

University of Massachusetts Boston

ScholarWorks at UMass Boston

Urban Harbors Institute Publications

Urban Harbors Institute

6-30-2004

South Shore Vessel Pumpout Evaluation & Outreach Plan, Final Report

Dan Hellin

University of Massachusetts Boston

Chantal Lefebvre

University of Massachusetts Boston

Michelle Portman

University of Massachusetts Boston

Samantha Woods

North & South Rivers Watershed Association

Follow this and additional works at: https://scholarworks.umb.edu/uhi_pubs



Part of the [Natural Resources and Conservation Commons](#), [Recreation Business Commons](#), and the [Recreation, Parks and Tourism Administration Commons](#)

Recommended Citation

Hellin, Dan; Lefebvre, Chantal; Portman, Michelle; and Woods, Samantha, "South Shore Vessel Pumpout Evaluation & Outreach Plan, Final Report" (2004). *Urban Harbors Institute Publications*. 17.
https://scholarworks.umb.edu/uhi_pubs/17

This Research Report is brought to you for free and open access by the Urban Harbors Institute at ScholarWorks at UMass Boston. It has been accepted for inclusion in Urban Harbors Institute Publications by an authorized administrator of ScholarWorks at UMass Boston. For more information, please contact scholarworks@umb.edu.

SOUTH SHORE VESSEL PUMPOUT EVALUATION & OUTREACH PLAN

FINAL REPORT
JUNE 2004



Prepared by the
Urban Harbors Institute
at the University of Massachusetts Boston
and the **North & South Rivers Watershed Association**

This report was funded through the
Coastal Nonpoint Source Pollution Grant Program

Administered by the
Massachusetts Office of Coastal Zone Management
251 Causeway Street, Suite 800, Boston, MA 02124

This product is funded through the Coastal Nonpoint Source Pollution Grant Program made possible by NOAA and administered by the Massachusetts Office of Coastal Zone Management. Views expressed herein are those of the author(s) and do not necessarily reflect the views of EOEA or CZM.

Produced by
Dan Hellin, Chantal Lefebvre and Michelle Portman
Urban Harbors Institute
University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, MA 02125

and
Samantha Woods
North & South Rivers Watershed Association

30 June 2004

Additional copies are available online at www.uhi.umb.edu

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iii
1 INTRODUCTION	1
1-1 Study Design	1
1-2 Background	2
1-2-1 Vessels as a Source of Nonpoint Pollution	2
1-2-2 Regulatory Context	2
2 QUESTIONNAIRE FINDINGS	4
2-1 Results of the Boaters' Survey	4
2-1-1 Number of Years as a Boater	4
2-1-2 Vessel Size Classes	4
2-1-3 Recreational and Commercial Boater	6
2-1-4 Local versus Transient Boaters	7
2-1-5 Boaters' Awareness of Local Regulations	7
2-1-6 Seasonal versus Year-round Boaters	8
2-1-7 Boating Time	8
2-1-8 Vessels Equipped with Marine Sanitation Devices	10
2-1-9 Types of MSDs with which the Boats are Equipped	10
2-1-10 Whether or Not Vessels are Equipped with Y-valves	14
2-1-11 Awareness of Pumpout Facilities	14
2-1-12 Knowledge of How to Access Pumpout Facilities	15
2-1-13 Convenient Location of Local Pumpout Facilities	15
2-1-14 Frequency of Use of Pumpout Services	16
2-1-15 Type of Pumpout Facilities Used	17
2-1-16 Level of Satisfaction with Pumpout Services	17
2-1-17 Problems that Boaters have Experienced with Pumpout Services	18
2-1-18 Boaters Awareness of Enforcement Authorities	21
2-2 Findings and Recommendations based on the Results of the Boater Survey	22
2-3 Results of the Operator Survey	23
2-3-1 Year Facilities were Opened	23
2-3-2 Type of Facility	23
2-3-3 Sewer Connections and Facilities for Porta Potties	24
2-3-4 Water Depth and Other Restrictions that Limit the Use of the Facilities	24
2-3-5 Opening Hours and Cost of the Pumpouts	26
2-3-6 Number of Vessels Serviced and Gallons Pumped	27
2-3-7 Vessel Sizes and Boater Information	27
2-3-8 Operational Logistics	28

2-3-9	Operational / Maintenance Problems	30
2-3-10	Customer Satisfaction	30
2-3-11	Possible Improvements.....	30
2-3-12	Specific Issues Identified via Pumpout Working Group	30
2-4	Findings and Recommendations based on the Results of the Operator Survey	31
3	EDUCATION AND OUTREACH FINDINGS	33
3-1	The Target of Outreach and Education Efforts	33
3-2	The Organizers of Education and Outreach Efforts	34
3-2-1	Federal / State Government.....	34
3-2-2	Municipal Government	37
3-2-3	Marina Operators	37
3-2-4	Other Groups and Organizations	37
3-3	The Focus of Education and Outreach Efforts	37
3-4	Effective Education and Outreach Methods.....	38
3-4-1	Distributing Literature	39
3-4-2	Posting Signs, Flags and Buoys	39
3-4-3	Advertising in Newspapers	40
3-4-4	Internet	40
3-4-5	Boater Guides	40
3-4-6	Radio and Television	40
3-4-7	Workshops	40
3-4-8	Public Meetings.....	41
3-4-9	Face-to-Face Meetings	41
3-5	Education and Outreach Conclusions	41
APPENDIX 1	EXAMPLES OF OUTREACH AND EDUCATION MATERIALS	A
APPENDIX 2	TEMPLATE PRESS RELEASE	V
APPENDIX 3	TEMPLATE OUTREACH MATERIALS	X

EXECUTIVE SUMMARY

During the course of this study, 413 boaters, seven pumpout facility operators and a number of state and municipal officials either were interviewed or completed questionnaires focused on the boat sewage pumpout facilities along the South Shore of Massachusetts.

The aims of the boater survey were to:

- collect data on how boaters disposed of their sewage waste;
- learn how well informed boaters were regarding the location of sewage pumpouts;
- determine if boaters were able to find operational pumpout facilities when they needed them;
- learn what common problems had been experienced when using pumpouts;
- determine if there were adequate facilities to service the South Shore boating community.

The operator survey aimed to:

- collect data on how frequently pumpouts were used;
- determine how each marina's pumpout services worked;
- to learn what common problems operators experienced with the equipment;
- to learn how marina operators promoted their services.

In addition to providing much needed statistical data on the number and size of boats, where they were used, the frequency at which they were used, etc., this study provided insight into what boaters and marina operators knew about the environmental impacts of vessel sewage in the coastal environment. These data, along with a web search for other outreach efforts and a literature search on environmental education and outreach, were reviewed to assess what future outreach may be needed and the shape it should take.

The key findings from the boater survey are as follows:

- ❑ While 95% of local boaters who were surveyed reported that they were aware of local regulations relating to the discharge of sewage from boats, 25% of transient boaters were not. This suggests that future outreach efforts should specifically target the transient boater population. Such outreach will be particularly important if any No Discharge Areas are designated in the area in the future.
- ❑ Of the boaters who had Type III MSDs, 95% were aware of the local pumpout facilities and 94% of these knew how to access them. This suggests that outreach or advertising have been effective but that there are still some boaters who reported that they were unaware of the services.
- ❑ A high percentage of boaters (82%) felt that the local services were conveniently located and the average rating of their level of satisfaction with these services was 7.6 (on a scale of zero to 10, with zero being highly unsatisfied and 10 being highly satisfied).
- ❑ Pumpout services in Duxbury, Plymouth and Cohasset were given an average rating higher than this and Marshfield, Scituate, Kingston and Norwell were rated lower. This suggests that there is some variation in the quality of pumpout services between towns within the study area. Further research should target boaters from those towns where the number of respondents to this survey was low.
- ❑ If possible, future research should ask boaters to rank particular marinas or pumpout services so that a direct comparison can be made and problem areas can be identified.
- ❑ Of the boaters who responded to the question, 49% reported that they had experienced problems with pumpout services in the past. Over 47% of these reported that the pumpout boat had been unavailable when they requested service. Between 25 and 34% of these boaters reported that the wait was too long, the pumpout was inaccessible, there was no pumpout at that location, no staff was available or the pumpout was out of operation. The problems that people have experienced with local

facilities warrant further study because, if boaters feel that accessing pumpout services is too much of an inconvenience, they may forego the services completely and simply discharge the contents of their holding tank illegally. However, it is important to remember that even though boaters reported having experienced problems, it is difficult to ascertain if their demands were reasonable.

- ❑ Of the boaters who responded, 71% reported that their vessel was equipped with an MSD or a porta pottie. Of these, 54% reported having a Type III MSD and 40% reported having a porta pottie on board. Only 4% reported having a Type I MSD and 1% reported a Type II.
- ❑ If the percentage of boats equipped with Type I and Type II MSDs is representative of the whole boat population within the study area, then the designation of a local NDA would only affect a small number of boaters, as such a designation does not prohibit the use of either a Type III MSD or a porta pottie.
- ❑ Conversely, if only 5% of the boat population is equipped with Type I or Type II MSDs, it seems unlikely that they contribute significantly to sewage contamination in the coastal waters of the study area. If water quality is currently being degraded by sewage from boats, the major causes may be illegal discharges from Type III MSDs, boaters emptying porta potties and leaks from onboard systems and pumpout facilities themselves.
- ❑ The survey revealed that, within the study area, the percentage of vessels of various sizes that were equipped with Type III MSDs differed significantly from those suggested in Environmental Protection Agency (EPA) and Clean Vessel Act (CVA) technical guidelines. The most significant difference was in the over 25 to 40 feet class. The EPA and CVA suggest that 50% of such vessels will be equipped with a Type III MSD. This study suggests that the figure is actually almost 80%. If the EPA and CVA guidelines are used to estimate the “adequate” number of pumpout facilities for a given area, they will underestimate significantly. This study suggests that the guidelines should be revisited with the aim to develop a more robust means of estimating what should be considered to be an “adequate” number of facilities.

The key findings from the operator survey are as follows:

- ❑ Of the operators that responded, 20% did not offer a facility at which boaters could empty porta potties. As porta potties appear to be used on a large percentage of boats, operators should be encouraged to provide some system that will allow boaters to empty these.
- ❑ Most pumpout operators (71%) suggested that there were no significant accessibility issues with their facilities. However, 27% of boaters who had experienced problems with pumpouts reported that they had experienced accessibility issues. It is important to remember that some boaters are more experienced and more skilled when it comes to maneuvering their vessel and that there will always be less skilled boaters who will find some pumpouts inaccessible.
- ❑ It is clear that the number of boats serviced and the amount of sewage that the operators reported to have pumped varied considerably. Further research may be able to identify if some facilities are being stretched to capacity and if others are less busy. This could assist in locating facilities that may be established in the future.
- ❑ In Massachusetts, the Clean Vessel Act is run by the Division of Marine Fisheries. As CVA funding comes from taxes imposed on recreational boats, sporting goods etc., facilities that receive such funding are prohibited from servicing commercial vessels. Due to this, it was difficult to ascertain accurately how many commercial boaters were using pumpout services in the area.
- ❑ While it is understandable that CVA funding is designed to provide pumpout services to recreational boaters, it appears that commercial boats are frequently ignored when it comes to providing such services and especially so when it comes to the designation of NDAs. This would appear to be a significant oversight as some vessels, such as passenger ferries, may have large Type III holding tanks. If pumpouts are not readily available to commercial vessels and they do not routinely operate more than three nautical miles off shore, then such vessels may have little choice other than to illegally discharging their tanks overboard closer to shore.

- ❑ It is clear that pumpout operators generally advertised their service by posting signs, deploying buoys, via the internet and by word of mouth. As the awareness of local pumpout services was high, it appears that such methods have been relatively successful. However, the fact that only 43% of the operators had any referral system suggests that better coordination between operators could enhance the overall pumpout services in the area.
- ❑ Pumpout operators should be encouraged to advertise actively alternative services that are available locally. This is particularly important if, for any reason, a pumpout service is out of operation.
- ❑ Operators should consider developing a coordinated system by which each service can readily inform boaters when they are operating and direct them to alternative services when they are not. The fact that they are in operation could be indicated by flying a pumpout flag that is clearly visible from outside of the marina and lowering the flag when operations are closed. Adding the contact information for alternative services on all flyers and signs would mean that boaters would not need to search for these details and would be more likely utilize these services.
- ❑ The key to encouraging boaters to use pumpout facilities is to make the services as convenient as possible. Operators should be encouraged to promote their services, as well as others in the local area, and to ensure that directions to their pumpout are advertised wherever possible.

The key findings about education and outreach are as follows:

- ❑ General boaters knew what they should be doing when it comes to the responsible disposal of sewage and what the local regulations are. However, responsible boating literature should continue to be distributed on a regular basis to remind boaters of what they should be doing and to educate new boaters. Additionally, when regulations change, such as the designation of a NDA, clear outreach materials must be developed and distributed so that boaters remain up-to-date and can comply.
- ❑ Boaters were generally aware of the environmental issues associated with sewage and understood that excessive amounts of sewage, particularly untreated sewage, can be harmful to the environment and that this in turn would potentially reduce the enjoyment that they derive from boating. While this suggests that past outreach efforts have largely been successful on many counts, it is important that outreach efforts continue so that new boaters are educated and other boaters are reminded of the issues.
- ❑ There is an underlying feeling among individual boaters that their contribution to the problem is small. As is often the case, cumulative impacts are hard to measure and no one boater will feel that they are a major part of the problem. Future outreach should focus on the fact that, while one individual flush of a head may not contribute much to the problem, as the number of boats increases, especially in an enclosed or poorly flushed area, water quality is likely to become degraded. This is especially true if boaters are illegally emptying Type III MSDs overboard.
- ❑ Boaters are often unaware of the fact that the contents of a Type III holding tank are often septic and the irresponsible disposal of it will have a greater environmental impact than the discharge of a similar volume of treated sewage.
- ❑ While generally boaters seemed to be aware of the issues associated with boat sewage and local regulations, this does not necessarily mean that they comply with the regulations. The main reason that people do not use pumpout stations is because they feel that they are inconvenient.
- ❑ Every effort should be made to reduce the inconvenience of pumping out to a level that means that most boaters will use them. To some extent, this can be done through advertising pumpout services and aiding boaters locate the facilities through signs, flags, posters, advertisements in local papers etc.
- ❑ While details of pumpout facilities are readily available in boating guides, pumpout guides and the internet etc., it is important that boaters can readily identify their location. This means not only the location of the marina which offers pumpout services, but also where within the marina the pumpout station is located. To this end, marinas and municipal governments should focus on making all pumpout facilities as high profile as possible with signs and buoys clearly on display to direct boaters to local pumpout stations.

