a refund on a new battery.
Expired Distress Signal Flares	✓ Encourage boaters to keep onboard as extras. Store in well-marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Be sure to notify the fire department and Coast Guard ahead of time—especially if using aerial flares. Conduct the demonstration over water. <ul style="list-style-type: none"> • Encourage boaters to bring to local fire department or household hazardous waste collection day.

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Scrap Metal	✓ Recycle.
Light Bulbs <ul style="list-style-type: none"> • Fluorescent bulbs • Mercury vapor lamps • High-pressure sodium vapor lamps • Low-pressure sodium vapor lamps • Metal halide lamps 	✓ Recycle if you have more than 10 to dispose of. <ul style="list-style-type: none"> • If fewer than 10, treat as solid waste.
Refrigerants	✓ Recycle. If you deal with AC, you must be certified and use EPA approved CFC recover and recycling equipment. <ul style="list-style-type: none"> • Use alternative refrigerants: HCFC- 122 for ACS and electric chillers, HCFC-123(replaces CFC-11), HFH-134A (replaces CFC-12).
Monofilament Fishing Line	✓ Recycle through a manufacturer or tackle shop.
Scrap Tires	✓ Recycle. Need to register with TNRCC. Store according to National Fire Protection. Association Standards.
Pesticides	✓ Dispose of as hazardous waste.
Plastic Shrink Wrap	✓ Recycle.
Fish Waste	✓ Prohibit disposal of fish waste into confined marina waters. Establish a fish cleaning station and adopt one of the following disposal methods: <ul style="list-style-type: none"> • Equip the cleaning station with a garbage disposal connected to municipal sewer. • Compost the scraps. • Instruct boaters to bag scraps in plastic and place in a dumpster or bring home. • Instruct boaters to dispose scraps off shore over deep water.

- 
- Photocopy and distribute the following Clean Boating Tip Sheet to your tenants. There is room to add your marina's name and logo.
 - Contact the Center for Marine Conservation for marine debris educational materials at minimal cost.
 - Post information about county Household Hazardous Waste Collection events and recycling centers.

Information Sources

Texas Natural Resource Conservation Commission

Texas Sea Grant College Program

Texas General Land Office

Pollution Report and Action Log

Report Date	Staff Reporting	Problem Description	Action Taken	Action Date	Staff Handling



Clean Boating Tip Sheet

Waste Containment and Disposal

Trash is ugly and may be Dangerous - dangerous to humans and to wildlife. For example, plastic may snare propellers and choke sea turtles. Congress passed a law in 1987 to protect our water ways from garbage. The Marine Plastic Pollution Research and Control Act (Title II of Public Law 100-220) regulates the disposal of garbage at sea according to how far a vessel is from shore:

- Within U.S. lakes, rivers, bays, sounds, and within 3 nautical miles from the ocean shore, it is illegal to dump anything other than fish guts.
 - Between 3 and 12 nautical miles from shore, it is illegal to dump plastic and any other garbage that is greater than one inch in size.
 - Between 12 and 25 nautical miles from shore, it is illegal to dump plastic and dunnage, i.e. lining and packing material, nets, lines, etc.
 - Beyond 25 nautical miles, it is illegal to dump plastic.
- Meeting the law is easy. Just follow these tips!

Contain Trash

- Don't let trash get thrown or blown overboard.
- If trash blows overboard, retrieve it. Consider it "crew-overboard" practice.
- Pack food in reusable containers.
- Buy products without plastic or excessive packaging.
- Don't toss cigarette butts overboard. They are made of plastic (cellulose acetate).
- Purchase refreshments in recyclable containers and recycle them.
- Properly dispose of all trash on-shore, e.g., bring home or leave in a dumpster at the marina.

Recycle

- Recycle cans, glass, newspaper, antifreeze, oil, oil filters, and lead batteries.
- Call 1-800-988-4GLO for recycling center locations and 512-239-3100 for the TNRCC locations.

