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**Assessing a Decade of Implementing Water Quality  
Best Management Practices (BMPs) at Virginia Marinas  
1994 vs. 2005**

**Final Contract Report  
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**VIMS Marine Resource Report No. 2006-4**

**May 5, 2006**

# **Assessing a Decade of Implementing Water Quality Best Management Practices (BMPs) at Virginia Marinas 1994 vs. 2005**

## ***Introduction***

The pollutant contribution from marina and boat operations likely represents only a small percentage of the total volume of pollutants being discharged annually into the Chesapeake Bay and its tributaries. But, because of their high visibility, location at the land/water interface and the composition of pollutants common to marina and boat operations, marinas are constantly scrutinized as potential problem areas.

This was apparent in 1990 when the federal government, under the Coastal Zone Reauthorization Amendments (CZARA), required all coastal states with approved Coastal Management Programs to develop Coastal Non-point Pollution Control programs to address non-point source pollution runoff within the coastal zone.

Non-point source pollution (NPS) is generated by agriculture, forestry, urban and suburban growth and redevelopment, and marina and recreational boating activities. At marinas, unchecked storm water runoff from boatyards, drips from fuel docks, discharges from marine heads, and fish waste all contribute to reduced water quality.

To satisfy CZARA's requirements the Virginia Marine Resources Commission, in 1994, conducted a survey among 100 marinas in the coastal zone area to develop a better understanding of both the level and type of BMPs being utilized by marinas in the coastal zone of Virginia. The primary focus was on those BMPs that were being used successfully to limit pollutant discharges.

The results of that survey assisted in the development of a comprehensive marina non-point source control program for the Commonwealth. That program, inaugurated in January of 2001, is the Virginia Clean Marina Program. A major part of the development of the Program was the "Virginia Clean Marina Guidebook" that outlines best management practices for marinas to follow to reduce pollutant discharges to the waterways.

The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (EPA) share the responsibility of protecting our coastal waters from polluted runoff. Through the Coastal Non-point Pollution Control Program, these agencies are coordinating (yes, you heard that right) their efforts to establish management measures for all coastal states to use in controlling non-point source pollution. These measures are designed to prevent or reduce runoff from a variety of sources, including marinas. Clean marinas remain among the top priorities that receive national and state attention and funds.

To help states meet requirements of this pollution program, NOAA and EPA created a Clean Marina Initiative that is both voluntary and incentive-based. Marina operators and boaters are encouraged to protect coastal water quality by using environmentally sound operating and maintenance procedures.

## ***Background***

As noted previously, in 1990, the federal government, under CZARA, required all coastal states with approved Coastal Management Programs to develop Coastal Non-point Pollution Control programs to address non-point source pollution runoff within the coastal zone.

In response to CZARA, Virginia, submitted a report that described the various laws, programs and regulations it had in effect to address NPS pollution. NOAA and EPA reviewed the report and in 1998 released their findings indicating that Virginia needed to do more to control non-point sources of pollution associated with marinas and recreational boating.

Faced with the strong possibility of having to impose additional regulations on marinas, Virginia asked and got support from NOAA and EPA to pursue the development of a voluntary program instead of imposing new regulations.

At this point in time, the Virginia Department of Conservation and Recreation (VDNR) and the Virginia Department of Environmental Quality (VDEQ) decided to form an advisory committee with public and private representatives, and to establish a Marina Technical Advisory Program (MTAP) to come up with a voluntary program that would do more to control non-point source pollution.

In mid 1999 the MTAP was established and housed within the Virginia Sea Grant Marine Advisory Program at the Virginia Institute of Marine Science at Gloucester Point, Virginia.

MTAP's mission was to provide advice, technical assistance and education to Virginia's marine industry. Providing a ready source of information and a place where marina owner/operators can go to openly discuss regulatory issues and get advice on corrective action without fear of penalty.

When the MTAP was initiated an advisory committee, the Virginia Marina Technical and Environmental Advisory Committee (MTEAC) was also formed to provide guidance to the MTAP staff. This fourteen member committee is comprised of members of the boating community, marina operators, marine conservationists, and representatives from state agencies. Also providing guidance and assistance to MTAP is a committee of eleven marina operators called the Virginia Marina Industry Advisory Committee.

The Committee quickly decided that the best way to promote pollution prevention would be to publish a guidebook that would provide marina operators with a host of BMPs that could be adopted for situations at their facilities that would help to eliminate pollution of the marine environment. Out of this came the idea for the Virginia Clean Marina Program (VCMP).

The VCMP is a process by which marinas can be awarded and rewarded for their efforts in implementing best management practices to improve and maintain water quality and living resources. After a year long effort by both committees, the MTEAC and the Virginia Marina Industry Advisory Committee, the VCMP Guidebook was published and ready for distribution to all Virginia marinas.

The award part of the VCMP comes in the form of a certification for a marina that meets all legal and regulatory standards as well as a percentage of the best management practices as outlined in the Guidebook.

Certification is a three step process. First, the marina owner/operator signs a pledge to become a VCMP within a year from signing on. Secondly, the owner/operator completes a Clean Marina Award Self Evaluation Checklist, provided with the Guidebook, and forwards it to MTAP. Third, one or two members of the MTEAC conduct a formal site visit to each marina applying for certification and, using the checklist sent in by the marina, evaluate the business. If the marina meets all the criteria, they are recommended for VCMP status.

The MTEAC votes on this recommendation and, if the vote is positive, the marina will be granted VCMP status and receive all the benefits therein. These benefits include: authorization to use the VCMP logo on their letterhead and in their advertising; a burgee to fly from their property; and promotion by the VCMP in publications, on the World Wide Web, and at public events such as boat shows.