- ❑ Boaters are particularly inconvenienced when problems occur with the pumpout that they are trying to access. In this study, 49% of boaters who responded to the question reported that they had experienced problems at a pumpout facility. One way to reduce such occurrences is to promote use of the 1-800-ASK-FISH hotline and to remind boaters that they can report malfunctioning pumpouts to the Division of Marine Fisheries at (508) 563-1779.
- ❑ Posters and flyers advertising pumpout services should not only include the location, hours and contact details of the pumpout and the fact that the service is free (or the cost if applicable) but also the names and contact details of other nearby services.
- ❑ If possible, pumpout operators should be encouraged to talk to each other so that they are all aware if one facility is not operational. An ideal situation would be that they would keep each other informed as to how busy they are so that boaters can be redirected to less busy facilities.
- ❑ If outreach materials are being developed that are intended for boaters to have onboard it is important to remember that for them to last, they must be somewhat waterproof. Additionally, as there is often limited space on board a boat, bulky publications are unlikely to be greatly appreciated by boaters. Therefore, keeping materials concise and removing unnecessary content is preferable.
- ❑ It appears that there is enough high-quality outreach material currently available and it is recommended that organizations focus on increasing the distribution of such materials rather than try to develop new ones.
- ❑ The use of signs and buoys has been shown to be an effective and relatively inexpensive way of ensuring that boaters remain informed. However, if sufficient funding is available, the use of face-to-face contact with boaters and operators should be encouraged. While costly and time-consuming, this seems to be highly effective and allows for the gathering of anecdotal information. The establishment of a "Dock Walker" program in Massachusetts could be extremely valuable.
- ❑ If possible, the method of prioritizing the needs for pumpout services that is employed in Maine should be applied to Massachusetts. This would allow for new pumpouts to be established in areas where there are high densities of boats or water quality issues etc. However, it is important to remember that, even though a pumpout service exists there remain questions as to how effective it is. This study revealed that some services are clearly better than others are.

1 INTRODUCTION

1-1 Study Design

A study of vessel sewage pumpout services was conducted in the South Shore region of Massachusetts in the summer and fall of 2003. An anonymous survey was mailed to over 5,000 registered boaters in the South Shore communities of Cohasset, Scituate, Norwell, Marshfield, Duxbury, Kingston, and Plymouth (Figure 1-1). In addition, almost 70 boaters were interviewed at select marinas in August 2003 in these same communities. Those boaters who were interviewed were instructed to disregard the mail survey.



Figure 1-1. South Shore communities surveyed and the location of local pumpout facilities, based on data from the 2003 Massachusetts' pumpout guide and marina websites.

The boaters' survey had five aims: (1) to collect data on how boaters in the South Shore disposed of their sewage waste, (2) to learn how well informed boaters were regarding the location of sewage pumpouts, (3) to determine if boaters were able to find operational pumpout facilities when they needed them, (4) to learn what common problems had been experienced when using pumpouts, and (5) to determine if there were adequate facilities to service the South Shore boating community.

Pumpout operators in the South Shore were also surveyed as part of this research. The purposes of the operators' survey were: (1) to collect data on how frequently pumpouts were used, (2) to determine how each marina's pumpout service worked, (3) to learn what common problems operators experienced with the equipment, and (4) to learn how marina operators promoted the service.

In addition to providing much needed statistical data on the number and size of boats, where they were used, the frequency at which they were used, etc., these surveys provide insight into what boaters and pumpout operators knew about the environmental impacts of vessel sewage in the coastal environment. These data, along with a web search for other outreach efforts and a literature search on environmental education and outreach, were reviewed to assess the need and the form future outreach should take.

1-2 Background

1-2-1 Vessels as a Source of Nonpoint Pollution

Boating is a principal recreational activity in the coastal waters and rivers on the South Shore of Massachusetts, and ranks among the top 15 most popular sports nationwide (Walz 2002). A database of boaters with boats registered in the South Shore was developed for this study and revealed that there were more than 5,000 boaters in this region.

The number and size of recreational vessels has steadily grown over the years, drawing attention to pollution generated by this pastime. Along with urban development, agriculture, forestry, and marina operations, recreational boating is recognized nationally as a nonpoint source of coastal water pollution (USEPA 2002). Oil, gasoline, litter, chemical cleaners, anti-fouling paints, and sewage are all examples of polluting byproducts of boating. Of these sources, boat sewage is among the most difficult to confirm and subsequently limit. This is, in part, because sewage and its associated contaminants also have land-based sources and it is difficult, if not impossible, to distinguish between the two sources. Additionally, boats are not static—they are moving targets and if a boater discharges sewage illegally while he is underway, it is extremely difficult to spot, or to prove. However, a number of studies link boating with environmental impacts such as bacterial contamination (e.g., Faust 1976, Kay 1982, Eldredge 1989) and nutrient enrichment of the waterways. Bacterial contamination from untreated boat sewage may contribute to beach closings and nutrient enrichment has been linked to the destruction of important fish and shellfish habitats such as eelgrass beds. However, studies of boater compliance with the relevant laws designed to protect the environment are limited (Baasel-Tillis 1998).

1-2-2 Regulatory Context

Internationally, a United Nations sanctioned agreement known as MARPOL regulates certain types of pollution from boats in five sections called “annexes.” MARPOL Annex IV addresses vessel sewage. It has never been ratified because of a lack of political support from the more industrialized countries.

At the federal level, the Clean Water Act prohibits the discharge of *untreated* sewage from a boat into waters within three nautical miles of the shoreline. The Clean Water Act also requires all boats with a toilet permanently installed onboard to have a US Coast Guard certified marine sanitation device (MSD) Type I, II, or III attached to it. With a Type I or II MSD, which provide varying levels of onboard sewage treatment efficiency, it is *legal* to discharge within three nautical miles of shore, except within a designated No Discharge Area (NDA). Such a designation prohibits the use of Type I and Type II MSDs. Only Type III MSDs that hold the sewage in an onboard tank can be used within an NDA. As this sewage is untreated, it is illegal to discharge it into sea while the vessel is within three nautical miles of the shore. Legally, holding tanks can only be emptied further out at sea or via a pumpout facility.

State authority to regulate vessel sewage discharge is limited by the Clean Water Act, which prohibits a state from adopting its own statute to govern the design, manufacture, or use of a MSD. However, they do have the ability to ensure that the MSD regulations are enforced if authorized to do so by the US Coast Guard. In Massachusetts, such enforcement is under the jurisdiction of the Environmental Police. States can also prohibit the discharge of all vessel sewage by applying to the EPA for No Discharge Area designation. While within a NDA, the use of a Type I or Type II MSD is prohibited and it must be secured to prevent use. Type III MSDs may be used within a NDA. However, if a vessel is equipped with a y-valve, which allows for the overboard emptying of a Type III holding tank, this valve must be secured in the closed position.

Boating industry representatives have some strong reservations about NDA designations. While they generally support these designations in areas that have significant water quality problems associated with poor flushing, they feel that NDAs are frequently being designated in other areas where this is not the case. They argue that advances in onboard treatment technology mean that it is now possible to reduce bacterial levels in the effluent to such a degree that they would contribute little to existing levels in coastal waters. When Type III MSDs are used responsibly and undergo regular maintenance, they will theoretically cut the bacterial inputs from a vessel to zero. However, industry representatives suggest that due to a limited number of available and functioning pumpout facilities and frequent queues, some boaters forego these facilities and discharge the untreated contents of their Type III MSDs illegally. Such discharges result in the release of a number of gallons of potentially septic sewage into coastal waters. Additionally, even when boaters are behaving responsibly, if Type III systems are not regularly maintained or not emptied frequently enough, pollution can occur through leaks and spills (Baasel-Tillis 1998). Manufacturers of the top-end Type I MSDs argue that the use of such systems should be allowed in all coastal waters, including NDAs. They suggest that, if this were the case, demand for such systems would increase and this would, over time, lead to a significant decrease in the overall amounts of bacteria entering such waters as more and more boaters adopted these systems. A further argument is that the expansion of NDAs will lead to significant logistical problems for commercial vessels that are not equipped with Type III MSDs. Some of these vessels, for example the tugboats that transport oil barges along the East Coast of the US, have a live-aboard crew of six or more and yet have no space available to accommodate a Type III holding tank. Currently, many commercial vessels are equipped with Type II MSDs. These retain sewage on board while it is being processed prior to discharge. However, the system's capacity does not allow for the retention of sewage for any significant period and the retention time is directly related to the amount that the MSD is used. Many more boats are equipped with Type I MSDs compared to those with Type II as these tend to be more expensive and are largely designed for larger, commercial vessels.

Advocates of NDAs argue that, for environmental reasons, it is important to cut bacterial inputs as much as possible and that the most effective way to do so is through the banning of the use of systems that discharge treated sewage into coastal waters and encouraging the responsible use of Type III holding tanks. Furthermore, they argue that while modern onboard treatment technology can reduce bacterial levels significantly, they are much less efficient at reducing the biological oxygen demand (BOD) of the effluent. As increased BOD can be extremely detrimental in the marine environment, advocates of NDAs suggest that this, in itself, is a reason that the use of such systems should not be permitted in NDAs. It is interesting to note that there are currently few regulations controlling the discharge of greywater. This often includes water from a ship's galley and studies have shown that this can have very high BOD levels.

It is unlikely that those on opposing sides of this issue will easily resolve their differences. However, what is clear is that as more and more boaters are encouraged to use Type III MSDs, it is essential that there are sufficient pumpout facilities available to service the demand. And, more importantly, that existing facilities remain operational and strive to offer a high level of service so that boaters will not feel compelled to bypass the regulations and discharge untreated sewage illegally.

This survey aimed to determine the existing level of service and customer satisfaction with pumpout services in the study area and to ascertain the level of awareness that boaters had and the degree to which they complied with existing regulations and availed themselves of the existing facilities.

2 QUESTIONNAIRE FINDINGS

2-1 Results of the Boaters' Survey

The survey data were collected using two methodologies: a mailing to people who were registered as boat owners and via interviews conducted in the field in August 2003. In total, there were 347 usable responses to the mailing and 66 interviews were conducted. While more than 347 mail surveys were received, some were discarded as they had not been filled in completely and crucial data were missing or the vessel was only used in freshwater.

After discussion with the University of Massachusetts' Center for Survey Research, it was concluded that, as both surveys would be classified as "convenience" surveys and because the questionnaire used was the same in both cases, the data could be pooled. This resulted in a total of 413 surveys that were analyzed.

Of these, a total of 339 reported that they lived within the study area and specified which town. The greatest proportion of responses came from residents of Scituate (34.5%), Plymouth (28.3%) and Marshfield (19.5%). Smaller percentages were from Cohasset (6.8%), Duxbury (5.9%), Kingston (3.5%) and Norwell (1.5%).

Some of the questions contained in the survey focused on issues that would only be relevant to a subset of the boaters. For example, while Type I and II MSDs have a limited capacity to hold sewage onboard for a short time, only boaters who have a Type III MSD, and therefore require pumpout services, could accurately answer questions regarding the function of pumpout facilities. In these circumstances, only the relevant subset of responses was analyzed. This is explained as the results are presented below.

2-1-1 Number of Years as a Boater

The range of experience as a boater was great, with seven people having been boaters for a year or less and one boater claiming 70 years of experience. The mean number of years of experience for the 409 boaters who responded was 27.8 years (SE ± 0.77). This represents a significant amount of experience and may partly be an artifact of the interview methodology, in that vessels that were likely to have a MSD on board were specifically targeted. These tend to be larger vessels (over 90% of the vessels were greater than 16 feet) and, due to the cost of such vessels, it would be expected that the owners would be older (i.e. have longer experience as a boater). The relationship between average vessel length and years of experience can be seen in Figure 2-1. On average, boaters with more experience tended to have larger vessels, up until 50 years of experience, after which the average size again falls.

It is likely that many of the boaters estimated their years of experience. Summary data showed peaks at year groups 16-20, 26-30, 36-40 and 46-50 (Figure 2-2). The raw data showed significant peaks at 10, 15, 20, 25 years etc. This suggests that, not surprisingly, boaters tended to round up their boating experience to the nearest five years. If a more accurate estimate were needed, the question could be rephrased to ascertain "in what year the boater first owned a vessel", or "in what year the boater first started boating". However, such a degree of accuracy was not needed for this study and many people may not be able to remember the exact year that they first became a "boater".

2-1-2 Vessel Size Classes

The size of vessels is frequently an important factor when studying pumpout facilities. The reason for this is that EPA guidelines, and consequently much of the literature, assumes that vessels that are 16 feet or less will not have a Type III MSD on board. Of those vessels greater than 16 feet but not over 25 feet, 20% will be so equipped. Of those vessels that are greater than 25 feet but not more than 40 feet, 50% will have an Type III MSD and all vessels over 40 feet will have one.

For this reason, the boaters were asked to provide information on the length of their vessel. A few boaters owned more than one vessel and in these cases, the largest vessel length was used for analysis. There were 401 clear responses.

The survey included 12 vessels less than or equal to 16 feet, 217 over 16 feet but not more than 25 feet, 149 over 25 feet but not over 40 feet and 23 vessels greater than 40 feet (Figure 2-3).

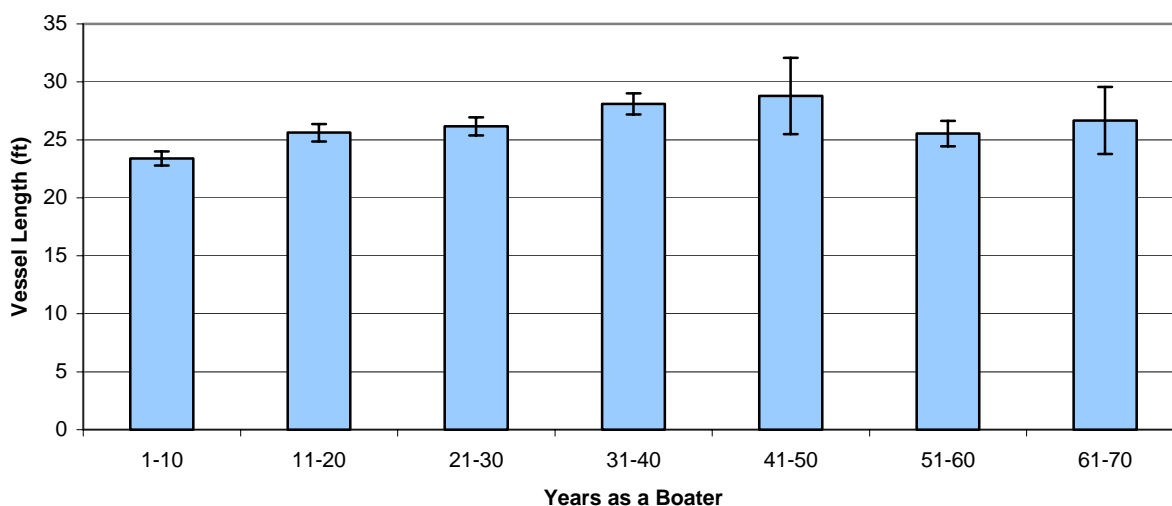


Figure 2-1. Mean vessel length (feet ±SE) against years of experience as a boater. n = 401.