- Bring used monofilament fishing line to recycling bins at your tackle shop or marina.

Fish Scraps

For safety reasons, marinas are often located in sheltered area - areas that will protect boats from wind and waves during a storm. The same features that protect boats during a storm, however, also limit the exchange of water. Poor exchange, or flushing, means that any waste which is discharged into the water may stay in the same general area for an extended length of time. Fish cleaning may pose a problem if the guts are discarded into a poorly flushed marina basin. Fish waste is smelly and unsightly. Also, life-sustaining oxygen is removed from the water column as bacteria decompose the innards. Avoid problems by following these tips.

- Do not discard fish waste in poorly flushed areas.
- Find out what your marina's disposal policy is.
- Bag waste and dispose at home or in a dumpster.
- Dispose over deep water.

Maintenance Waste

Dispose of the following items according to the recommendations listed below. Call 1-800-998-4GLO for recycling center locations or visit www.glo.state.tx.us/Recycling for the names and numbers of local recycling and hazardous waste coordinators. Also see the TNRCC resources at www.tnrcc.state.tx.us and www.1800.cleanup.org

Waste Product

Disposal Method

Oil	Recycle.
Oil Filters	Puncture and hot drain for 12 hours. Recycle oil and canister.
Antifreeze	Recycle.
Paint and Varnish	Allow to dry completely, i.e., solidify. Dispose in regular trash.
Solvents, Gasoline, and Pesticides	Bring to a household hazardous waste collection day.
Expired Emergency Flares	Bring to local fire department or a household hazardous waste collection day.
Human waste	Pump out stations



Marina Management

Staff Training

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

Inform Patrons and Independent Contractors

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

Public Relations

- Publicize Your Good Deeds
- Become a Clean Texas Marina

Business Practices

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

Information Sources





Marina Management

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

Staff Training

Stormwater Pollution Prevention Plan.

The TNRCC Industrial Permit for Discharges from Marinas requires that you teach your employees about the components and goals of the stormwater pollution prevention plan. The training must be conducted at least twice a year and must address the following topics as applicable.

- Used oil management
- Spent solvent management
- Proper disposal of spent abrasives
- Disposal of vessel wastewater
- Spill prevention and control
- Fueling procedures
- General good housekeeping
- Painting and blasting procedures
- Used battery management

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

Emergency Response Plans.

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

- Review plans and response procedures with staff at the beginning of each boating season.
- Train employees in the use of containment measures.
- Train employees in the use of fire fighting equipment.
- Have fire department conduct basic fire fighting training for tenants as well.
- Keep extinguishers and hoses charged and inspected.
- Make sure fire fighting equipment, i.e. hose connections, etc., is compatible between fire department and marina.
- Run emergency response drills at least twice annually.
- Invite U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.



Be Watchful.

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

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

Approach Polluters.

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

Investigate Community College Offerings.

Look for college courses related to environmental protection.

Maintain Training Records.

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

Inform Patrons and Independent Contractors

The TNRCC Industrial Permit for Discharges from Marinas requires that customers and contractors be informed about pollution control practices and be required to use them.

Incorporate Best Management Practices into Contracts.

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

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

Post Signs Detailing Best Management Practices.

- Post signs at fuel docks and pumpout stations, along piers, in vessel maintenance areas, and at dumpsters and recycling stations. See samples below.
- Be sure the signs are visible.
- Signs must be durable, eye catching, and appropriately sized.
- Post your facility's environmental policy in a conspicuous location.

If a boater is sanding and not containing the debris, bring a vacuum sander to him or her. Explain that it collects most of the dust and allows one to work more quickly. Charge him or her your standard rental fee for the equipment.

Keep Fuel Out of the Water
Do Not Top Off Tank
Listen to Anticipate When Tank is Full
Wipe-up Spills Immediately

OIL SPILL RESPONSE KIT



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

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

Notice

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

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

Report Oil Spills to USCG at (800) 424-8802 and TXGLO at (800) 832-8224 or see www.glo.state.tx.us/oilspill to learn more about oil spill requirements.