There is no cost or fee to participate in the VCMP. Once achieved, Clean Marina status is renewed biannually. To do so the marina completes a Clean Marina Award Checklist, attests to its validity by signature, and submits it to the MTEAC. There it is reviewed by the Committee and, if all is in order, a recertification is issued for the marina.

Support for the VCMP is provided by the Virginia Sea Grant Marine Advisory Program's Marina Technical Advisory Program. They conduct annual reviews of the Clean Marinas; hold workshops to provide educational opportunities to marina owners, operators and staff; and provide technical assistance on an as needed basis.

This Program has given marina owners/operators the opportunity to avoid more government regulations by voluntarily adopting and implementing best management practices and common sense approaches to improving and maintaining water quality and living resources.

Becoming a certified Virginia Clean Marina is one way for marina operators to let the boating public know that they are committed to improving and maintaining water quality in the Chesapeake Bay. In our site visits to marinas we find that they already meet 90% of the criteria for certification. With little additional effort they are ready for certification.

The boating public has become more and more environmentally conscious and looks to patronize marinas that share their view. In a way the Clean Marina designation is a form of "eco-labeling." It doesn't end there however. Aside from the environmental benefits, the implementation of best management practices leading to VCMP certification means increased business and economic growth for marinas.

## ***Project Description***

The objective of this current study was to determine the effectiveness of the VCMP in promoting the use of BMPs by marinas to reduce or eliminate pollutant discharges to the waterways.

The 1994, pre-VCMP, survey results were used as a benchmark against which to compare the results of the current survey. The 100 marinas surveyed in 1994 were included in the study sample along with the 22 marinas that have achieved the Virginia Clean Marina designation. Six of these Virginia Clean Marinas were among the group surveyed in 1994.

## **Methodology**

This study was conducted to determine what affect the VCMP, inaugurated in January 2001, has had on marinas and their use of BMPs in the preventing pollutant discharges to Virginia’s waterways.

To accomplish this, the group of marinas and places where boats are moored or stored that was surveyed in 1994 was re-surveyed. This sample included 100 facilities. In addition, facilities that have been designated Virginia Clean Marinas were contacted and at the time this survey was conducted there were 22 designated Virginia Clean Marinas. Six of them were among the 1994 surveyed group. This resulted in a sample size of 116 for the current study.

While the 1994 study was conducted using personal interviews with marina managers and on site inspections of their facilities, the current study was done entirely by mail. Some follow-up telephone calls were made mainly to elicit completion and submittal of the questionnaire. The study achieved a 43% response rate among the 116 facilities surveyed.

## **Findings**

### **Services & Related Management Measures**

Figures shown are the percentage of respondents indicating use of these services and related management measures at their facilities.

#### **Distribution of Pump-Out Facilities**

A comparison of surveyed facilities in the 2005 vs. 1994 study shows a marked increase in the number of pump-outs in use at marinas. This increase is largely due to the Clean Vessel Act and the 75% funding it provided for the installation of these types of facilities.

<b>Table 1. Distribution of Pump-Out Facilities</b>				
<b>Type</b>	<b>All Marinas</b>		<b>Virginia Clean Marinas</b>	<b>Non-Virginia Clean Marinas</b>
	<b>2005</b>	<b>1994</b>	<b>2005</b>	<b>2005</b>
Facilities With Pump-Outs	92%	74%	100%	90%
Facilities With No Pump-Outs	8%	26%	----	10%

In the current study the average usage of pump-outs was 179 times per season (16 weeks). This compares to an average of 84 times a season as reported in the 1994. (On a per wet slip basis pump-out usage is about 1.62 times a season (8,404 pump-out visits/5,189 wet slips) 84% of the respondents indicated that they used signs to encourage the use of available pump-out facilities.

The availability of dump-stations at marinas is more than double what it was in 1994: 78% vs. 34%.

### Management of Petroleum Products

Marinas use a variety of management measures to limit the possibility of a fuel spill. The most widely used are absorbent bilge pads and spill response kits. These kits contain a variety of items like donut rings to place over the fueling nozzle, absorbent pads, and in some kits a containment boom. All are effective in clean up or containment of a fuel spill.

Type	All Marinas		Virginia Clean Marinas	Non-Virginia Clean Marinas
	2005	1994	2005	2005
Number of Marinas Selling Fuel	37	71	18	19
Fuel (Gas/Diesel)	84%	72%	83%	52%
Fuel (Gas only)	16%	28%	17%	48%
BMPs in use				
Fuel Spill Contingency Plan	89%	26%	94%	52%
Spill Response Kit	100%	29%	100%	61%
Containment Boom	100%	32%	94%	65%
Waste Liquid Storage	67%	55%	70%	68%
Absorbent Bilge Pads	100%	---	100%	71%
Automatic Shutoff	81%	87%	83%	52%

Cost per annum for disposal of waste oil/solvents varies among facilities.

In 1994 the cost ranged from \$0 to \$400 with an average cost of \$38 per year. In the 2005 study, these costs ranged from \$0 to \$10,000 with an average annual cost of \$1,107 at all marinas surveyed and \$2,261 at the Virginia Clean Marinas studied. At non-Virginia Clean Marinas this cost averages \$550.

## Hull Maintenance Area (HMA) Management

Below is a comparison of the services and related management measures found at the marinas accommodating hull maintenance.