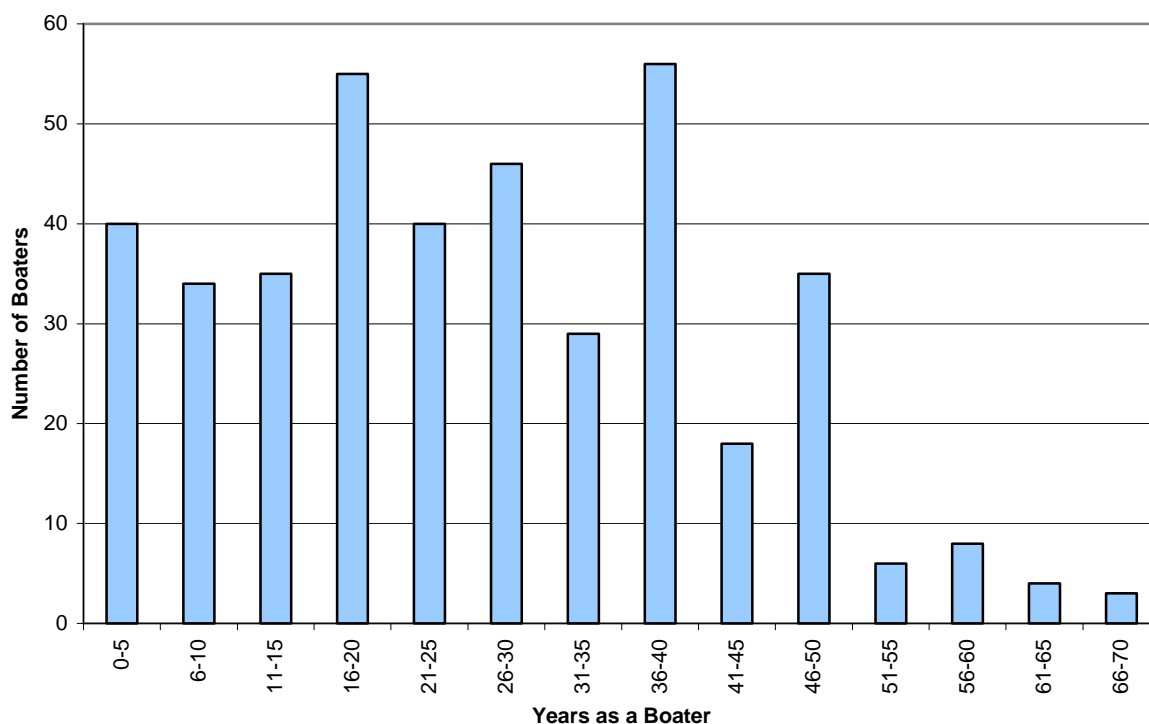


Figure 2-2. The distribution of boaters against the number of years of boating experience. n = 409.

While there were are a large number of vessels less than 40 but over 16 feet in length, there were few in both the smallest and largest category. This was to be expected. There is less demand for vessels over

40 feet due to the cost of purchasing such a vessel and due to the maintenance and running costs. For most people, such a vessel is beyond their financial means and also larger than they would need. Additionally, larger vessels tend to be slower and less easy to pilot.

There are a number of possible reasons why there were few vessels of 16 feet or less:

- The interview survey was conducted at docks and marinas and specifically targeted vessels that were likely to be equipped with a MSD. Generally, smaller vessels are less likely to be equipped with a MSD due to the limited amount of available space.
- These vessels are frequently transported to and from the water on trailers and so would not necessarily have been captured by the interview methodology.
- Smaller vessels are often powered by outboard engines. These frequently have external, portable fuel tanks that can be removed from the vessel and filled elsewhere. This means that the boater does not have to face the often long queues at fuel docks, and therefore would not be captured by the interviewer.
- Many people feel that a small vessel is of limited recreational use as it can only accommodate a limited number of people or equipment and tends to be cramped. Therefore, it is likely that the demand for small vessels is less than for larger ones.

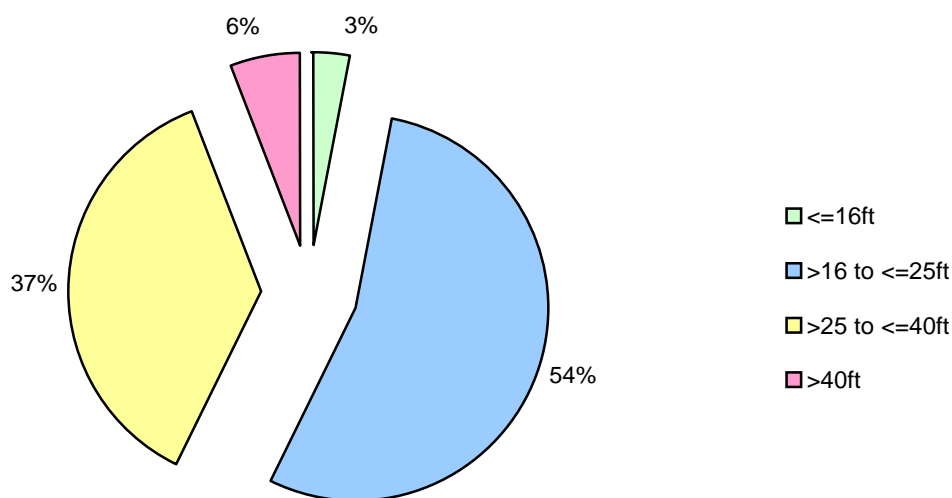


Figure 2-3 Percentage breakdown of vessels by size category. n = 401.

2-1-3 Recreational and Commercial Boater

While the survey was aimed more at the recreational boater, it was not possible to determine if the boat registration data included any commercial boaters. Therefore, with the mail survey, 13 respondents were commercial boaters and five classified themselves as both commercial and recreational. Six boaters did not respond to the question.

The interviewer was able to ascertain if a boater was commercial and therefore all of the final interviews were with recreational boaters (Figure 2-4).

The distinction between recreational and commercial boaters is important as many of the pumpout facilities within the study area received funding from the Clean Vessel Act through the Massachusetts Division of Marine Fisheries. As funding for the CVA is derived from taxes imposed on recreational

boaters, any pumpout that receives such funding is prohibited from servicing commercial vessels. Therefore, commercial boaters may have different views about local pumpout services.

2-1-4 Local versus Transient Boaters

The mailing survey was expected only to capture boaters who would classify themselves as local. However, the responses contained eight people who described themselves as transient. It is thought that they use their boats away from where they reside and, therefore, think of themselves as transient. Nine boaters did not respond to this question.

The interview method captured 12 transients (Figure 2-5) and was clearly a more effective method of gathering data from those visiting the area.

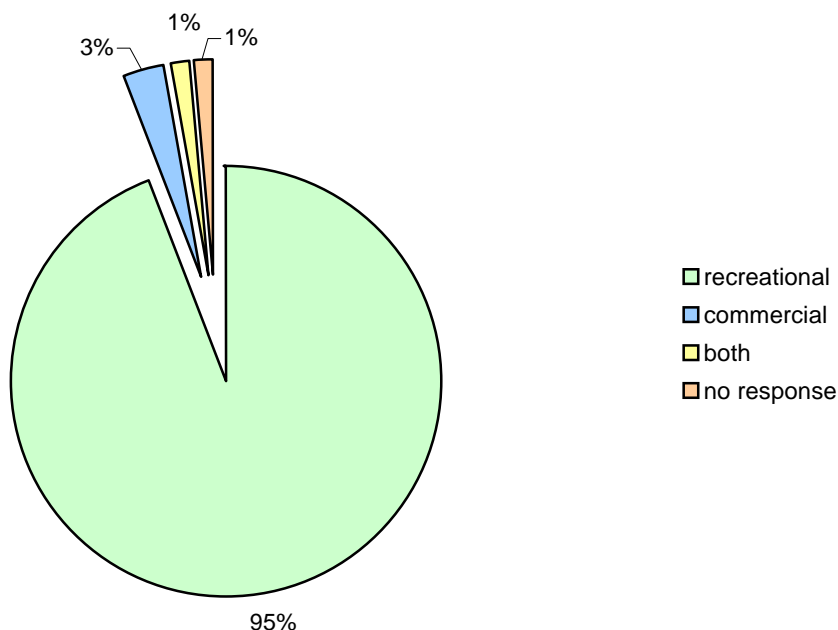


Figure 2-4. Breakdown of recreational and commercial boaters. n = 413.

2-1-5 Boaters' Awareness of Local Regulations

This question was particularly aimed at the transient boaters. It was designed to reveal if those boaters who were visiting the area had made the effort to discover if there were any local restrictions on sewage discharge and if the information was readily available. While the interviewer simply skipped this question when he was interviewing a local boater, there was some confusion with the mail survey. While only eight boaters identified themselves as transients in the mail survey, 116 people responded to the question. Of the eight transients, three were aware of existing regulations and five were not. Of the 108 locals who answered this question, all but five were aware of local regulations (Figure 2-6).

Of the transient boaters who were interviewed, all 12 claimed to be aware of the regulations. Therefore, of the total of 20 transient boaters who responded to the survey, 25% were unaware of any local regulations.

The difference between the responses from those who were interviewed (100% awareness) and those who responded to the mailed questionnaire (38% awareness) may be due to the different methodology. When being interviewed, a person may claim that they know about the regulations, even if they do not, so as to appear as an "environmentally friendly" boater. In an anonymous mail survey, the boaters have less reason to be untruthful.

The fact that 25% of the boaters who were identified as transients, and 5% of local boaters claimed that they were unaware suggests that more outreach and education would be beneficial and that specific efforts should be made to inform visiting boaters.

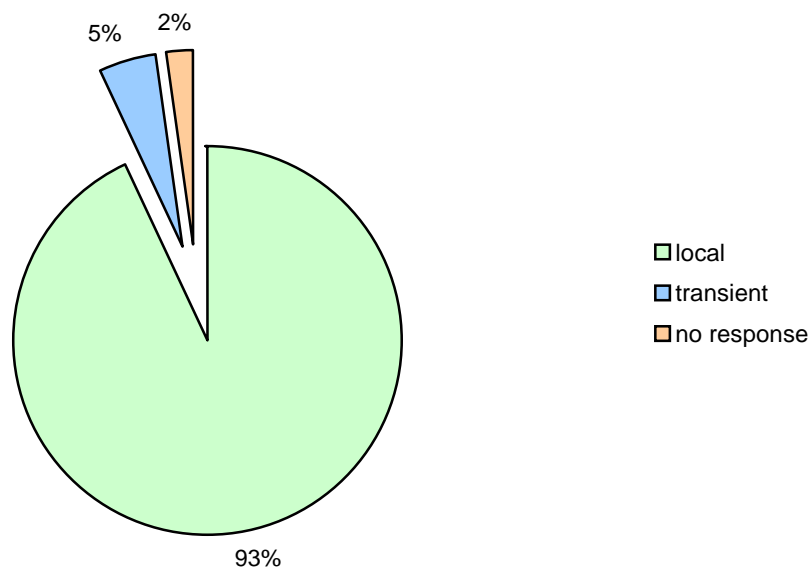


Figure 2-5. Percentage of local versus transient boaters who responded to the survey. n = 413.

2-1-6 Seasonal versus Year-round Boaters

Within the survey, there were a number of questions that related to the amount of time that the boaters used their vessel and the frequency that they used pumpout facilities. In order to be able to analyze these data it is necessary to have the answers in the same units (e.g. X days per year at sea, or Y times per year). Previous studies by the Urban Harbors Institute have shown that boaters will report their activities in a number of ways, such as hours per week at sea, or days per month etc. It was therefore necessary to ascertain if the boater used his boat throughout the year or only during the boating season.

Of the 413 respondents, 94% reported to be seasonal boaters (Figure 2-7). As the winter months are less than ideal for boating in Massachusetts, this is not surprising.

2-1-7 Boating Time

Previous surveys by the Urban Harbors Institute have revealed that boating behavior varies considerably. For some people, boating is their main form of recreation and they use their boat as frequently as possible. For others, their boat time is minimal. Regardless of the frequency of use, previous research by the Urban Harbors Institute has shown that there are also many different uses to which people put their boats. Some will be away from the dock and out on the water for significant periods of time, while others rarely leave the marina and simply relax on board. Those that tend to sit in the marina also rarely use the head on board, as they prefer to use the shoreside facilities. For those out on the water, this is not a practical option and therefore the use of the head would be expected to be greater.

In order to gauge boating behavior, the questionnaire asked the boaters to estimate the amount of time they were on board alongside the dock and the time on board and away from the dock. As the time and frequency were given in various units (e.g. hours per week, days per month etc.), it was necessary to convert these into standard units. It was decided that these would be days per year of boating activity. The boating season was estimated at 26 weeks per year. Therefore, a seasonal boater who reported that they used their boat for "one day a week" was analyzed as having a total boat usage of 26 days per year.

However, a year-round boater who reported the same frequency of use was analyzed as having a total boat usage of 52 days per year. For those whose responses were in hours rather than days, it was assumed that a day was 8 hours.

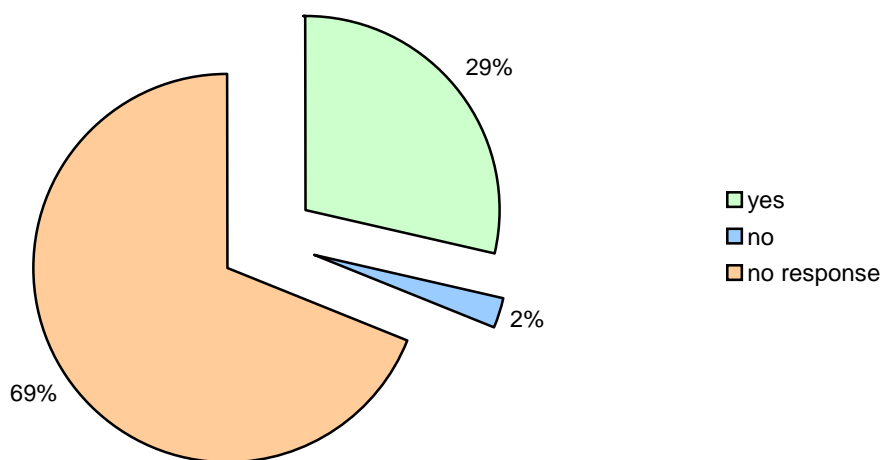


Figure 2-6. Percentage of boaters who were aware of local regulations governing the discharge of sewage. n = 413.

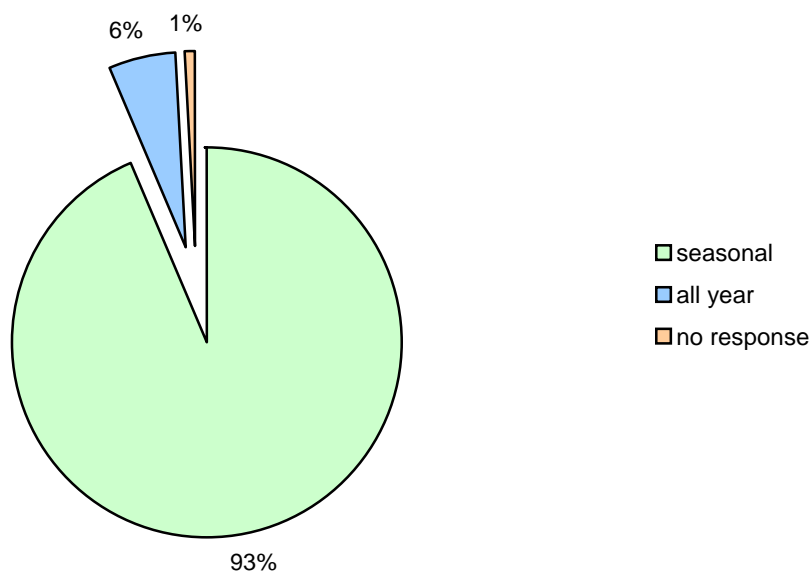


Figure 2-7. Percentage of seasonal versus year-round boaters. n = 413.