Vessel Maintenance Area

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

Pumpout Station

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

Do Not Discharge Sewage

Please use our clean, comfortable restrooms while you are in port

Nutrients and pathogens in sewage impair water quality

Recycle

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

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

Think Before You Throw

The following items may not be placed in this dumpster

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

Recycle Antifreeze

This container is for

- Ethylene glycol antifreeze
- Propylene glycol antifreeze

Tailor to fit your hauler's requirements

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

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

Recycle Oil

This container is for

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

Tailor to fit your hauler's requirements

Gasoline is **STRICTLY PROHIBITED**

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

No Fish Scraps

Please do not discard fish scraps within the marina basin

- Use our fish cleaning station
- Bag the scraps and dispose in dumpster or at home
- Save and dispose over deep water

Distribute Literature to Patrons.

- Copy and distribute the Clean Boating Tip Sheets included in this Guidebook or create your own. Boater tip sheets on Vessel Maintenance, Petroleum Control, Boat Sewage, and Waste Disposal can be found at the end of each associated chapter.
- Send the tip sheets with monthly mailings or place in dock boxes or on vessels. Be cautious that they do not end up in the water.
- Include articles about best management practices in your newsletter.
- Get free copies of clean boating materials from organizations such as the Galveston Bay National Estuary Program, Galveston Bay Foundation, state river authorities, Boat/U.S. Clean Water Trust, and Coastal Bend Bays and Estuaries Program.
- Contact the United States Coast Guard for publications summarizing Federal boating requirements.

Host a Workshop.

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

Marine Sanctuary

This marina provides food and shelter for young fish

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

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

Environmental Policy

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

Thank you for
keeping the Bay
clean and safe!

Make Use of Informal Communication Mechanisms.

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

Recognize Boaters.

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

Public Relations

Publicize Your Good Deeds.

- Seek free publicity with local press, magazines, television, and radio outlets.
- Prepare news releases to highlight your innovative practices, new equipment or services, available literature, or a workshop you are sponsoring.
- Plan news releases to coincide with seasonal activities, e.g., helpful tips for winterization.
- Start news releases with a contact person's name and phone number, the date and a headline. The first paragraph should

contain vital information: who, what, when, and where. Fill in with secondary information and support data. Conclude with a “call to action” (e.g., visit the marina for a demonstration of the new plastic media blasting system). Double-space the text. One page is best. It should be no longer than two pages. Refer to the Associated Press Style Book for additional formatting information.

- Learn media deadlines and send releases in time to meet them.
- When submitting a news release, be sure you have the name of the correct editor and that it is spelled accurately.
- Get press kits from manufacturers of environmentally-sensitive products. Use their photographs and product information.

Become a Clean Texas Marina.

- Apply to the Texas Department of Natural Resources for recognition as a Clean Texas Marina. Once you have satisfied the selection criteria, you may use the Clean Texas Marina logo in your advertising and correspondence, fly a Clean Marina burgee, and enjoy promotion by the Clean Texas Marina Program in publications, on the World Wide Web, and at public events.
- Use your selection into the program as an opportunity to prepare a press release.

Business Practices

Offer Environmental Audits for Boaters.

- Expand your business by selling environmental audits.
- Inspect engines, bilges, fuel systems, and marine sanitation devices.
- Sell oil absorbent pads, air/fuel separators, etc.

Avoid Environmental Surcharges.

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

Be Diligent.