<b>Table 3. Hull Maintenance Area (HMA) Management</b>				
<b>Type</b>	<b>All Marinas</b>		<b>Virginia Clean Marinas</b>	<b>Non-Virginia Clean Marinas</b>
	<b>2005</b>	<b>1994</b>	<b>2005</b>	<b>2005</b>
Number Marinas Accommodating Hull Maintenance	33	58	11	21
Pressure Wash	100%	97%	100%	100%
Routine Collection of Hull Residue	85	55	91	82
Wash Down Pad	63	57	50	69
Sediment Trap	78	26	60	60
Positive Drainage	62	41	65	59
Containment Measures				
Vacuum Sanders	71	21	81	69
Filter Cloth/Tarps	88	53	90	85
Spray Booth	38	19	50	31
Ground Vacuum	21	1	10	31

Among the 33 marinas that accommodate boat maintenance, 93% have a specific area set aside for hull maintenance. At 19% of these facilities the HMA is under cover and at 64% the HMA is on a pervious surface.

By way of comparison, the Virginia Clean Marinas studied all have a specific area set aside for hull maintenance. At 18% of these the HMA is under cover and at 55% the HMA is on a pervious surface. Non-Virginia Clean Marinas – 86% have specific area set aside for hull maintenance. In 21% this area is under cover and in 64% is on a pervious surface.

Among all marinas surveyed, this area is located an average of 198 feet from the water. Among Virginia Clean Marinas, the distance is 215 feet on average. The current trend is for these areas to be moved further away from the water. In 1994 this distance was an average of 102 feet. For non-Virginia Clean Marinas the distance averages 194' from the water.



## Waste Collection

**Fish Waste Management** with the utilization of designated fish cleaning stations and waste receptacles has improved slightly from the 1994 study as shown in the following table:

<b>Table 4. Fish Waste Management</b>				
<b>Type</b>	<b>All Marinas</b>		<b>Virginia Clean Marinas</b>	<b>Non-Virginia Clean Marinas</b>
	<b>2005</b>	<b>1994</b>	<b>2005</b>	<b>2005</b>
Fish Cleaning Station Available	45%	34%	50%	45%
Designated Fish Waste Receptacles	33	14	35	35
Rules Posted Governing Cleaning/Disposal	57	7	70	52

**Trash Collection** is practiced at all of the facilities. Ninety-eight percent of the marinas (100 % of Virginia Clean Marinas – 97% of non-Virginia Clean Marinas) reported the availability of trash receptacles at their facility. In all but 5 marinas (2 Virginia Clean Marinas; 2 non-Virginia Clean Marinas) these receptacles were covered.

Sixty-three percent of the marinas (85% Virginia Clean Marinas; 48% non-Virginia Clean Marinas) surveyed encouraged recycling, and 57% (80% Virginia Clean Marinas; 42% non-Virginia Clean Marinas) had recycling containers available for their own and customer use.

**Liquid Waste** At 75% of the marinas surveyed specific containers were set aside for disposal/recycling of specific used fluids.

<b>Table 5. Trash Collection and Liquid Waste</b>						
<b>Type</b>	<b>All Marinas</b>		<b>Virginia Clean Marinas</b>		<b>Non-Virginia Clean Marinas</b>	
	<b>2005</b>		<b>2005</b>		<b>2005</b>	
	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>
Waste Fuel	25	49	9	45	15	48
Waste Lubricants	35	69	13	65	23	74
Solvents	23	45	9	45	14	45
Anti-Freeze	21	41	9	45	12	39
Total Respondents	51	100	20	100	31	100

Sixty-seven percent of the marinas (65% of Virginia Clean Marinas; 68% non-Virginia Clean Marinas) had areas set aside for storage of paints, solvents, cleaners, etc. and in all but one case the area was covered.

Forty-three percent of the marinas (60% of Virginia Clean Marinas; 35% non-Virginia Clean Marinas) had posted signs to direct patrons in the proper methods of disposal.

The annual costs for disposal (hauling) of waste oil/solvents, etc. averages \$1,107.00 among all marinas surveyed, and \$2,261.00 among the Virginia Clean Marinas and \$550.00 among non-Virginia Clean Marinas.

**Educating customers about BMPs** - Pump-out education ranks highest among those surveyed as evidenced in the table below.

<b>Table 6. Educating Customers About BMPs</b>			
<b>Type</b>	<b>All Marinas</b>	<b>Virginia Clean Marinas</b>	<b>Non-Virginia Clean Marinas</b>
	<b>2005</b>	<b>2005</b>	<b>2005</b>
Pump-Out	78%	95%	71%
Sewage Disposal	76	90	71
Pollution Prevention	73	90	65
Boater Safety	71	90	61
Recycling Programs	57	85	39
Proper Disposal Methods	49	75	35

**Operational Recommendations & Viewpoints**

Marinas estimate they have spent an average of \$46,784 (\$38,909 for Virginia Clean Marinas) associated with pollution controls and non-point source BMPs at their facilities (\$51,342 for non-Virginia Clean Marinas).

Their estimated annual cost associated with maintenance of the BMPs is on average \$2,680.00 (\$2,554 for Virginia Clean Marinas; \$2,764 for non-Virginia Clean Marinas).

Thirty-three percent of the marinas (48% in 1994) and 35% of the Virginia Clean Marinas and 29% of non-Virginia Clean Marinas feel that control of non-point discharge at their facility is **more than adequate**, while 57% (48% in 1994) and 55% of Virginia Clean Marinas and 61% of non-Virginia Clean Marinas feel it is **adequate**.

In the 1994 study, 4% of the respondents thought that BMPs played a **large role** in reducing pollutant discharge at marinas. In the current study 57% of all the marinas 70% of the Virginia Clean Marinas and 45% of the non-Virginia Clean Marinas thought BMPs play a **large role**.

Eighty percent of all respondents (90% of Virginia Clean Marinas and 13% of non-Virginia Clean Marinas) said they did not see marinas as a source of pollutant discharges (92% in 1994).