Some boaters did not provide estimates and others were unclear in their answers. Only those answers that were clear were analyzed. There were 168 useable responses about the time spent alongside the dock and 216 responses regarding time out on the water. The mean number of days per year that boaters

spent alongside the dock was 36.6 (SE ± 4.15). On average boaters spent 51.0 (SE ± 3.27) days per year out on the water.

2-1-8 Vessels Equipped with Marine Sanitation Devices

While Type I and II MSDs temporarily store sewage on board while it is being processed, Type III MSDs are specifically designed to store sewage in a holding tank until such a time as the vessel is over three nautical miles offshore and can discharge legally, or the boater accesses a pumpout service. All MSDs are permanently fitted in a vessel and have, by law, to be of a type certified by the US Coast Guard. An alternative to a fitted MSD is a “porta pottie”. This is a removable toilet, or “head”, that has a small holding tank. When full, the porta pottie can be taken ashore and emptied into a normal toilet or via a pumpout facility equipped with an adaptor. The use of a porta pottie, or any other receptacle that a boater may wish to use, is not governed by the same regulations that restrict the use of Type I and Type II MSDs within a No Discharge Area. However, it is important to know how common porta pottie use is. When preparing a No Discharge Area application, assumptions are made that X percent of vessels in Y size category will have a Type Z MSD. Previous research by the Urban Harbors Institute has suggested that this does not always hold true and it was therefore necessary to include porta potties as an unofficial type of MSD for this survey.

The survey asked boaters if their boat was equipped with a MSD (including a porta pottie). Of the 412 clear responses, 292 vessels were equipped with a MSD. Of the remaining vessels, 111 had no MSD and nine boaters did not respond (Figure 2-8).

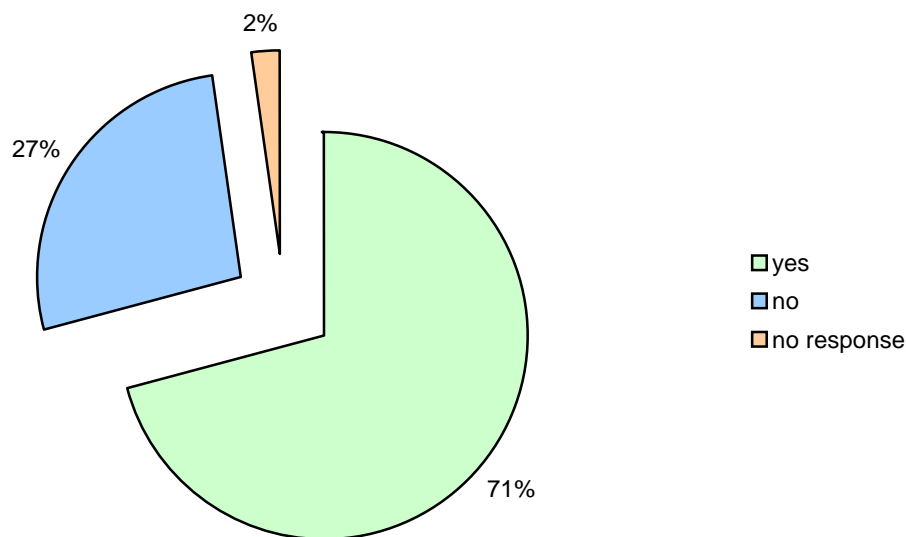


Figure 2-8. Percentage of vessels equipped with either a MSD or a porta pottie. n = 412.

2-1-9 Types of MSDs with which the Boats are Equipped

Those boaters who had a MSD on board were then asked to identify what type it was. As this question was only relevant to those who had a MSD, only their responses were analyzed (n = 292). Two boaters did not know what type of MSD they had. Of the remaining boaters, 11 reported a Type I, three reported a Type II, 160 reported a Type III and 116 boaters used a porta pottie (Figure 2-9).

It is clear that the majority of vessels were either equipped with a Type III MSD (that can be used even in a No Discharge Area) or a porta pottie (the use of which is not prohibited in a No Discharge Area).

As discussed earlier, the relationship between the size of a vessel and whether or not it is equipped with a MSD is important to ascertain because assumptions about this are frequently made when No Discharge Area applications are being considered.

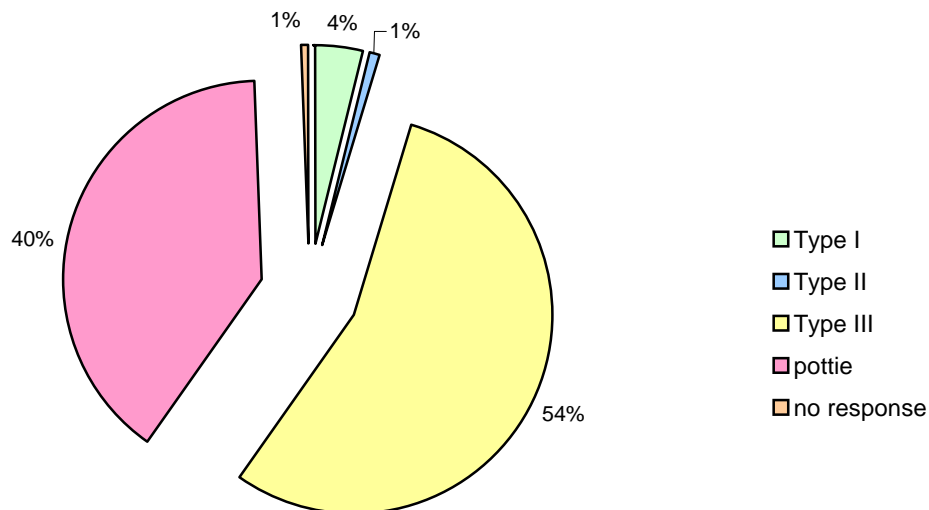


Figure 2-9. Types of MSDs fitted on the vessels. n = 292.

To analyze this, the percentage of vessels equipped with MSDs (including porta potties) for each of the four size classes of was calculated. Only responses that included data on the size of the vessel, if it was equipped with a MSD, and the type of MSD were analyzed. Therefore n = 401. The responses were used to determine the percentage of vessels in each size class that were equipped with a head of some sort, the percentage with porta pottie and the percentage with Type I, Type II or Type III MSDs (Table 2-1 and Figure 2-10).

It is important to note that there were few vessels in the smallest and largest size classes, and therefore the percentages given are not statistically robust. However, the data suggested that most vessels of 16 feet or less did not have a MSD. This would be expected as discussed previously. In the 16 to 25 feet class, over 56% of the vessels were equipped with a MSD or a porta pottie. However, the majority of these boaters used porta potties. In the two largest size classes, the majority of vessels were equipped with a Type III MSD, with a small number using a porta pottie and an even smaller number using Type I and Type II MSDs (Table 2-1).

Table 2-1. Percentage of vessels with and without a MSD or porta pottie by vessel size class.

	Vessel Size Class			
	<=16ft	>16 to <=25ft	>25 to <=40ft	>40ft
Total # responses	12	217	149	23
% without head	83.3	43.3	3.4	8.7
% with pottie	0.0	45.2	10.7	8.7
% with Type I	8.3	0.5	6.0	0.0
% with Type II	0.0	0.5	1.3	0.0
% with Type III	8.3	10.6	78.5	82.6
Total % with MSD	16.7	11.5	85.9	82.6

Both the EPA and CVA Guidelines seem to underestimate significantly the number of vessels that will have a Type III MSD and, as a result, also underestimate what the “adequate” number of pumpout stations will be. This is extremely significant as one of the essential elements necessary for a successful NDA is that there are sufficient facilities to ensure that boaters are not inconvenienced to such a degree that they illegally empty their holding tanks in the area. If there are insufficient facilities, more boaters may feel the need to adopt this practice and the result could be an increase in sewage contamination of the waters - the exact opposite of what the NDA designation was meant to achieve.

Further analysis was undertaken on only those vessels equipped with a porta pottie or MSD (n=290). There were only 2 vessels in the 16 feet or less class for which data on MSD type were available, and only 21 in the over 40 feet class. Therefore, the analysis of these two classes was of limited statistical significance and is presented here only to illustrate what the limited data show (Figure 2-10).

It is often suggested that vessels of 16 feet or less generally will not be equipped with a MSD. This study shows that while most had no head, almost 17% of these vessels were so equipped. It is also suggested that if they do have some sort of head on board, it is most likely to be a porta pottie due to space limitations. However, the data from this survey identified two vessels of this size that had permanently installed MSDs (one with a Type I and the other with a Type III). While Figure 2-10 may suggest that 50% of boats in this class were equipped with Type I MSDs and the remaining 50% with Type III, this is not a valid conclusion and the data are presented simply to show that some smaller vessels do have installed MSDs.

The data for the largest size class only represent 23 vessels but show that almost 9% of vessels over 40 feet in length were equipped with porta potties. This is not thought to be typical as the majority of vessels of this size have ample room on board for a MSD and those operating such vessels would normally insist on such facilities.

The data from the two intermediate size classes were more robust and are of greatest interest. In the 16 to 25 feet size class, the majority of vessels that had a head on board actually had a porta pottie (80%). Over 18% were equipped with Type III MSDs and less than 2% were equipped with either a Type I or Type II MSD.

In the 25 to 40 feet class, over 80% had Type III MSDs. 11% of them were equipped with porta potties and less than 8% were equipped with Type I or Type II MSDs (6% and 1% respectively).

This raises another issue. Of the 174 vessels that were equipped with a fixed MSD (i.e. not including those boaters who used porta potties), only 14 boaters (<8%) reported having a MSD that treated the sewage on board prior to discharging the effluent overboard. This is important for two reasons. Firstly, if this percentage is applicable to other areas of Massachusetts or New England then it means that the designation of a No Discharge Area is likely to inconvenience only a relatively small number of boaters. A No Discharge Area designation prohibits the use of Type I and Type II MSDs and only allows boaters to use a Type III MSD when within the area. Over 90% of the vessels surveyed that had a MSD were equipped with Type IIIs. Therefore, such a designation would have no impact on those boaters who were already using their Type III MSD responsibly. The second point that this raises is that, if there are actually so few boats currently using Type I or Type II MSDs, can continued problems with impaired water quality really be attributed to them? If boat sewage is an issue then perhaps, the more likely sources of such contamination are leaks from poorly maintained Type III MSDs, spillage or leakage during pumpout operations, the overboard emptying of porta potties or the illegal emptying of Type III holding tanks by boaters who are unwilling to access a pumpout facility.

Another potential source of boat sewage is from commercial vessels such as ferries that transport large numbers of passengers and need to adhere to tight schedules. While conducting studies in recent years, the Urban Harbors Institute has received many anecdotal reports of such illegal discharges occurring within Boston Harbor. These reports have come from a variety of sources including state and municipal officials, boat captains, other boaters and ex-employees of ferry companies. Work continues on how best to control and prevent such activities.

2-1-10 Whether or Not Vessels are Equipped with Y-valves

In larger vessels, the most common MSD was a Type III. These hold the sewage in a tank and this can be emptied at a pumpout station or to a pumpout boat. However, some vessels were equipped with a y-valve. Such a valve allows a boater to empty the holding tank overboard into the water. The sewage held in a Type III holding tank is untreated, and if the tank has not been emptied for a while, the contents may also be septic. The discharge of untreated sewage from a MSD is illegal if a vessel is less than three nautical miles from the shore. Boaters who frequently travel over three nautical miles offshore often take the opportunity to empty their holding tank there. However, many boaters do not go so far offshore and for them the only legal way to empty their holding tank is via a pumpout station or boat. If these nearshore boaters cannot, or are unwilling to, use a pumpout service and their vessel is fitted with a y-valve then the option is available simply to discharge the tank illegally overboard.

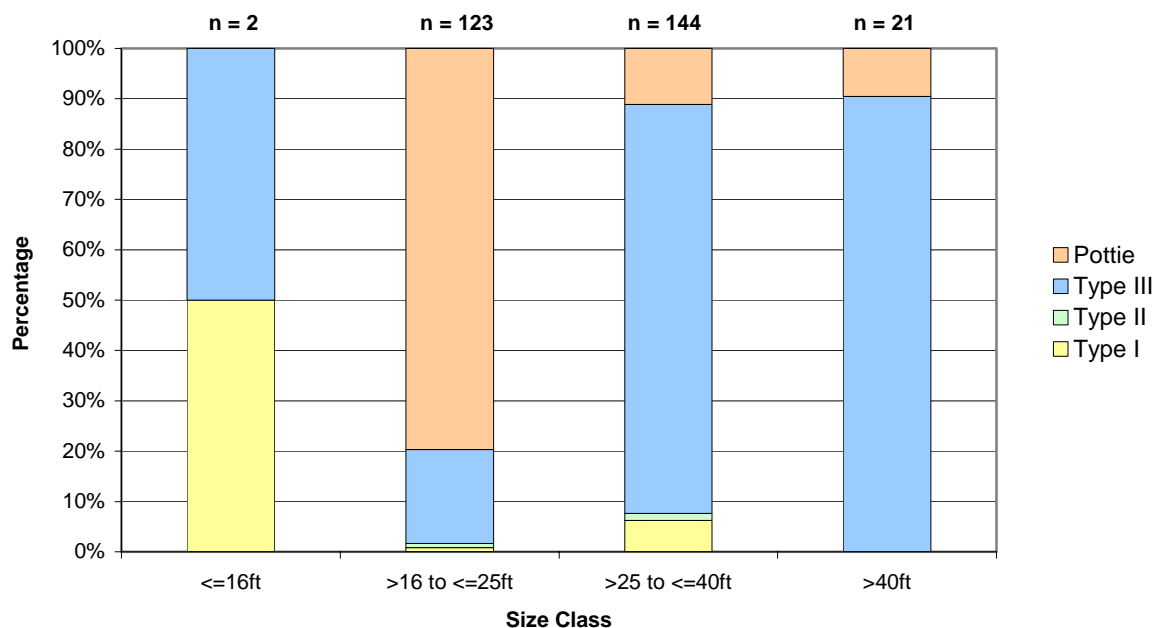


Figure 2-10. Percentage of various MSD types used on vessels in four size classes.

This survey found that of the 160 vessels that were fitted with a Type III MSD, 138 reported that their vessel was fitted with a y-valve. Of the remaining 22, four did not know or did not respond while 18 reported that they did not have the capability to empty the holding tank overboard (Figure 2-11). Vessels that are not equipped with a y-valve must use pumpout services if they are to continue to use their head.

As the discharge of untreated sewage is illegal in nearshore waters and such discharges are difficult to spot, especially if the vessel is underway, it is nearly impossible to know how common such events are. If they do occur then they will result in a large volume of bacteria- and nutrient-rich effluent entering the marine environment. The volumes involved will vary depending on the type of vessel and the size of the holding tank itself. But for example, West Marine (a boating equipment supplier), stocks tanks ranging from five gallons up to 55 gallons. Obviously large commercial vessels such as ferries may have much larger holding tanks to accommodate the waste from numerous passengers.

2-1-11 Awareness of Pumpout Facilities

The boaters were asked if they were aware of the availability of local pumpout services. The majority of boaters (95%) were aware of the services, with six boaters being unaware and one boater did not respond (Figure 2-12). Clearly, only the opinion of those who would use pumpout facilities was relevant, so only the responses from boaters with vessels equipped with Type III MSDs were analyzed (n = 160).