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



Information Sources

Texas Natural Resource Conservation Commission

Texas General Land Office

Galveston Bay Estuary Program

Corpus Christi Bay and Estuary Program

Laws and Regulations

Selected Federal Agencies and Their Jurisdictions

- Environmental Protection Agency
- National Oceanographic and Atmospheric Administration
- United States Army Corps of Engineers
- United States Coast Guard

Selected State Agencies and Their Jurisdictions

- TNRCC
- TXGLO
- TPWD

Selected Federal Laws that Impact Marinas

- Clean Air Act Amendments, 1990
- Clean Vessel Act
- Coastal Zone Act Reauthorization Amendments of 1990
- Federal Water Pollution Control Act
- Marine Plastic Pollution Research and Control Act
- Oil Pollution Act of 1990
- Organotin Antifouling Paint Control Act of 1988
- Refuse Act of 1899
- Resource Conservation and Recovery Act

Selected State Laws that Impact Marinas

- Marine Sanitation Devices

Environmental Permits and Licenses

- Industrial Permit for Discharges from Marinas
- Stormwater Pollution Prevention Plan

Information Sources





Laws and Regulations

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


- an introduction to the responsibilities of certain Federal and State agencies,
- an overview of some relevant laws,
- a look at the TNRCC Industrial Permit for Discharges from Marinas, and
- a synopsis of information about other pertinent permits and licenses.

Selected Federal Agencies and Their Jurisdictions

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

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

The United States Army Corps of Engineers (USACE) is responsible for ensuring adequate flood control, hydropower production, navigation, water supply storage, recreation, and fish and wildlife habitat. The Corps contracts and regulates coastal engineering projects, particu-



larly harbor dredging and beach renourishment projects. They also review and permit coastal development and artificial reef projects. A joint permit from the TNRCC and the Army Corps of Engineers is required for all dredging projects.

The United States Coast Guard, an arm of the U.S. Department of Transportation, protects the public, the environment, and U.S. economic interests. They promote maritime safety and marine environmental protection, enforce maritime law, tend all Federal navigation aids, and regulate and monitor recreational and commercial vessels and waterfront facilities.

Selected State Agencies and Their Jurisdictions

TNRCC

The mission of the Texas Natural Resources Conservation Commission TNRCC is to “inspire people to enjoy and live in harmony with their environment, and to protect what makes Texas unique - our diverse landscapes and our living and natural resources.” TNRCC coordinates all natural resources activities within the State affecting the State’s bays and tributaries, fisheries, forests, parks, wildlife, and geology. The Department oversees State land acquisition and management and historic preservation. Additionally, TNRCC reviews and evaluates all natural resources policies, plans, programs, and practices of county, State, regional and Federal agencies, and institutions. The agency serve to preserve and protect Texas’s natural resources and its citizens by enforcing all conservation, boating, and criminal laws and by serving as the primary search and rescue agency on Texas waters and in remote areas of the State. TNRCC is the lead agency for the Clean Texas Marina Program and is responsible for the Sewage Pumpout Program.

TXGLO

The General Land Office was originally responsible for managing the public domain by collecting and keeping records, providing maps and surveys and issuing land titles. Since then the GLO’s duties have evolved, but its core mission is still the management of state lands and mineral-right properties totaling 20.3 million acres. Included in that portfolio are the beaches, bays, estuaries and other ‘submerged’ lands out to 10.3 miles in the Gulf of Mexico, institutional acreage, grazing lands in West Texas and timberlands in East Texas. In managing that property, the land office now leases drilling rights for oil and gas production on state lands, producing revenues and royalties.

TPWD

The Texas Parks & Wildlife department seeks to manage and conserve the natural and cultural resources of Texas for the use and enjoyment of present and future generations.

Selected Federal Laws that Impact Marinas

Clean Air Act Amendments, 1990

As a result of the 1990 Clean Air Act Amendments, the “gasoline marine final rule” establishes emission standards for new spark-ignition gasoline marine engines. Outboard engines and gasoline marine engines used in personal watercraft and jet boats are covered by the rule. Because sterndrive and inboard engines offer cleaner technologies, emission standards were not set for these types of engines. Boat engines currently in use are not affected by this regulation. Boat owners are in no way responsible for making modifications to their current engines to meet the standards. Likewise, boat dealers are not responsible for compliance with this regulation. The regulation does require that manufacturers of outboard and personal watercraft marine engines achieve yearly emission reductions by meeting a corporate average emission standard, which allows them to build some engines to emission levels lower than the emission standard and some engines to emission levels higher than the standard, provided the manufacturer’s overall corporate average is at or below the standard.