Fifty-three percent of the all respondents (45% of Virginia Clean Marinas and 61% of non-Virginia Clean Marinas) said marinas are singled out as being significant sources of pollution. This compares with 65% in the 1994 study.

Seventy-five percent of all marinas surveyed (80% of Virginia Clean Marinas; 68% of non-Virginia Clean Marinas) feel that existing regulations and regulatory oversights are sufficient to protect aquatic resources. In 1994 that number was 65%.

### **Marina Siting and Design Criteria**

Because a number of those responding to the survey were not involved in the initial development of their facilities, many were unable to answer questions concerning activities during the initial site selection and development.

In the 1994 study, 52% of the respondents indicated that they believed preconstruction dredging had been required. In the current study only 41% thought dredging had been required.

Respondents to the 2005 survey specified that maintenance dredging is required to maintain dredge depths. For those facilities requiring routine maintenance dredging there is an average interval of 11.1 years (12.7 in 1994).

### **Water Quality Assessment**

Eighty-eight percent of the survey respondents said that there have not been any significant problems with the water quality of the water body adjacent to their marina. Forty-one percent felt that these waters meet state water quality standards.

### **Habitat Assessment**

In the 1994 study, wetlands impacts were cited as being the “most frequent impact” associated with the development of the original marina. In the current study, wetlands impacts were cited by 33% of the respondents. The following table shows a comparison of the “impacts” reported in the current survey by all marinas surveyed versus those certified as Virginia Clean Marinas and non-Virginia Clean Marinas.

<b>Table 7. Comparison of Impacts</b>			
<b>Type</b>	<b>All Marinas*</b>	<b>Virginia Clean Marinas*</b>	<b>Non-Virginia Clean Marinas</b>
Impacted by Development	%	%	%
Shellfish Grounds	25	5	35
Wetlands	33	5	48
Submerged Aquatic Vegetation	16	0	26
Water Quality	68	95	55
None of the Above	68	95	55

\* Includes all marinas surveyed: 51, 20 and 31 respectively

### **Shoreline Stabilization**

Current study results indicate that 71% of the facilities surveyed have found it necessary to install riprap or bulkhead to harden the adjacent shoreline.

Sixty-one percent said they have planted vegetation to control shoreline erosion. And, 94% said that drainage outfalls for runoff from their facility are properly stabilized to minimize shoreline erosion. Comparative percentages for Virginia Clean Marinas surveyed are 80%, 80%, and 100% respectively; non-Virginia Clean Marinas are 61%, 45% and 90%.

The most visible areas of a marina's operation that can have a negative effect on the environment are in unchecked storm water runoff from boatyards, drips from fuel docks, discharges from marine heads, and fish waste all contribute to reduced water quality.

### ***The Benefits of Becoming a Clean Marina***

This Program has given marina owners/operators the opportunity to avoid more government regulations by voluntarily adopting and implementing best management practices and common sense approaches to improving and maintaining water quality and living resources.

Becoming a certified Virginia Clean Marina is one way for marina operators to let the boating public know that they are committed to improving and maintaining water quality in the Chesapeake Bay. In our site visits to marinas we find that they already meet 90% of the criteria for certification. With little additional effort they are ready for certification.

The boating public has become more and more environmentally conscious and looks to patronize marinas that share their view. In a way, the Virginia Clean Marina designation is a form of "eco-labeling." It doesn't end there however. Aside from the environmental

benefits, the implementation of best management practices leading to Virginia Clean Marina certification means increased business and economic growth for marinas.

While much has been written about the need to better quantify the economic values associated with Virginia Clean Marina certification, a survey this year among Virginia's certified Clean Marinas provides some real insight into how industry views the benefits of becoming a clean marina. For example, among the recent findings: 79% of clean marinas feel that Virginia Clean Marina status has brought economic benefits to their marina by both reducing costs and increasing revenues. When asked to elaborate, 70% of the marinas responding felt that Virginia Clean Marina designation had led to increased revenues (ranging from \$5,000- \$50,000 annually); primarily from attracting new customers. Forty-three percent felt the VCMP guidebook and management practices helped reduce costs of operating; 29% said they had not had Virginia Clean Marina status long enough to quantify such impacts. Seventy-nine percent felt that Virginia Clean Marina status led to more "goodwill" and significantly improved relationships with regulators. Further the group consistently echoed one statement reported that "regulators are more responsive to new ways to accomplish a given end," and "they are more willing to work with us knowing that we are all working toward the same goal." On the marketing side, Virginia Clean Marinas cited increased transient traffic, increased fuel sales and an overall perception by the customer of value added as important measures of economic benefits gained. One marina concluded "Recognition for caring for the environment brings in a higher quality clientele. They tend to take better care of their boats (business for us) and our property." Clean marina status was likened to "star ratings" for hotels. Boaters know exactly what to expect in the way of service and amenities when visiting a certified Virginia Clean Marina.

## ***Appendix***

# *Clean Marina Program*

## *Virginia's*

*-MAKING BIG WAVES-*

Now entering its fifth year, the Clean Marina Program is poised to make big waves along Virginia's coast. The program, while mirroring similar efforts by neighboring states, takes a gentler, non-regulatory approach that has captured the attention and respect of the boating public.

The attention is nothing to sneeze at. It is estimated that Virginia boaters spend approximately \$400 million annually on the purchase of new boats and related accessories. Virginia's boating community represents a significant slice of the recreational pie, ranking right alongside more traditional leisure activities like hunting and fishing. In fact, during 2004 some 243 thousand registered recreational watercraft called Virginia waters home—up from 240 thousand just four years earlier.

All of that activity translates into an economic boom for the marine trades industry, one of the fastest growing sectors of Virginia's coastal economy. Together, marine trades and tourism act as potent economic drivers in Virginia, and the Clean Marina Program dovetails logically into that mix. Virginia is still considered by boaters a jewel among coastal destinations—and water quality and rural aesthetics have a lot to do with that perception.