2-1-12 Knowledge of How to Access Pumpout Facilities

While awareness of the availability of facilities is important, this is not necessarily the same as knowing how to access them. Of the 159 boaters who were aware of the pumpout facilities, 94% responded that they did know how to access them. Ten boaters did not (Figure 2-13). Increased education and outreach would help to reduce this number.

2-1-13 Convenient Location of Local Pumpout Facilities

Of the 149 boaters who knew how to access the pumpout facilities, 123 (82%) felt that the local facilities were conveniently located. Of the others, 19 felt that they were not convenient and eight did not offer an opinion (Figure 2-14). As discussed previously, if facilities are not convenient then the chances that boaters may feel compelled to empty their holding tanks illegally may increase.

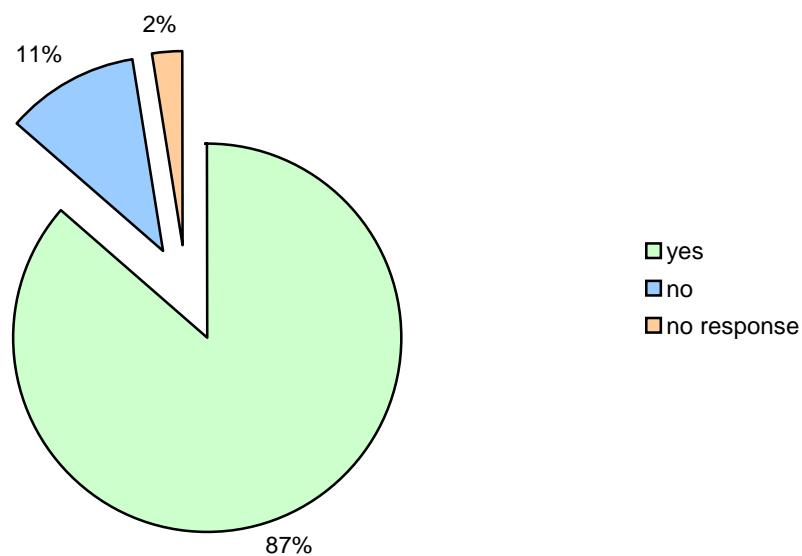


Figure 2-11. Percentage of vessels that were equipped with a Type III MSD and had a y-valve allowing for overboard discharge of the tank. n = 160.

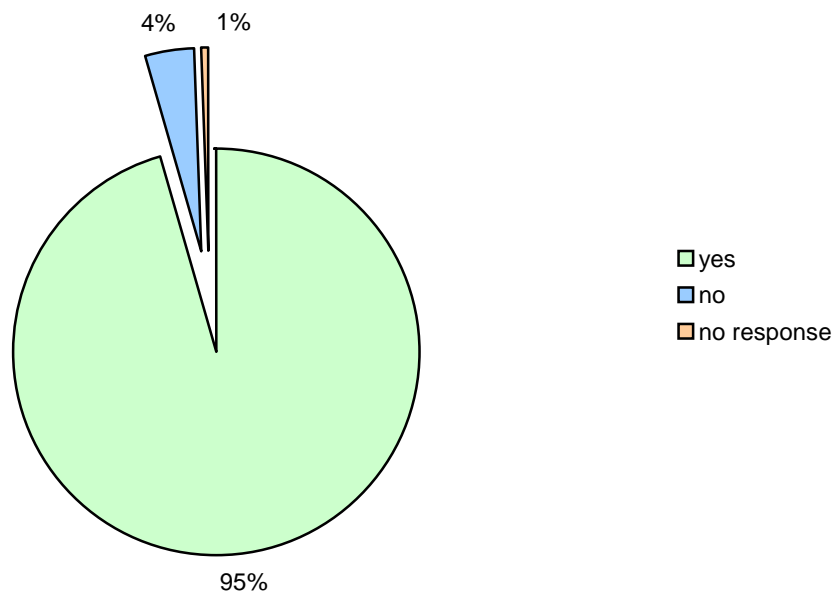


Figure 2-12. Percentage of boaters who were aware of the availability of local pumpout facilities. n = 160.

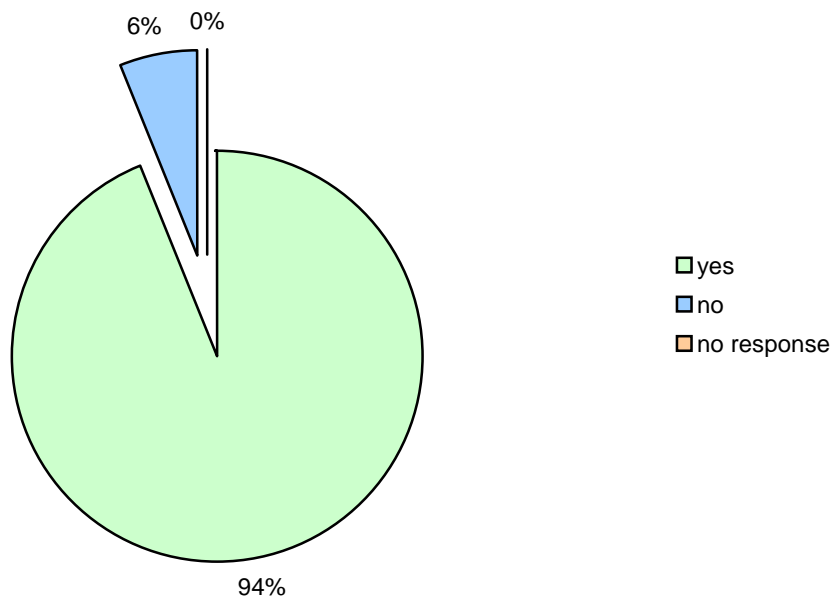


Figure 2-13. Percentage of boaters who knew how to access the local pumpout services. n = 159.

2-1-14 Frequency of Use of Pumpout Services

The boaters were asked to estimate how often they utilized local pumpout services. Once again, the replies were in various units (e.g. X times per week, once a month, twice per season etc.) and were therefore scaled up to number of times per year using the same assumptions as were made in the boat use analysis. On average, boaters accessed the local pumpout services 7.9 (SE ± 0.86) times per year.

2-1-15 Type of Pumpout Facilities Used

The 149 boaters who utilized the local pumpout services were asked if they normally used a dockside service, a pumpout boat, or both. The number of boaters using dockside services was similar to the number that used pumpout boat services (54 and 51 respectively). Of the remaining 44 boaters, 36 regularly used both types of service and eight boaters did not respond (Figure 2-15).

2-1-16 Level of Satisfaction with Pumpout Services

The 149 boaters were asked to rate their level of satisfaction with their local pumpout services. They were asked to rate it on a scale of zero to 10, with zero being highly unsatisfied and 10 being highly satisfied. Twenty boaters did not have an opinion or did not respond, of the others, the average rating was 7.6 (SE ± 0.23).

The boaters were also asked their level of satisfaction with pumpout services in general. There were 137 responses that provided an average level of satisfaction of 7.3 (SE ± 0.22). With both ratings of satisfaction, the responses ranged from zero to 10 (Figure 2-16).

The average level of satisfaction was also calculated by town using data from all local boaters who expressed a view. The boaters from Duxbury, Plymouth and Cohasset rated the local pumpout services above the local average of 7.6. Marshfield, Scituate, Kingston and Norwell were below average (Table 2-2).

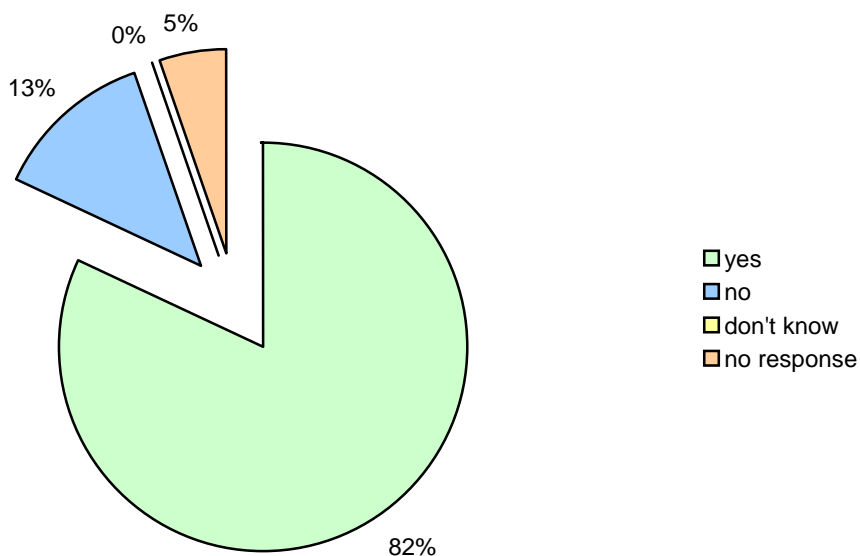


Figure 2-14. Percentage of boaters who felt that the local pumpout facilities were conveniently located. n = 149.

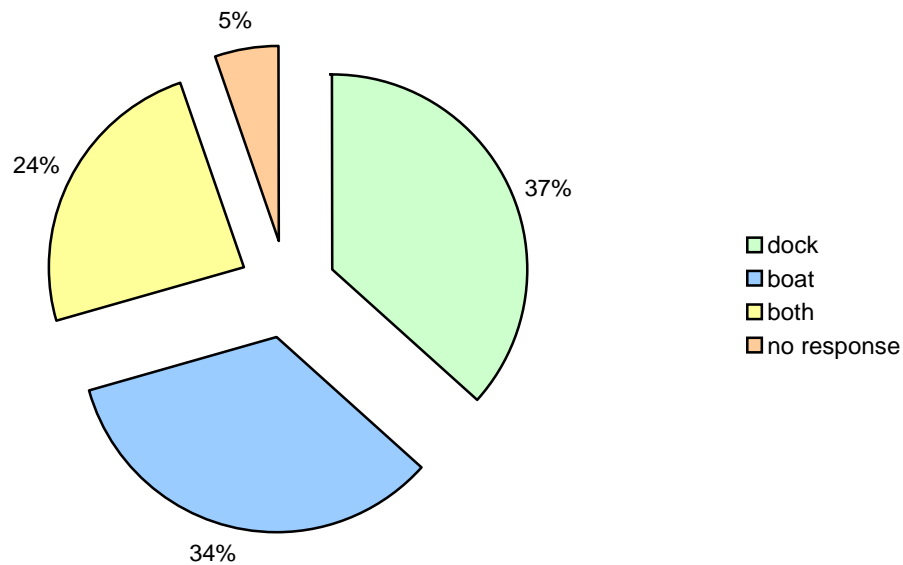


Figure 2-15. Percentage of boaters accessing dockside pumpout services, pumpout boats or both. n = 149.

2-1-17 Problems that Boaters have Experienced with Pumpout Services

Although the levels of satisfaction were reasonably high, the boaters were asked if they had experienced any problems accessing pumpout facilities. Of the 149 boaters, 49% reported that they had experienced problems at some time. The remaining 51% reported no problems.

Table 2-2. Average level of satisfaction reported by boaters from the towns within the study area. These data were derived from all the local boaters who expressed a view about local pumpout services. n= 145.

Town	Average Level of Happiness	SE	n
Duxbury	8.6	0.34	9
Plymouth	8.5	0.40	31
Cohasset	7.8	0.66	5
Marshfield	7.3	0.69	25
Scituate	7.0	0.35	70
Kingston	6.8	2.14	4
Norwell	6.0	0.00	1

The 74 boaters who had reported problems were asked to if they had experienced any of the following problems (Figure 2-17, Table 2-3):

- **Marina closed:** the boater went to the marina for pumpout services but the marina / pumpout service was closed.
- **No pumpout:** the boater went to the marina only to find that it did not offer pumpout services.
- **Broken:** the boater discovered that the pumpout equipment was inoperable.
- **No Staff:** the pumpout was operational but there were no staff to operate it.

- **Can't use:** the pumpout was self-service but the boater was unable to operate the equipment.
- **Inaccessible:** the pumpout services were located in a place into which the boater was unable to navigate their vessel.
- **Boat unavailable:** the boater requested a pumpout boat but the service was unavailable at that time.
- **Wait too long:** the queue for the pumpout was too long and the boater left without pumping out.
- **Cost too high:** the amount required for pumpout services seemed excessive and the boater left without pumping out.

Over 47% of boaters reported that they had had problems with a pumpout boat not being unavailable. Studies in other areas have suggested that some pumpout boat operators frequently do not actually pump out a vessel even though the service has been requested. However, there is also the fact that boaters can be unreasonable in their demands. If a boater radios to request a pumpout boat at the end of the day on the 4th of July, it is likely that the pumpout service will not be able to fulfill the request due to excessive demand.

Over a third of boaters had found that when they tried to access pumpout services, the system was not operational. From previous studies, it is clear that while some operators strive hard to maintain the service, others are less diligent. Anecdotal information suggests that some services are not operational for significant durations and this leads to boater frustration. If a boater makes the effort to try to access pumpout services only to find the system is down, this will probably increase the likelihood that boaters will simply illegally empty their holding tanks overboard.

A lack of staff to operate the pumpout was also a reasonably common complaint (34%). An operator during a previous study said that he often had problems with staffing when students were not available. While operating a pumpout may not be a job that offers much satisfaction, many people have suggested that, while the pumpout is free, boaters tend to tip well. While this may not be a draw to the "old hands", it is more likely to appeal to people such as students.

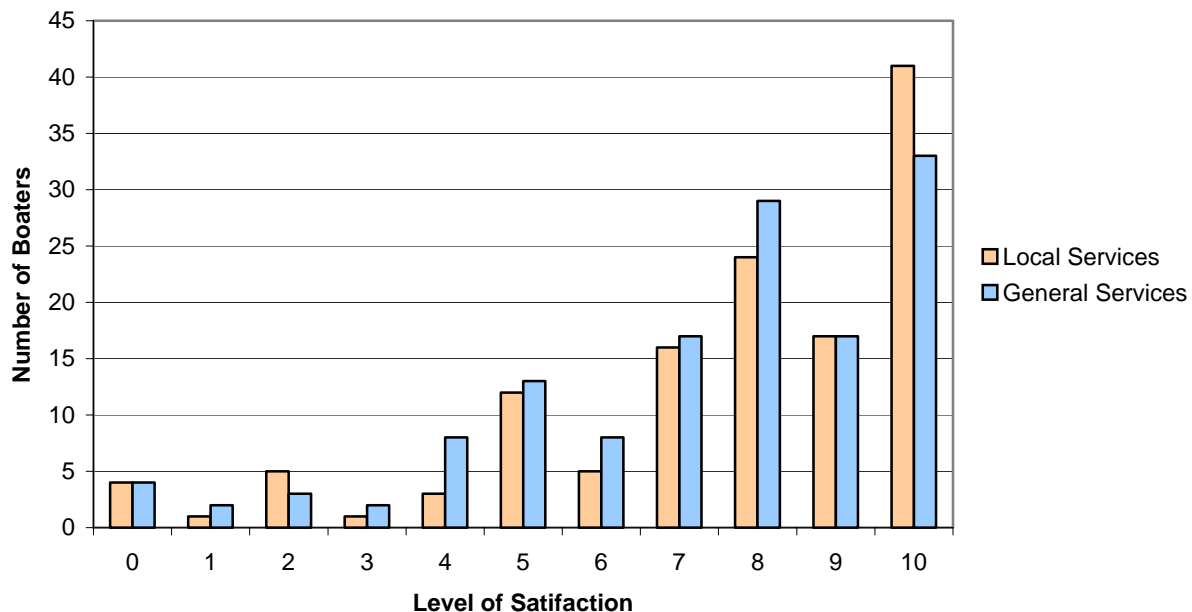


Figure 2-16. Levels of satisfaction on a scale of zero to 10 (highly unsatisfactory to highly satisfactory) for local pumpout services and pumpout services in general. n = 129 for local and n = 137 for general.