Clean Vessel Act (CVA)

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

Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)

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

Federal Water Pollution Control Act

The Federal Water Pollution Control Act, commonly known as the Clean Water Act, addresses many facets of water quality protection. It

provides the authority for the National Pollutant Discharge Elimination System (NPDES) permit program for point sources of pollution. The Act prohibits the discharge of oil or hazardous substances into U.S. navigable waters. It also prohibits the use of chemical agents like soaps, detergents, surfactants, or emulsifying agents to disperse fuel, oil, or other chemicals without the permission of the U.S. Coast Guard. All vessels 26 feet in length and over are required to display a placard that is at least 5 by 8 inches, made of durable material, and fixed in a conspicuous place in the machinery spaces or at the bilge pump control station. The placard must read:

Discharge of Oil Prohibited

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

The Clean Water Act requires that the U.S. Coast Guard be notified anytime there is such discharge.

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

Marine Plastic Pollution Research and Control Act (MPPRCA)

The Marine Plastic Pollution Research and Control Act (MPPRCA) is the U.S. law that implements an international pollution prevention treaty known as MARPOL. The MPPRCA of 1987 (Title II of Public Law 100-220) restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to dispose of plastic materials into the water anywhere. The disposal of other garbage is restricted according to a vessel's distance from shore.

- Within U.S. lakes, rivers, bays, sounds, and within 3 nautical miles from shore, it is illegal to dump plastic, paper, rags, glass, metal, crockery, dunnage (lining and packing material, nets, lines, etc.), and food.
- Between 3 and 12 nautical miles from shore, it is illegal to dump plastic and any other garbage that is greater than one inch in size.
- Between 12 and 25 nautical miles from shore, it is illegal to dump plastic and dunnage.

- Beyond 25 nautical miles, it is illegal to dump plastic.

The dumping restrictions apply to all vessels operating in all navigable waters of the United States and the 200 mile Exclusive Economic Zone. All vessels greater than 26 feet must display a MARPOL placard outlining the garbage dumping restrictions. All vessels over 40 feet must also have a written waste management plan on board.

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

Oil Pollution Act of 1990 (OPA)

The Oil Pollution Act of 1990 (OPA) was written in direct response to the Exxon Valdez oil spill. The law primarily addresses commercial oil shipping (e.g., tankers must be double-hulled, captains may lose their licenses for operating a vessel under the influence of drugs or alcohol). Some of the requirements are applicable to recreational boating, however. Most notably, 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 like the cost of providing increased or additional public services. The financial liability for all non-tank vessels is \$600 per gross ton, or \$500,000, whichever is greater. Also, substantial civil penalties may be imposed for failing to report a spill, for discharging oil, for failure to remove oil, failure to comply with regulations, and gross negligence.

Organotin Antifouling Paint Control Act (OAPC) of 1988

The Organotin Antifouling Paint Control Act restricts the use of organotin antifouling paints, including tributyl tin-based paints. Tributyl tin (TBT) paints may be used only on aluminum-hulled vessels, on boats larger than 82 feet (25 meters), and on outboard motors and lower drive units. Under the provision of the State antifouling paint law (Agriculture Article §5-901) marina operators must obtain a license from the Maryland Department of Agriculture to purchase and apply organotin antifouling paints and hire a certified pesticide applicator. It is illegal for anybody without a license to distribute, sell, use or possess antifoulants containing tributyl tin. The only exception is for spray cans that are 16 ounces or less and that do not exceed the

release rate of less than or equal to 5.0 micrograms per square centimeter per day.