And during a time of heightened environmental awareness, especially among those with leisure time and the disposable income to support it, the Clean Marina Program just makes good business sense. Clean marinas go hand-in-hand with the standards that boaters expect as part of their overall trip experience and represent prime examples of a public-private partnership that is working well in the state.



The Clean Marina Program also has enhanced Virginia's stewardship reputation across the region. It offers real-world proof of the state's focus on Chesapeake Bay clean-up efforts and the importance that Virginians ascribe to them.

The program brings together several agencies of state and federal governments, a marine research institution, and involvement by 65 marina facilities—31 of which are already certified, and the list is growing. It touches thousands of Virginia residents and countless visitors who frequent Virginia's shores—a num-

ber that will surely skyrocket at the peak of the state's historic 2007 celebrations. No matter where those boats travel between Alexandria and Portsmouth, they will be welcomed by a Virginia Clean Marina. Both large and small marinas participate in the program, and their visibility is rising.

For their part, marina owners and operators are pleased with the many tangible and intangible benefits the program has brought them. Built upon common sense, the Clean Marina Program can be implemented by any marina wishing to promote environmentally sensitive behaviors. Clean water, habitat preservation, and protection of the sensitive land-water interface form the underpinnings of the clean marina philosophy. A comprehensive guidebook clearly articulates the best management practices that participants subscribe to, while giving them resource lists and helpful information on emergency planning and safety.



Virginia's Clean Marina Program appears to be saving marinas money, too. A recent survey conducted by program managers found that almost 80% of respondents thought the Clean Marina Program had reaped economic benefits upon their business. Dollar

savings of \$500 to \$5,000 a year were noted by those who had already implemented best management practices. Roughly the same percentage of participants now enjoy better relationships with state regulators and find that communication and cooperation has greatly improved.

"Regulators are more receptive to new ideas and ways to accomplish a given end.

They are more willing to work with us, knowing that we are all working toward the same goal," said one program participant. Others tout the value of having a comprehensive guidebook in place—something that provides excellent guidelines and training information for marina employees.

While the early years of the program were devoted to research, guidebook development, and building relationships with marina operators, *the Virginia Clean Marina Program is now hitting its stride!* The past two years have been spent on soliciting and recruiting new members. That list is growing, but it represents a small fraction of the program's ultimate potential. When considering the current trends toward coastal development and the burst of boating activity that Virginia is experiencing, the need for the program remains vital. The Virginia Clean Marina Program, as a public-private stewardship initiative, should not be forgotten.



## Why every marina should be a 'Clean Marina'

BY PETER R. HALL AND  
THOMAS J. MURRAY

Many of today's boaters have a host of concerns regarding the waters where they recreate, including: Is it safe to swim in and fish? Are the shellfish beds safe to harvest? Do algal blooms stick to their hulls? After all, the quality of the resource affects the quality of the customer's experience. And, marinas are keenly aware that many coastal waters and estuaries in the U.S. are seriously impacted by water pollution.

The marina industry understands its customers and is implementing operational changes to improve its service to boaters, and in many cases to stay ahead of the regulations. Regardless of motivation, many marina operators feel that environmental protection is part of the cost of doing business nowadays. Quite frankly, good water quality means good business.

It's not just about doing the right thing. Marinas can benefit economically from being clean. For instance, by becoming more efficient in the use of raw materials, marinas can reduce pollution and waste, and save money. Clean marinas can receive free technical assistance, such as workshops and guidebooks, plus positive press. Many state coastal programs award marinas with burgees to indicate their certification as clean marinas.

But the federal government is, and always has been, involved in the national efforts to keep our marinas clean. Specifically, the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) share the responsibility of protecting our coastal waters from polluted runoff. Through the Coastal Nonpoint Pollution Control Program, these agencies are coordinating their efforts to establish management measures for all coastal states to use in controlling nonpoint source pollution. These measures are designed to prevent or reduce runoff from a variety of sources, including marinas. Clean marinas remain among the top priorities that receive national and state attention and funds.



*Signs like these are becoming increasingly more common at marinas as they do their part to protect the environment.*



*Proper fueling is necessary to prevent drips from fuel docks and to maintain water quality.*

To help states meet the requirements of this pollution program, NOAA and EPA have created a Clean Marina Initiative that is both voluntary and incentive-based. Marina operators and boaters are encouraged to protect coastal water quality by using environmentally sound operating and maintenance procedures.

### More background

In 1990, the federal government, under the Coastal Zone Reauthorization Amendments (CZARA), required all coastal states with approved Coastal Management Programs to develop Coastal Nonpoint Pollution Control programs to address non-point source pollution (NPS) runoff within the coastal zone.

NPS is generated by agriculture, forestry, urban and suburban growth and redevelopment, and marina and recreational boating activities. At marinas, the biggest culprits are unchecked storm water runoff from boatyards, drips from fuel docks, discharges from marine heads, and fish waste. All contribute to reduced water quality.

### One state's response

In response to CZARA, Virginia state

officials submitted a report that described the various laws, programs, and regulations it had in effect to address NPS pollution. The EPA and NOAA reviewed the report and in 1998, told Virginia that it needed to do more to control non-point sources of pollution associated with marinas and recreational boating.

Faced with the strong possibility of having to impose additional regulations on marinas, Virginia asked and got support from NOAA and EPA to pursue the development of a voluntary program instead of imposing new regulations.

At this point, Virginia's Departments of Conservation and Recreation and Environmental Quality formed an advisory committee with public and private representatives, and established a Marina Technical Advisory Program (MTAP). This voluntary program would come up with ways to control nonpoint source pollution.