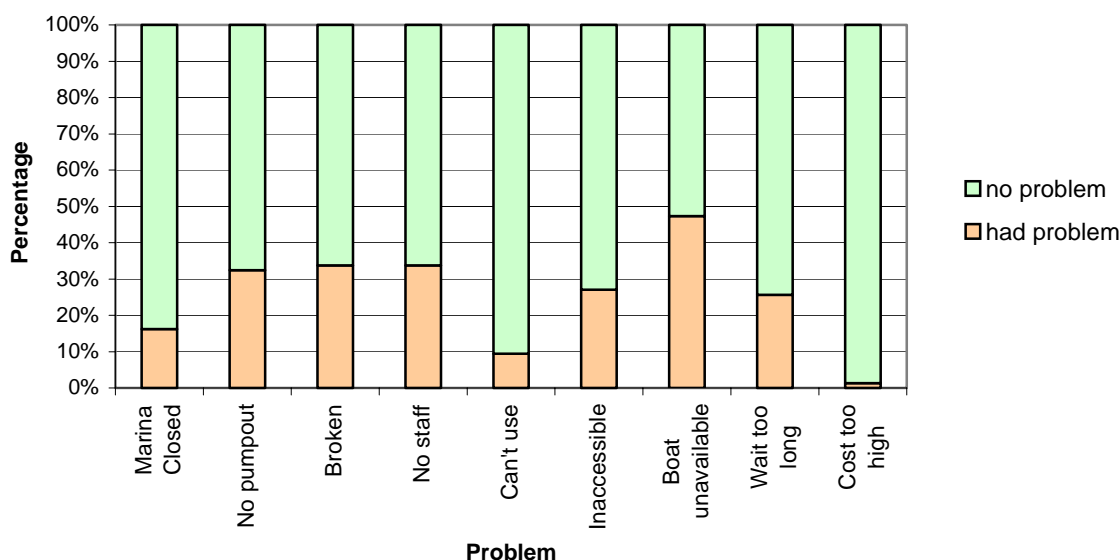


Figure 2-17. Percentage of boaters who had experienced specific problems with pumpout services. n = 74.

Almost a third of boaters reported that there was no pumpout service at the location that they had gone to. However, this does not necessarily mean that the location had advertised that it offered these services. It may have been that the boaters had made that assumption.

Shoreside pumpout services can come in two forms. Either they are a fixed system that ties directly into the municipal sewerage system, a septic system or a land-based holding tank or they are “carts”. Such carts can be wheeled along a dock to where the vessel is tied up. Clearly if the system is mobile, the chances are that accessibility is unlikely to be an issue. However, fixed systems mean that a vessel must get in to a particular area of a dock or pier. This may not necessarily be the most convenient site for the boaters, as it may be governed by other factors such as its proximity to the local sewerage system tie-in. Various factors can limit the accessibility. The water depth at the dock may be too shallow for deep draft vessels (such as sailboats with deep keels), or there may be little room to maneuver. The latter is a relative term that depends on a boater’s skill at piloting their vessel. However, it is still an issue. Boating skills vary considerably and new boaters, or those with new vessels, are likely to be less capable of maneuvering their vessels in tight spaces.

Table 2-3. Percentage of boaters who had experienced specific problems with pumpout services. n = 74.

Problem Type	% of boaters who had	
	experienced this problem	not experienced this problem
Boat unavailable	47.3	52.7
Broken	33.8	66.2
No staff	33.8	66.2
No pumpout	32.4	67.6
Inaccessible	27.0	73.0
Wait too long	25.7	74.3
Marina closed	16.2	83.8
Can't use	9.5	90.5
Cost too high	1.4	98.6

Over a quarter of boaters had suggested that the wait for a pumpout was too long. Once again, this is relative and depends on the boater. Many fixed, shoreside pumpouts are located at fuel docks. The idea behind this is that boaters can pump out at the same time as fuelling. In effect, this offers 'one stop shopping'. It takes time to take a vessel to a dock and to tie up. If boaters have to do this in order to fuel and then do it again in order to pump out, there is a good chance that they will forego the latter. However, fuel docks can be busy places, especially at a weekend during the boating season. At such times, there can be a significant wait time to get to the fuel dock, and therefore the pumpout.

While over 16% of the boaters reported that they had found the marina closed, it was not possible to ascertain if this occurred during operational hours or if the boaters simply attempted to access pumpout services outside of advertised hours.

Few boaters reported that they had been unable to operate the equipment themselves. Generally, operators require staff to run the pumpout and do not encourage self-service. However, some systems are self-service and therefore require the boater to know how to, and be willing to, operate the equipment. Figure 2-18 shows that almost 56% of boaters felt that they would be happy to use a pumpout system unsupervised, just over 22% were not and a little less than 22% either did not answer, or had no view.

The fact that the cost of pumpout services was not reported as a significant problem was to be expected as, in general, such services are free. However, discussions with a local Harbormaster revealed that he still encountered people who had delayed having their holding tank emptied because they had not wanted to "spend the money". This would suggest that, within the study area, there was a degree of misunderstanding that might be overcome with increased outreach and education regarding pumpout services and the fact that most of them are free.

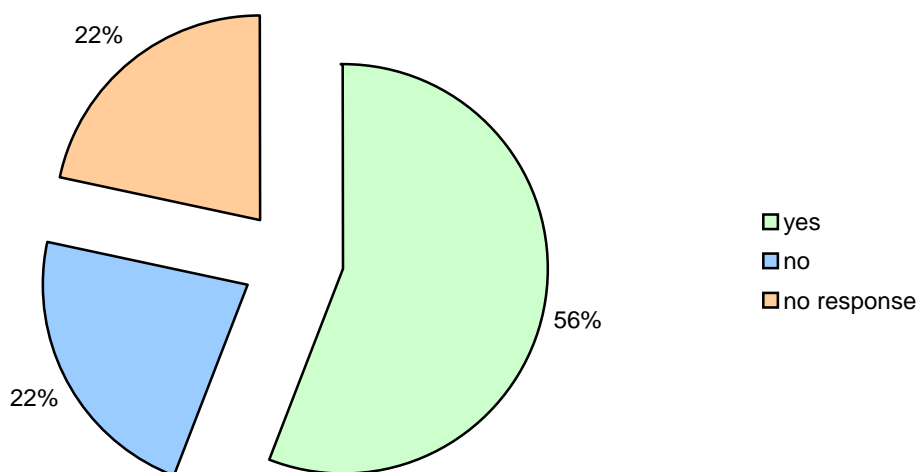


Figure 2-18. Percentage of boaters who were happy to pump out their own vessel without supervision. n = 160.

2-1-18 Boaters Awareness of Enforcement Authorities

The boaters were asked that if they witnessed an illegal discharge of sewage, did they know to whom they should report it. Over 70% responded that they did know. Over 20% did not and over 9% did not respond (Figure 2-19).

There are a number of authorities that boaters may report to and these depend on where the illegal discharge occurs. If it occurs within a marina, the most likely person that a witness would report to is the marina operator. If it occurs in a municipal harbor then the authority may be the Harbormaster. Otherwise,

boaters tend to feel that illegal discharges should be reported to the US Coast Guard. However, the USCG has no authority over illegal sewage discharges. Their authority simply extends to ensuring that vessels are equipped with USCG certified MSDs. If the USCG does board a vessel within a No Discharge Area, they may verify that Type I or II MSDs are secured and, therefore, cannot be used. However, when illegal sewage discharges are reported to them, they pass this information on to the relevant state authority. However, there seems to be some confusion within state government as to under whose jurisdiction such discharges fall. In fact, they fall under the jurisdiction of the Environmental Police. Enforcement is always identified as a major problem associated with No Discharge Areas and it is essential that the jurisdictional issues are addressed and the public is informed about what to do if they witness, or suspect an illegal discharge. As the USCG are increasingly focused on Homeland Security, it is likely that their ability to field reports will be severely restricted for the foreseeable future.

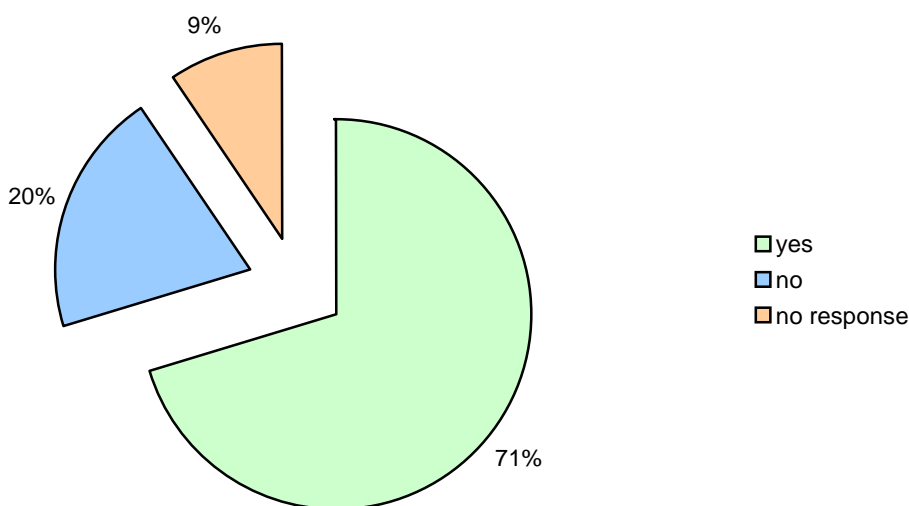


Figure 2-19. Percentage of boaters who knew to whom to report an illegal sewage discharge. n = 160.

2-2 Findings and Recommendations based on the Results of the Boater Survey

Twenty-five percent of transient boaters and 5% of local boaters who were surveyed claimed that they were unaware of local regulations regarding the use of MSDs and the discharge of sewage from boats. This suggests that increased outreach in the area should be considered and that this should largely target the transient boater population to ensure that they are made aware of any such regulations. This will be of particular importance if any NDAs are designated in the area in the future.

Of the 160 boaters who had Type III MSDs, 95% were aware of the local pumpout facilities and 94% of these knew how to access them. This suggests that outreach or advertising have been effective but that there were still some boaters who reported that they did not know about the services. A local Harbormaster reported that at the end of the season he still encountered boaters who had delayed accessing a pumpout facility for as long as possible “due to the cost”. As most of the local facilities offer pumpout services for free, this suggests information about these services had not reached all boaters.

A high percentage of boaters (82%) felt that the local services were conveniently located. The average rating of their level of satisfaction with these services (on a scale of 0 to 10, with 0 being highly unsatisfied and 10 being highly satisfied) was 7.6 with Duxbury, Plymouth and Cohasset being above average and Marshfield, Scituate, Kingston and Norwell being rated below average. While for some of these towns the number of boaters who responded was low (e.g. n = 1 for Norwell), this does suggest that there is some variation in the quality of pumpout services between towns within the study area. If further research were undertaken in the future, it would be helpful to target a greater number of boaters from those towns where

the number of respondents to this survey was low. Additionally, it would be useful if boaters were to rank particular marinas or pumpout services so that a direct comparison can be made.

While the levels of satisfaction were reasonably high, 49% of respondents reported that they had experienced problems with pumpout services in the past. Over 47% of these reported that the pumpout boat had been unavailable when they requested service. Between 25 and 34% of these boaters reported that the wait was too long, the pumpout was inaccessible, there was no pumpout at that location, no staff was available or the pumpout was out of operation. The problems that people have experienced with local facilities warrants further study because, if boaters feel that accessing pumpout services is too much of an inconvenience, they may forego the services completely and simply discharge the contents of their holding tank illegally. However, it is important to remember that even though boaters reported having experienced problems, it is difficult to ascertain if their demands were reasonable. For some, a wait of 5 minutes may be considered too long while for others this may not be the case. Therefore, many of these types of “problems” are extremely subjective.

It appears that the percentage of local boats that are equipped with Type I or Type II MSDs is small. This suggests that the designation of a local NDA would only affect a small number of boaters, as such a designation does not prohibit the use of either a Type III MSD or a porta pottie. Conversely, if a NDA designation is being applied for in order to improve water quality, will prohibiting approximately 5% of boaters from discharging treated sewage lead to significant improvements? If water quality is currently being degraded by sewage from boats, the major causes may be illegal discharges from Type III MSDs, boaters emptying porta potties and / or leaks from onboard systems and pumpout facilities themselves.

The survey revealed that, within the study area, the percentage of vessels of various sizes that were equipped with Type III MSDs differed significantly from those suggested in EPA and CVA technical guidelines. The most significant difference was in the over 25 to 40 feet class. The EPA and CVA suggest that 50% of such vessels will be equipped with a Type III MSD. This study suggests that this figure is actually over 80%. If the EPA and CVA guidelines are used to estimate the “adequate” number of pumpout facilities for a given area, they will significantly underestimate this number. This study suggests that the guidelines should be revisited with the aim to develop a more robust means of estimating what should be considered to be an “adequate” number of facilities. This study found that 87% of vessels equipped with a Type III MSD were also equipped with a y-valve that allows onboard discharge of untreated sewage. Therefore, if current guidelines are being used that under-estimate the necessary number of facilities, this may lead to an increase in the frequency that boaters illegally discharging the contents of their Type III MSDs and result in an increase in the amount of sewage entering the local coastal waters. More importantly, such sewage would be untreated and potentially septic.

2-3 Results of the Operator Survey

The operators of pumpout facilities within the study area were mailed questionnaires along with cover letters explaining the scope of the project. In total, 12 facilities were identified and contacted. If no response was received then the mailing was followed up with a telephone call or a site visit to encourage participation. In total, seven completed questionnaires (58%) were received.

2-3-1 Year Facilities were Opened

The majority of the facilities (71%) reported that they first opened as a pumpout in the 1990s. One had opened in 2002 and one reported that it had been open for “over 20 years” (Figure 2-20).

2-3-2 Type of Facility

The operators were asked if they were equipped with a shoreside system (either a fixed system or a cart), a pumpout boat, or both. The majority of the facilities only offered shoreside pumpouts that required the boaters to come to the marina or dock (57%). Three facilities operated pumpout boats and one of these also had a shoreside system (Figure 2-21).

2-3-3 Sewer Connections and Facilities for Porta Potties

Six of the seven facilities reported that they had a direct connection to the municipal sewer system and that it was through this that they disposed of the sewage that they had pumped. Only one facility was equipped with a tank to hold the sewage until a truck was required to empty it (Figure 2-22).

The operators were also asked if there were facilities available for boaters to empty porta potties, and if there were such facilities, to describe them. Only five of the operators responded with 80% of these reporting that boaters were able to empty porta potties at their facility (Figure 2-23). Three of these operators had restrooms where boaters could empty them, while one had an adaptor for the pumpout system that could be used to empty potties (Figure 2-24).