Refuse Act of 1899

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

Resource Conservation and Recovery Act (RCRA)

The Federal Resource Conservation and Recovery Act (RCRA) provides the legal authority to establish standards for handling, transporting, and disposing of hazardous wastes. The Texas hazardous waste regulations are based on RCRA and the State Environment Article.

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

- All generators and transporters of hazardous waste must apply to the TNRCC for an Environmental Protection Agency (EPA) identification number. Use EPA Form 8700-12.
- Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations (refer to 49 CFR 178). Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.
- Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste.
- Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
- Anybody who sends hazardous waste offsite for treatment, storage or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste

manifest must accompany all hazardous wastes “from cradle to grave.” It is your responsibility to ensure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored or disposed.

- Submit an annual report to the TNRCC that summarizes hazardous waste activities during the year.
- Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by TNRCC.

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

Selected State Laws that Impact Marinas

Marine Sanitation Devices

The Federal Clean Water Act and Texas State law (Natural Resources Article §8-741) require that any vessel with an installed toilet be equipped with a certified Type I, Type II, or Type III marine sanitation device (MSD):

- Type I systems 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. The fecal coliform bacteria count of the effluent 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 IIs treat the sewage to a higher standard: 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. Type IIs also require more space and have greater operating energy requirements.
- Type III systems are total containment with optional discharge

means. The most common form of a Type III system is a holding tank. Other forms include re-circulating and incinerating systems.

Vessels 65 feet and under may have any of the three types of MSDs. Vessels more than 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

The State law allows a vessel, operating on a navigable water way, with an installed toilet to have a "Y" valve or other means to by-pass the MSD. Within State waters, including rivers and coastal waters, however, all pathways for overboard discharge of raw sewage must be secured. The "Y" valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

Finally, any vessel with an installed toilet that is offered in Texas as a noncaptained charter must be equipped with an operational MSD. The lease agreement signed by the leasing party must include a paragraph outlining the operator's responsibility.

Environmental Permits and Licenses

General Permit for Discharges from Marinas (96-GP-0013)

Who must obtain a permit?

In 1990, EPA implemented regulations requiring permits for stormwater discharges from certain activities. The stormwater permit program requires that certain marinas classified by the Office of Management and Budget with Standard Industrial Classification (SIC) system number 4493 be covered by a National Pollution Discharge Elimination System (NPDES) permit. Any marina or boat yard that conducts boat maintenance activities, including washing, or that has wastewater discharges must apply for coverage under a permit. This permit authorizes the discharge of boat and equipment washing water, stormwater runoff from boat maintenance areas, noncontact cooling water, and condensate discharges. In order to comply with the permit, marina operators must develop a stormwater pollution prevention plan and implement best management practices to ensure that wastewater and stormwater leaving the marina property will not harm the quality of the surrounding waters.

How does one apply for the permit?

To obtain coverage, an applicant must submit a notice of intent (NOI) form to the TNRCC along with the required application fee. The

fee varies depending upon the number of slips. Notice of intent forms are available from the Industrial Discharge Permits Division of TNRCC.

Upon notification of acceptance of the NOI by the TNRCC, the marina is authorized to discharge in accordance with the special conditions listed below. The plan must be available for review by TNRCC.

Wash Water

- Remove suspended solids from wash water using such methods as straw dam filters, geotextiles, settling basins or sand filters.
- Wash water may not be discharged to State waters if detergents or other chemical cleaning agents are used.
- Discharge of wastewater from the cleaning of engines or other oily parts is prohibited.

Cooling Water

- Total residual chlorine in the discharge shall not be present in concentrations greater than 0.1 mg/l.

Condensate


- Discharge of condensate that comes into contact with petroleum products or causes erosion is prohibited.

Accidental Discharge of Oil or Hazardous Substances

- In the event of an oil spill, the discharger must notify the National Response Center at (800) 424-8802
- Within 10 days of becoming aware of a release, the permittee must submit a written description of the release.
- The stormwater pollution prevention plan required as a condition of the general permit must be modified to include a description of the release and to identify measures to prevent and respond to a recurrence.
- Facilities which have more than one anticipated discharge per year of the same hazardous substance or oil which is caused by events occurring within the scope of the relevant operating system shall, likewise, report the release to TNRCC and identify measures to prevent or minimize such releases.