The Committee quickly decided that the best way to promote pollution prevention would be to publish a guidebook that would provide marina operators with a host of best management practices they could adopt for situations at their facilities that would help to eliminate pollution of the marine environment. Out of this came the idea for the Virginia Clean Marina Program (VCM).

The VCM is a process by which marinas can be awarded and rewarded for their efforts in implementing best management practices to improve and maintain water quality and living resources. After a year long effort, the Virginia Marina Technical and Environmental Advisory Committee and the Virginia Marina Advisory Committee, published the *VCM Guidebook* and distributed it to all Virginia marinas.

The award part of the VCM comes in the form of a certification for a marina that meets all legal and regulatory standards, as well as a significant percentage of the best management practices as outlined in the Guidebook.

Certification is a three-step process. First, the marina owner/operator signs a pledge to become a VCM within a year. Second, the marina completes a Self-Evaluation Checklist, provided with the

Guidebook, and forwards it to MTAP. Third, MTEAC members conduct a formal site visit to each marina applying for certification and, using the checklist sent in by the marina, evaluate the business. If the marina meets all the criteria, it is recommended for VCM status.

MTEAC votes on this recommendation and, if the vote is positive, the marina will be granted VCM status and receive all the benefits therein. These benefits include: authorization to use the VCM logo on their letterhead and in their advertising; a burgee to fly from their property; and promotion by the VCM in publications, on the Web, and at public events.

There is no cost to participate in the VCM Program. Once achieved, Clean Marina status is renewed biannually. To do so, the marina completes a Clean Marina Award Checklist, attests to its validity by signature, and submits it to MTEAC. There it is reviewed by the Committee and, if all is in order, a recertification is issued for the marina.

Support for the VCM is provided by the Virginia Sea Grant's Marina Technical Advisory Program. They conduct annual reviews of the Clean Marinas; hold workshops to provide educational opportunities to marina owners, operators, and staff; and provide technical assistance on an as-needed basis.

Becoming a certified Virginia Clean Marina is one way for marina operators to let the boating public know that they are committed to improving and maintaining water quality in the Chesapeake Bay. In our site visits to marinas, we find that they already meet 90% of the criteria for certification. With little additional effort, they are ready for certification.

The boating public has become more and more environmentally conscious and looks to patronize marinas that share their view. In a way the Clean Marina designation is a form of "eco-labeling." It doesn't end there however. Aside from the environmental benefits, the implementation of best management practices leading to VCM certification means increased business and economic growth for marinas.

### **The benefits**

While much has been written about the need to better quantify the econom-

ic values associated with VCM certification, a survey this year among Virginia's certified Clean Marinas provides some real insight into how industry views the benefits of becoming a clean marina. For example, among the recent findings: 79% of clean marinas feel that VCM status has brought economic benefits to their marina by both reducing costs and increasing revenues.

When asked to elaborate, 70% of the marinas responding felt that VCM designation had led to increased revenues (ranging from \$5,000- \$50,000 annually); primarily from attracting new customers. In addition:

- 43% felt the VCM guidebook and management practices helped reduce operating costs;
- 29% said they had not had VCM status long enough to quantify such impacts;
- 79% felt that VCM status led to more "goodwill" and significantly improved relationships with regulators.

Further, the group consistently reported that "regulators are more responsive to new ways to accomplish given ends." The group added, "They are more willing to work with us knowing that we are all working toward the same goal." On the marketing side, VCM marinas cited increased transient traffic, increased fuel sales, and an overall perception by the customer of value added as important measures of economic benefits gained. One marina concluded, "Recognition for caring for the environment brings in a higher quality clientele. They tend to take better care of their boats [business for us] and our property." Clean marina status was likened to "star ratings" for hotels. Boaters know exactly what to expect in the way of service and amenities when visiting a certified Clean Marina.

So why shouldn't every marina become a Clean Marina? ⚓

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*Tom Murray is a marina business specialist and Peter Hall is a Clean Marina Specialist with the Virginia Sea Grant Marine Advisory Program, Virginia Institute of Marine Science, College of William & Mary, Gloucester Point Virginia. To find a clean marina certification program in your state visit <http://cleanmarinas.noaa.gov/>.*

September 2005

Dear Marina Operator:

Re: *Survey of Marina Best Management Practices in Use*

In January 2001, the Virginia Clean Marina Program (VCMP) was launched to promote the voluntary adoption of management measures that prevent or reduce pollution from marinas, recreational boats and public access areas. Currently, there are 57 marinas participating in this Program.

The Program was implemented in order to comply with the provisions of the federal "Coastal Zone Management Act (CZMA) of 1972," which was reauthorized by Congress in 1990. Provisions contained within the CZMA now require states such as Virginia, with federally approved coastal resource management programs, to develop coastal pollution control programs that address "nonpoint" sources that could have a potentially deleterious effect on water quality. *States failing to address these provisions could lose federal coastal zone management funding and coastal businesses such as Virginia marinas could face direct regulation by EPA.*

Now, five years into the Program, a determination is needed of which BMPs are now being used and by how many marinas. This information is vital in two ways. It will help to assess the success of the VCMP, and it will provide a basis for permanent funding by the General Assembly.

Federal funding for the VCMP expired in 2004 and it is now up to the individual states to fund their own programs. Discontinuation of the VCMP, which would result from a lack of permanent funding, will mean additional federal government mandated regulations that could cost Virginia considerably more money to implement than is needed to fund the VCMP.

I am asking for your cooperation and assistance by completing the enclosed survey and returning it to me in the stamped/addressed envelope provided or by fax (804-684-7161). Your quick response will be greatly appreciated. Thanks for your help.