2-3-4 Water Depth and Other Restrictions that Limit the Use of the Facilities

Six of the seven operators provided information about the minimum water depth at, or in the approaches to their facility. The water depths ranged from 6 to 9 feet at mean low water (MLW). Four facilities reported only 6 feet of water at MLW, one reported 8 feet and one reported 9 feet.

When asked if there were any other restrictions that limited the access to, or use of their facility, all operators responded. Five (71%) reported that there were no significant restrictions or limitations. One operator reported that the hose on his system restricted the use of the pumpout as it was too short and could not reach all the necessary berths. Another operator said that at extreme low tides access could be limited due to the water depth alongside. Additionally, he felt that the location of his facility (two miles off the main part of the North River) meant that some boaters would not be willing to travel to his facility for pumpout. A third operator, while not classifying it as a restriction, stated that having the pumpout system on the fuel dock meant that at particularly busy times, accessing the pumpout could be difficult.

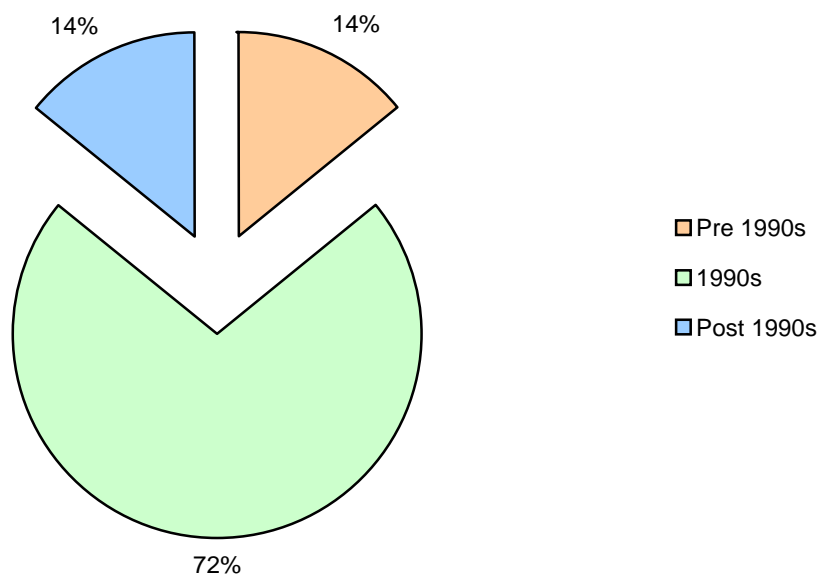


Figure 2-20. Percentage of facilities that opened before the 1990s, during the 1990s or after the 1990s. n = 7.

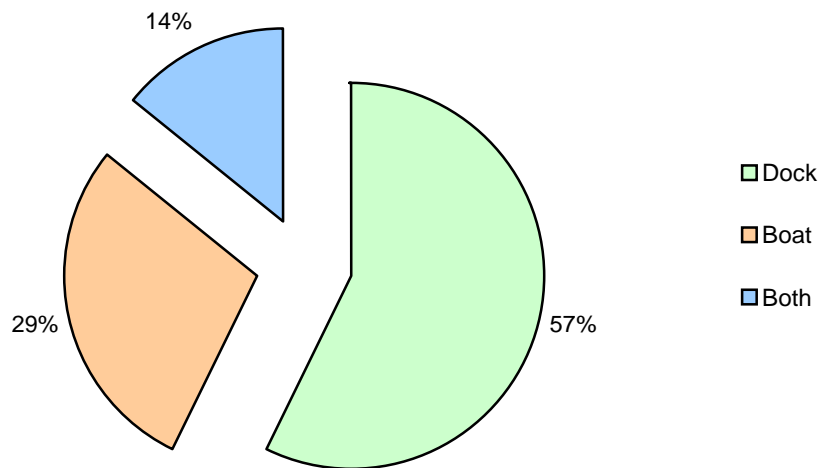


Figure 2-21. Percentage of facilities with shoreside systems, pumpout boats or both. n = 7.

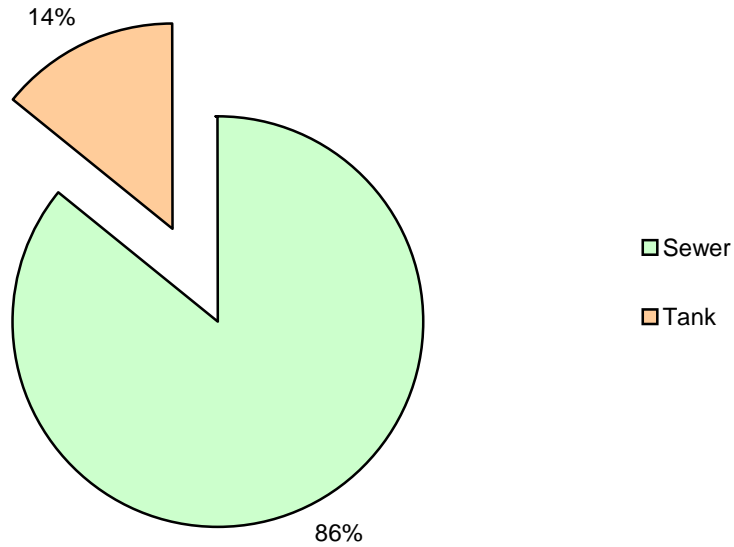


Figure 2-22. Percentage of facilities with direct sewer connections and those using sewage-holding tanks. n = 7.

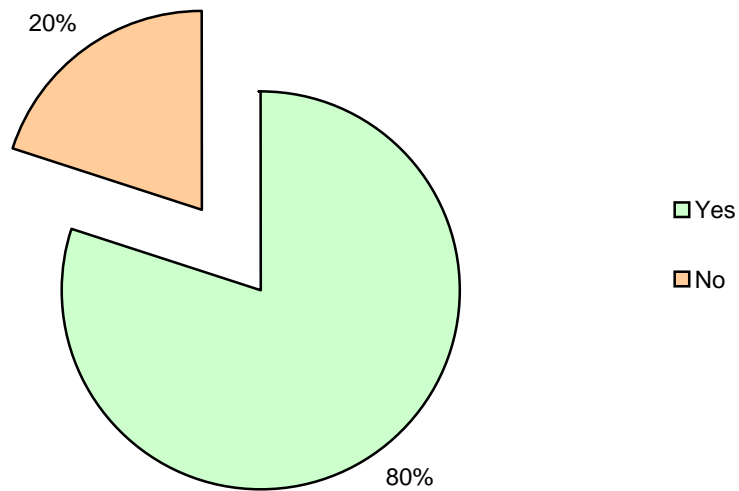


Figure 2-23. Percentage of facilities for boaters to empty porta potties. n = 5.

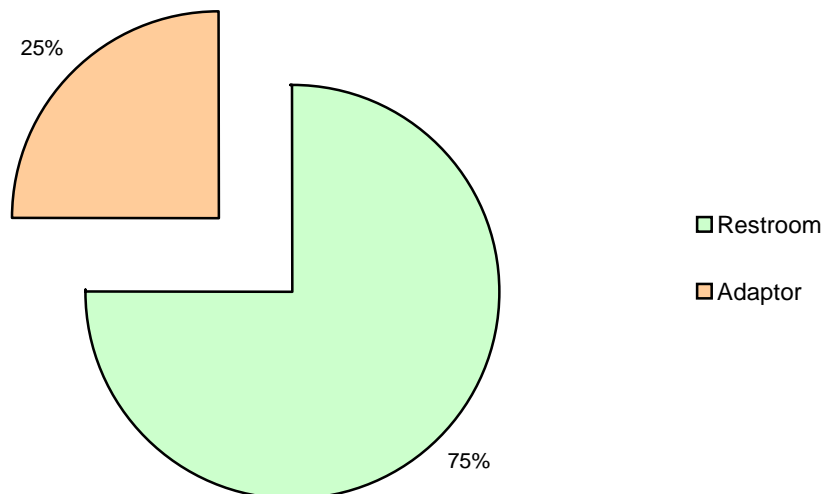


Figure 2-24. Types of facilities for boaters to empty porta potties. n = 4.

2-3-5 Opening Hours and Cost of the Pumpouts

All seven operators provided details of their opening hours. No facilities were open during the winter. Two facilities opened at the beginning of April, with the rest opening at various time during May. One facility stayed open through into December, but the other six facilities closed in October (n = 3) or November.

Five facilities did not report any season variations in opening hours. Those that did have seasonal variations either opened earlier or stayed open later during the summer, or both. In general, summer opening hours varied little (opening between 7am and 8am). Closing times varied more significantly with some facilities closing at 4pm, while others reported remaining open until 2am during the summer months. Only one facility reported any variation in hours between weekdays and weekends. In this case, the facility opened slightly later on weekends (9am rather than 7am) and closed slightly later (5pm rather than 4pm).

All seven facilities gave details of what they charged for pumpout services. All but one facility had no fee. The facility that did charge was a private marina and charged a \$10 fee to non-members.

2-3-6 Number of Vessels Serviced and Gallons Pumped

The operators were asked to estimate the number of boats that they serviced and the number of gallons of sewage that they pumped in a given period. The periods that the operators used varied from X boats (or gallons) per day, per week, per month or per season. These were therefore standardized into an estimate of boats, or gallons, per week. Obviously, there will have been some seasonal variation. While this may not have been a perfect measure, previous studies by the Urban Harbors Institute have suggested that few records are kept of pumpout activities and that, if they do exist, they are not readily available. However, such data would provide significant insight into how busy particular services were in comparison to others and would be useful in ascertaining if an area did, in reality, have adequate services. An additional problem was that one operator estimated that they serviced between 70 and 140 boats per week. Therefore, an average and standard error were calculated for both the lower and the higher estimates. All operators provided estimates of the number of boats that they serviced with the lower average being 20 boats per week ($SE \pm 9.0$). The higher estimate was 31 boats per week ($SE \pm 18.6$). The lowest estimate was two boats per week and the highest was 140.

Five operators provided estimates of the amount of sewage that they pumped, the remaining two did not know. These varied from 145 gallons per week, up to 4,200 gallons per week. The average was 1030 gallons ($SE \pm 793.9$).

2-3-7 Vessel Sizes and Boater Information

The operators were also asked to estimate the size of the vessels that they serviced. The size classes that were used in the questionnaires differed slightly from the classes that were used in the analysis of MSDs reported in the boater questionnaire. However, in general they show similar trends. The operators reported that they serviced no vessels of 16 feet or under. On average, 23% ($SE \pm 10.8$) of the vessels were over 16 feet but not more than 25 feet in length. The majority of boats (66%, $SE \pm 10.3$) were greater than 25 feet but not over 45 feet. However, the operators estimated that on average, 11% ($SE \pm 8.0$) were greater than 45 feet in length (Figure 2-25).

The boater survey revealed that 54% of respondents had vessels that were over 16 feet but not more than 25 feet in length (Figure 2-3) and 37% had vessels in the next largest size class. However, the analysis of the types of MSDs with which these vessels were equipped revealed that less than 11% of the smaller, and almost 79% of the larger class of vessels were equipped with Type III MSDs (Table 2-1) and would, therefore require pumpout services. This explains why the operators reported that most of the vessels that they service were in the second largest size class. While many vessels in the largest category were equipped with Type III MSDs (83%; Table 2-1), boats of this size are simply less common than smaller ones and therefore are unlikely to be frequent users of pumpout facilities.

Based on responses from five operators, an average of 74% ($SE \pm 12.7$) of their pumpout customers were locals. However, this figure varied significantly with the lowest estimate being 25% and the highest being 99%.

Six operators responded to the question asking them to estimate what percentage of their customers were recreational boaters as opposed to commercial operators. The average was that 98% ($SE \pm 1.6$) were recreational with the lowest estimate being 90% and the highest being 100%. The responses to this question are always difficult to assess because if a facility receives CVA funding, as is frequently the case

in the study area, it is prohibited from servicing commercial vessels. Therefore, operators are unlikely to reveal the fact if they are, in fact, servicing commercial customers.

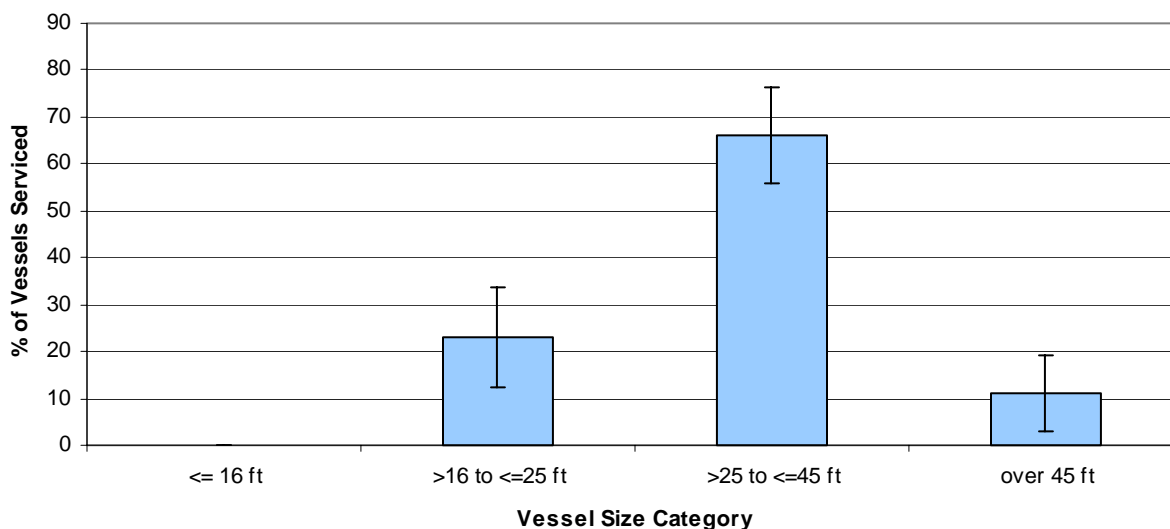


Figure 2-25. Percentage of boats of various size classes serviced by the pumpout facilities. n = 6.

2-3-8 Operational Logistics

The operators were asked how they let boaters know that they offered pumpout services. Of the six methods identified in this study, 86% of the operators used signs to alert boaters to the fact that they offered pumpout services. Three operators (43%) utilized the internet. This may have been in the form of a website specifically for the facility, or a more general site that listed marina facilities. Two operators reported using buoys and two reported using flyers. Word of mouth was the main method for one facility. None of the facilities reported using mailings to increase customer awareness (Figure 2-26).

Only two of the six operators who responded reported that they actively tried to attract new customers.