Stormwater Pollution Prevention Plan

- The permittee must develop and implement a stormwater pollution prevention plan. The plan must identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges associated with industrial activity at the facility. Additionally, the plan shall describe and insure the



implementation of practices to reduce pollutants in stormwater discharges from industrial activities at the facility.

- For guidance in developing a stormwater pollution prevention plan, refer to: Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices and an EPA-published summary document on the same subject. See the Appendix for more details on plan development.
- For existing marinas and boatyards, the plan must be completed within one year of obtaining coverage under this permit. The facility must be in compliance with the terms of the plan within 18 months of receiving coverage.
- For new facilities, the plan must be completed and implemented prior to submitting a Notice of Intent for coverage under the general permit.
- Upon request, the plan must be submitted to TNRCC. The permittee may then be notified that the plan does not meet one or more of the minimum requirements. In such an event, the permittee must amend the plan and submit a written certification to TNRCC that the requested changes have been made.
- The permittee shall amend the plan whenever there is a change in design or operation that will have a significant effect on the potential for pollutants to be discharged to State waters. The plan shall also be amended if it proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity.

Contents of a Stormwater Pollution Prevention Plan

1. Pollution prevention team
2. Description of potential pollutant sources
3. Site map indicating drainage, maintenance, and storage areas
4. Inventory of materials exposed to precipitation
5. List of significant spills and leaks that occurred in the 3 most recent years
6. Sampling data describing pollutants in stormwater discharges from the facility
7. Summary of potential pollutant sources and identification of associated risks
8. Description of stormwater management controls
 - A. Washing areas
 - B. Blasting and painting areas
 - C. Material storage areas
 - D. Engine maintenance and repair areas
 - E. Material handling areas
 - F. General yard areas
9. Preventive maintenance
10. Spill prevention and response procedures
11. Inspections
12. Employee training
13. Record keeping and internal reporting procedures
14. Non-stormwater discharges
15. Sediment and erosion control
16. Comprehensive site compliance evaluation
17. Consistency with other plans
18. Special requirements for stormwater discharges associated with industrial activity to municipal separate storm sewer serving a population of 100,000 or more



Information Sources

Texas Natural Resource Conservation Commission

- Environmental Permits Service Center
- Industrial Discharge Permits

National Technical Information Service

TNRCC Regulatory Resources

Rules – <http://www.tnrcc.state.tx.us/oprd/index.html>

Pollution Prevention Technical Assistance and Voluntary Programs

<http://www.tnrcc.state.tx.us/exec/sbea/p2tech.html>

Small Business Assistance: Confidential and Free Technical Assistance

<http://www.tnrcc.state.tx.us/exec/sbea/smallbus.html>

Clean Texas Program – <http://www.tnrcc.state.tx.us/exec/sbea/cleantx/index.html>

Storm water – <http://www.tnrcc.state.tx.us/permitng/waterperm/wwperm/tpdestorm.html>

Air Permits – Permits by Rule – http://www.tnrcc.state.tx.us/air/nsr_permits/exempt.htm

Waste Designation Decision Matrix http://www.tnrcc.state.tx.us/exec/small_business/matrix/enter.html

Industrial & HW Registration & Reporting – http://www.tnrcc.state.tx.us/permitting/r_e/eval/we/reg_rep.html

Compliance & Enforcement – <http://www.tnrcc.state.tx.us/homepgs/oce.html#3>

Other Resources:

Galveston Bay Estuary Program – <http://gbep.tamug.tamu.edu/index.html>

Coastal Bend Bays and Estuaries Program – <http://tarpon.tamucc.edu>

Publications: <http://www.tnrcc.state.tx.us/admin/topdoc/index.html>