Cordially,



Peter R. Hall  
Marina Technical Specialist  
804-684-7768

Enclosures

# MARINA SURVEY

This survey is being conducted to determine what Best Management Practices are currently being utilized at Tidewater marinas and their level of utilization. The survey is also intended to evaluate available services at a given facility and assess whether current measures are effectively limiting the discharge of pollutants into adjacent waters.

Your assistance in filling out this survey is greatly appreciated. Please answer as completely as possible. If a question does not apply, designate using N/A. If the answer to the question is unknown, designate using UK.

**(Please Print)**

Your Name: \_\_\_\_\_ Telephone # \_\_\_\_\_

Which of the following best describes your position at this facility?  
(Check the appropriate response)

Owner     Operator     Employee     Agent     Other (specify): \_\_\_\_\_

## **I. FACILITY DESCRIPTION**

Name of Facility \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Water Body \_\_\_\_\_

Water Body Code \_\_\_\_\_ (To be completed by VMRC)

Which one of the following classifications best describes the function of this facility?  
(Check One)

- |  |  |
|--|--|
| <input type="checkbox"/> Commercial Marina (Public)    | <input type="checkbox"/> Community Mooring Facility  |
| <input type="checkbox"/> Campground Marina             | <input type="checkbox"/> Boatyard & Service Facility |
| <input type="checkbox"/> Seafood Processing            | <input type="checkbox"/> Restaurant Marina           |
| <input type="checkbox"/> Other (Please describe) _____ |  |

Which of the following services are available at this site? (Check all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> Electricity                          | <input type="checkbox"/> Gas                                       |
| <input type="checkbox"/> Water                                | <input type="checkbox"/> Diesel Fuel                               |
| <input type="checkbox"/> Wet Slips (How many?) _____          | <input type="checkbox"/> Boat Sales                                |
| <input type="checkbox"/> Live Aboards (How many boats?) _____ | <input type="checkbox"/> Recycle Bins                              |
| <input type="checkbox"/> Dry Storage (How many spaces?) _____ | <input type="checkbox"/> Ship's Store                              |
| <input type="checkbox"/> Travel Lift                          | <input type="checkbox"/> Restrooms                                 |
| <input type="checkbox"/> Fork Lift                            | <input type="checkbox"/> Fish Cleaning Station                     |
| <input type="checkbox"/> Marina Railway                       | <input type="checkbox"/> Sewage Pump-out                           |
| <input type="checkbox"/> Launch Ramp                          | <input type="checkbox"/> Sewage Dump Station                       |
| <input type="checkbox"/> Hull Repair                          | <input type="checkbox"/> Sewage Treatment.                         |
|   | <input type="checkbox"/> On-site <input type="checkbox"/> Off-site |
| <input type="checkbox"/> Engine Repair                        | <input type="checkbox"/> Waste Collection                          |
| <input type="checkbox"/> Pressure Washing                     | <input type="checkbox"/> Hotel                                     |
| <input type="checkbox"/> Boat Construction                    | <input type="checkbox"/> Restaurant                                |

In what year was this facility constructed? \_\_\_\_\_

In what year was the most recent expansion completed? \_\_\_\_\_

Is there currently a waiting list for slips at your facility?  Yes  No

What percent of the boats at this facility are used in an average week during the regular boating season? \_\_\_\_\_%

## **II. SITING & DESIGN**

### **A. Marina Flushing**

Were the flushing characteristics of the adjacent water body considered in marina site selection?  Yes  No  Don't Know

Was dredging required initially?  Yes  No  Don't Know

Is periodic maintenance dredging necessary?  Yes  No  
If yes, how frequently? Every \_\_\_\_\_ years.

Which one of the following best describes the water body on which the facility is located?

- |   |   |
|---|---|
| <input type="checkbox"/> Open Water         | <input type="checkbox"/> Dredged Basin    |
| <input type="checkbox"/> Restricted Channel | <input type="checkbox"/> Dead end Channel |
| <input type="checkbox"/> Cove               |   |

## **B. Water Quality Assessment**

Was a seasonal shellfish condemnation required initially?  Yes  No  Don't Know

Is there an existing condemnation?  Yes  No  Don't Know

Do adjacent waters meet state water quality standards?  Yes  No  Don't Know

In your opinion, have there been any significant problems with the water quality of the adjacent water body?  Yes  No

## **C. Habitat Assessment**

Which of the following were impacted by the development of this facility?

- Shellfish grounds
- Wetlands
- Submerged Aquatic Vegetarian
- Water Quality
- None of the above

## **D. Shoreline Stabilization**

Has it been necessary to install riprap or bulkheading to harden the adjacent shoreline?  
 Yes  No

Has vegetation been planted to control erosion?  Yes  No

Are the drainage outfalls for runoff originating from this site properly stabilized to minimize shoreline erosion?  Yes  No

## **III. MANAGEMENT OF SOLID WASTE & STORM WATER RUNOFF**

Best Management Practices are techniques or measures to reduce or eliminate the sources and impacts of pollution to adjacent waters. In which of the following management areas at this facility are BMPs being used to reduce pollution: (Check all that apply)

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Solid waste        | <input type="checkbox"/> Fish waste       | <input type="checkbox"/> Solvents                         |
| <input type="checkbox"/> Petroleum products | <input type="checkbox"/> Hull maintenance | <input type="checkbox"/> Boat Cleaning                    |
| <input type="checkbox"/> Public Education   | <input type="checkbox"/> Boat Operation   | <input type="checkbox"/> Maintenance of Sewage Facilities |

**A. Boat Maintenance Area (BMA)**

Does this facility presently accommodate boat maintenance?  Yes  No

Is there a specific area set aside for hull maintenance?  Yes  No

Are boaters allowed to perform their own hull maintenance?  Yes  No

Is this area under cover?  Yes  No

Is it clearly marked?  Yes  No

Is hull maintenance allowed outside this area?  Yes  No

Does the hull maintenance area have an impervious surface?  Yes  No

How far is the HMA from the nearest water body (# of feet)? \_\_\_\_\_

Is hull preparation performed using vacuum sanders?  Yes  No

Is bottom paint residue and sanding dust routinely collected?  Yes  No

Is filter cloth used under boats during hull maintenance?  Yes  No

Is there a travel lift washdown pad?  Yes  No

Does this area have a sediment trap?  Yes  No

If Yes, How often is it necessary to cleanout the sediment trap?  Weekly  Monthly  
 Other (Specify) \_\_\_\_\_

Is there positive drainage away from the Hull Maintenance Area?  Yes  No

Is your facility licensed to apply TBT paint?  Yes  No

What other measures, if any, are utilized to limit the discharge of pollutants from these areas? (Please specify)

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Which of the following are utilized to minimize runoff form the hull maintenance area?

- Vegetated Filter Strips
- Swales
- Source Controls
- (Containment Measures)
  - Spray/sand booth
  - Tarps/Filter Cloth under boats
  - Vacuum equipped sanders
  - Ground Vacuums

What measures are used to improve filtration and infiltration in non-service areas?

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## **B. Waste Collection**

Fish

- Is there a specific area designate for fish cleaning?  Yes  No  
Are specific receptacles designated for fish waste?  Yes  No  
Are there rules governing fish cleaning and disposal?  Yes  No

Trash

- Are trash receptacles available?  Yes  No  
If yes, Are they covered?  Yes  No  
Are recycling containers available?  Yes  No

Liquids

Which of the following are available at this site?

- Gas
- Diesel Fuel
- Motor Oil
- Anti-freeze
- Propylene Glycol(Pink)
- Ethylene Glycol (Green)

Are specific containers set aside for the disposal or recycling of:

- Waste fuel
- Waste lubricants
- Solvents
- Anti-freeze



Is there a specific area set aside for the storage of paints, solvents, cleaners, etc.?

Yes  No

If yes, is this area covered?  Yes  No

Are signs posted to direct patrons in proper disposal methods?  Yes  No

Do you encourage recycling?  Yes  No

**If yes, How?** \_\_\_\_\_  
\_\_\_\_\_

Does slip rental agreement restrict discharge of waste liquids?  Yes  No

What is your annual costs for the disposal (hauling) of waste oil/solvents etc.?  
\$ \_\_\_\_\_

What measures are in place to limit the possibility of a fuel spill?

- Bermed container area
- Automatic shutoff?
- Boater education?

What measures are available to address a spill in the event one occurs?

- Fuel Spill Contingency Plan
- Spill response kit
- Absorbent bilge pads
- Containment boom

### **C. Boat Cleaning**

Are specific measures undertaken to limit the introduction of cleaning materials into adjacent waters?  Yes  No

Is hull cleaning limited to periods when boats are out of the water?  Yes  No

Are phosphate free/biodegradable cleaning products used?  Yes  No

Is in the water hull scraping allowed?  Yes  No

### **D. Sewage Handling**

Does your facility have a pump-out?  Yes  No

If yes, Is it fixed or portable?  Fixed  Portable

If in fixed, where is the pump-out equipment located?

- At fuel dock
- Other (Specify) \_\_\_\_\_

Is it easily accessible?  Yes  No

What is the cost per use of the pump-out? \$ \_\_\_\_\_

How often is the pump-out used during a normal boating season? \_\_\_\_\_

What efforts are undertaken to encourage the use of the available pump-out facilities?

- Signs
- Slip rental contract restrictions
- Other (Specify): \_\_\_\_\_

Does your facility have a dump station?  Yes  No

### **E. Education**

Are efforts undertaken to educate boaters as to?

- Pollution prevention
- Boater safety
- Sewage disposal
- Pump-out
- Recycling programs
- Signs to identify BMPs
- Signs to designate proper disposal methods
- Contract requirements

## **IV. OPERATOR RECOMMENDATIONS & VIEWPOINTS**

What do you estimate has been the installation costs associated with pollution controls and non-point source BMPs at your facility? \$ \_\_\_\_\_

What would you estimate the annual cost associated with maintenance of BMPs? \_\_\_\_\_

Would you say that control and treatment of runoff of suspended solids and non-point source discharges from your marina is?

- More than adequate
- Adequate
- Less than adequate

What role do existing BMPs play in reducing pollutant discharge from your marina?

- Large role
- Moderate role
- Small role

What is the single most important BMP at your facility?

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Do you feel activities involving boats at marinas contribute significant quantities of pollutants to area waters?     Yes    No

Do you feel that marinas are singled out as significant sources of pollution associated with boating activities?     Yes    No

If yes, by whom? \_\_\_\_\_

Which additional BMPs do you feel are needed or would be appropriate for your facility?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Do you feel that existing regulations and regulatory oversights are sufficient to protect aquatic resources?     Yes    No

What specific trends do you see in the boating industry that will entail additional BMPs to protect water quality? (Please use the space below to summarize your thoughts.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Are you familiar with or aware of the Virginia Clean Marina Program?

Yes    No

Is your facility a Certified Virginia Clean Marina?    Yes    No

If not, would you like to become a Certified Virginia Clean Marina?    Yes    No

If not, why? \_\_\_\_\_

*Please return questionnaire via mail or fax to:*

***Mr. Pete Hall  
Virginia Clean Marina Program  
VIMS, P.O. Box 1346,  
Gloucester Point, VA 23062-1346***

***Fax: 804-684-7161***