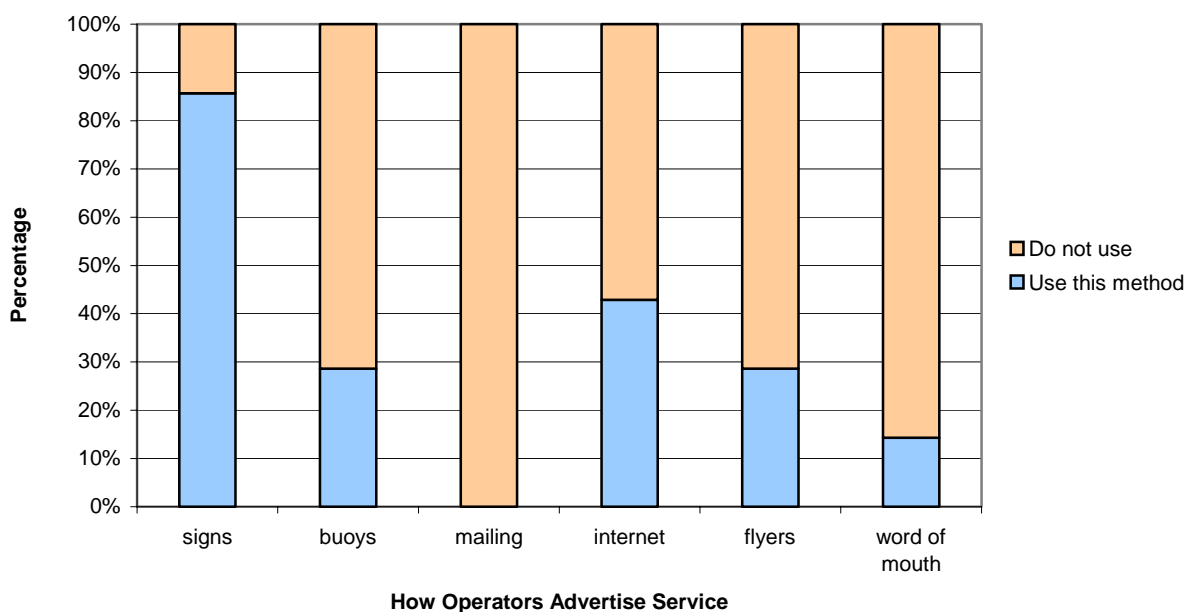


Figure 2-26. Different methods used by operators to advertise their pumpout services. n = 7.

The operators were asked how boaters could request pumpout services. Six out of seven operators (86%) accepted requests by radio and by telephone. Five operators (71%) would respond when boaters simply asked for pumpout services. Only one out of the seven operators had a system in place by which boaters could request pumpout by either a form or via e-mail (Figure 2-27).

While there were clearly limits to the methods by which boaters could request pumpout services, three out of six operators reported that boaters could use the pumpout facilities without supervision. A self-service system means that the operators do not have to dedicate staff to the pumpout. However, unsupervised usage also increases the possibilities of misuse of equipment leading to damage or spillage. While unsupervised use was allowed at three facilities, five of the six that responded (83%) also provided staff to operate the pumpout. The apparent contradiction here is explained by the fact that some facilities had more than one system available. For example, one facility had both a pumpout boat and a shoreside facility. The shoreside facility could be used without an attendant. Additionally, one private facility allowed unsupervised use out of hours, but only by members.

Only one of the seven facilities (14%) would pump out a boat without the owner being on board.

Only 43% of the operators (three out of seven) had any referral system in place so that boaters could be directed to an alternative pumpout if their primary one was closed or out of operation.

It is reassuring to note that all of the operators were aware of the Clean Vessel Act website and were familiar with their literature. However, this is perhaps not surprising given that all but one facility received some sort of federal or state funding towards their set-up costs. Such funding covered between 75 and 100% of the set-up costs at six facilities. When asked about how much of their operational costs were covered by federal or state funding, only five operators responded. Of these five, four received funding to cover 75% or greater of their annual operational costs. The other operator reported that funding only covered 25% of the annual operational costs. Only two out of the seven operators reported that they were required to offer pumpout services as part of a DEP permit.

When asked, only four operators provided an estimate of their annual maintenance costs. These ranged from zero to \$300 dollars per year, with an average of \$133.33 (SE±49.4).

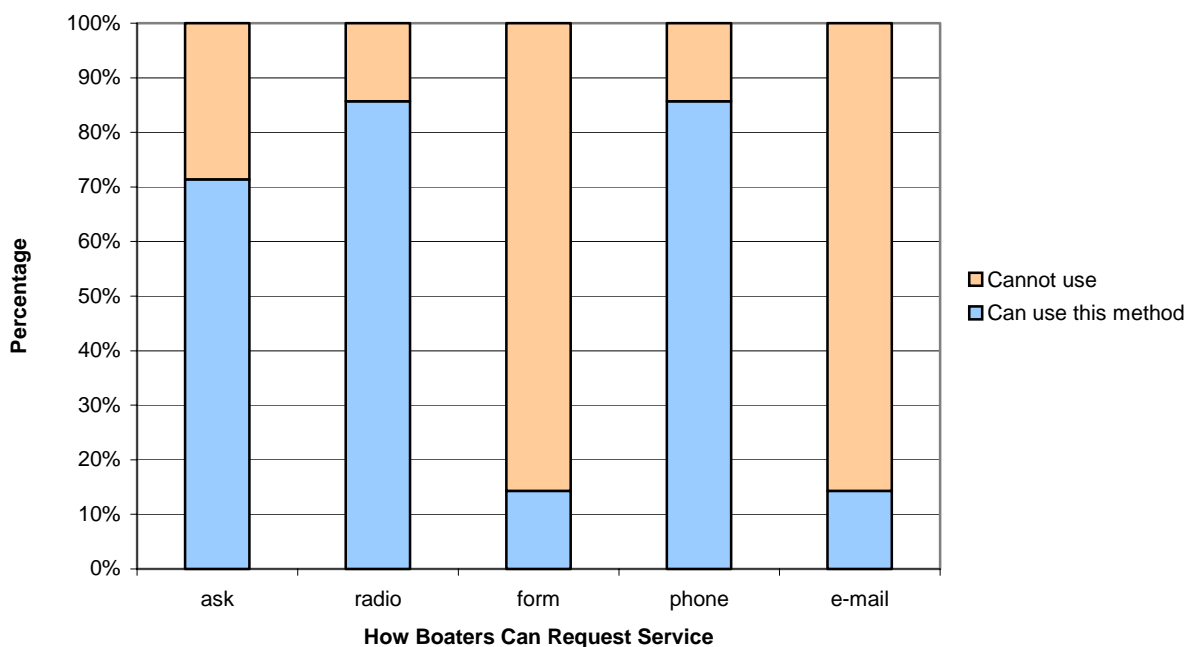


Figure 2-27. Percentage of acceptable methods by which boaters can request pumpout services. n = 7.

2-3-9 Operational / Maintenance Problems

Although all the operators responded, only two (29%) reported that they had a non-scheduled shutdown in the previous season. One reported a 5-day period when the pumpout was not operational due to staffing problems. Another reported a 2-day non-operational period due to problems with the equipment. Another reported equipment problems but did not report the loss of any operational days.

The majority of the facilities (71%) reported that they kept spares for their system on site. When asked if the cost or availability of minor and major spares interfered with consistent service, 43% suggested that minor spares were occasionally an issue and 29% reported that major spares were occasionally an issue. No operator reported that spares were frequently an issue. Minor spares never caused an issue for 57% of the operators and major spares were never an issue for 71% of them. This is of interest as previous work by the Urban Harbors Institute had suggested that mechanical problems were not uncommon and had, in the past, led to extended periods on unscheduled closure in other areas.

Of the six operators that responded, 83% suggested that all problems were dealt with promptly. Only one operator suggested that this was not the case. One operator reported that they dealt with system problems themselves. Another said that they would take it up with the manufacturer of the system and a third said that they would contact the CVA.

2-3-10 Customer Satisfaction

When asked to rate what they felt was their customers' level of satisfaction on a scale of 0 to 10 (zero being highly dissatisfied and 10 being highly satisfied) the responses ranged from 8 to 10, with an average of 9.4 (SE±0.4). The boaters' survey revealed levels of satisfaction of around 7.6, suggesting that the operator's may be overestimating how happy their customers were.

When the operators were asked on what they had based their estimate on, 43% responded that it was based on customers' comments, two operators based their views on the fact that there had been no complaints and one on the amount that the facility was used.

When asked if there was any formal system for boaters to report problems or to complain, 71% of the operators responded that such a system did exist. When asked how it worked, they reported that such reports were made verbally. Two operators (29%) reported that no formal system was in place. However, some may not have judged that reporting issues verbally constituted a 'formal' system.

2-3-11 Possible Improvements

The operators were asked what they felt could be done to improve local pumpout services. These represent their personal feelings and therefore may or may not be practical or realistic. They made the following suggestions:

- Allow boaters to operate the pumpout themselves;
- The operators should be provided with more money but that this should not mean that there would be an increase in regulations;
- Pumpout services should be available for extended hours;
- More funding should be provided for maintenance; and,
- Boaters should be encouraged not to wait until just before having their boat hauled for the winter to have their holding tank pumped.

2-3-12 Specific Issues Identified via Pumpout Working Group

Several issues were identified through various discussions of a Pumpout Working Group that met in 2002 and 2003. The working group consisted of representatives of the Harbormaster's Office from the Towns of Scituate and Marshfield, Scituate Harbor's boat pumpout operator, South and North River marina operators, the Massachusetts Bays Program, the Massachusetts Clean Vessel Act Program, the Massachusetts Office of Coastal Zone Management, and the North and South Rivers Watershed Association (NSRWA).

The origination of this Pumpout Working Group began because of a perceived need to provide more boat pumpout services specifically to the boaters in the North and South Rivers. In addition, the NSRWA has been considering whether to apply for a NDA designation for the North and South Rivers. An application was drafted in 1996 by the Town of Scituate but has not pursued further. In order to obtain a NDA designation, there must be adequate pump out service available to boaters.

Presently, there is a dockside pumpout facility at James Landing, a marina on the Herring River (a tributary to the North River), that is tied into the Scituate sewage system and there are several other shoreside facilities along the North and South Rivers that utilize pumpout carts. Discussions with the local marina operators suggested that the pumpout cart facilities were inadequate and not used often. While the shoreside pumpout at James Landing was adequate, it was difficult for many boaters to access due to its location and depth constraints. The rivers are heavily trafficked during the summer and in particular, the Spit is a transient hot spot at the mouth of the rivers during the summer weekends. The group concluded that there was a need for a pumpout boat that would service the North and South Rivers exclusively.

One challenge that was identified was ownership of a pumpout boat and the fact that there are two towns with jurisdiction within the North and South Rivers. These same towns also have active harbors (Green Harbor and Scituate Harbor) that have existing pumpout facilities. For municipal ownership to be effective, any pumpout boat would have to be jointly owned and operated by the two towns, which may lead to logistical problems of coordination. While the Towns would be interested in cooperating, they foresaw the joint ownership issues as challenging. Having a private marina operator own and operate a pumpout boat was identified as another potential solution to town ownership. There was consensus among the group that this might be a more feasible option than the joint Town-owned solution. After these discussions two private boat operators within the area applied for CVA funding to buy and operate a pumpout boat for the North and South Rivers. Their applications are under review.

Other problems identified via the working group included:

- Proper facilities to off load to along the rivers that were directly tied into a sewage facility. The only existing shoreside pumpout hooked up to a town sewer system is at James Landing Marina in Scituate. Other shoreside pumpouts discharge to tanks that require septic system haulers to pumpout. This represents an additional cost burden to the operator to have the system pumped.
- Staffing a pumpout boat, whether Town owned or run by a private operator, was identified as a challenge due to the minimal pay and nature of the work.
- Boat owners often have little knowledge of how to manage their head systems and could use some training in order for them to use self-service pump out facilities.
- More education on where to go for pumpout, how to use pumpout services and making pumping out as convenient as possible to boaters were all identified as needs perceived by the working group.
- There are some concerns regarding liability if pumping out is done when the boat owner is not aboard.
- There were also concerns expressed regarding “self-service” shoreside pumpouts in terms of liability, accidental releases, large number of users and small holding tank capacity.

2-4 Findings and Recommendations based on the Results of the Operator Survey

Of the operators that responded, 20% did not offer boaters a facility at which they could empty porta potties. It is clear that porta potties are used on a large percentage of boats and therefore, where possible, operators should be encouraged to provide some system that will allow boaters to empty these items.

Most of the operators (71%) suggested that there were no significant accessibility issues with their facilities. However, 27% of boaters who had experienced problems with pumpouts reported that they had experienced accessibility issues. It is important to remember that the level of skill that boaters have varies considerably. Inexperienced boaters may have difficulty maneuvering their vessels and therefore find

some pumpouts inaccessible. While it is difficult to address the skill level of boaters, it is important to remember that there will always be relatively unskilled boaters and, where possible, operators should try to cater to the less experienced boater.

It is clear that the number of boats serviced and the amount of sewage that the operators reported to have pumped varied considerably. Future research may be able to identify if some facilities are being stretched to capacity and if others are less busy. This may assist in locating facilities that may be established in the future.

On average, the operators estimated that 74% of their clients were local boaters. The fact that only 5% of those boaters involved in this survey were transients highlights the difficulty of capturing transients as part of studies such as this. Future research should specifically target transient boaters as they may provide significant insight into how effective outreach efforts are at informing those boaters who are simply visiting from elsewhere.

The fact that CVA funding comes with a prohibition on servicing commercial vessels means that it was difficult to ascertain accurately how many commercial boaters were using pumpout services. While it is understandable that CVA funding is designed to provide pumpout services to recreational boaters, it appears that commercial boats are frequently ignored when it comes to providing such services, and especially so when it comes to the designation of NDAs. This would appear to be a significant oversight as some vessels, such as passenger ferries, may have large Type III holding tanks. If pumpouts are not readily available to commercial vessels and they do not routinely operate more than three nautical miles off shore, then such vessels may have little choice apart from illegally discharging their tanks overboard closer to shore.

It is clear that pumpout operators generally advertised their service by posting signs, deploying buoys, via the internet and by word of mouth. As the awareness of local pumpout services was high, it appears that such methods have been relatively successful. However, the fact that only 43% of the operators had any referral system suggests that better coordination between operators could enhance the overall pumpout services in the area. As few operators charged for pumpouts, it is clear that they were not offering the service for direct financial benefit. Increased patronage, increased fuel sales etc. are the more likely indirect benefits. Another way in which all the operators could benefit may be through increasing customer satisfaction throughout the area. One way to do this could be for pumpout operators to advertise actively alternative services that are available locally. This is particularly important if, for any reason, a pumpout service is out of operation. If boaters were made aware of the fact that a pumpout was unavailable and directed to alternative services it is less likely that they would feel so inconvenienced that they would forego pumping out all together and discharge illegally. Operators should consider developing a coordinated system by which each service can readily inform boaters if they are operating and direct them to alternative services when they are not. The fact that they are in operation could be indicated by flying a pumpout flag that is clearly visible from outside of the marina and lowering the flag when operations are closed. Adding the contact information for alternative services on all flyers and signs would mean that boaters would not need to search for these details and would be more likely access these services.

As discussed previously, the key to encouraging boaters to use pumpout facilities is to make the services as convenient as possible. Operators should be encouraged to promote their services, as well as others in the local area, and to ensure that directions to their pumpout are advertised wherever possible.

3 EDUCATION AND OUTREACH FINDINGS

3-1 The Target of Outreach and Education Efforts

There are many, on-going efforts that are aimed at reducing pollution from boats from entering coastal waters. These include federal and state regulations and initiatives, and national campaigns, as well as more local efforts. One form of pollution that has been of particular concern is sewage.

Clearly, one way to reduce the amount of sewage is by encouraging boaters to equip their vessels with Type III MSDs and to use them responsibly. This responsibility means that each boater needs to ensure that their MSD is adequately maintained and that they use pumpout facilities, or at least comply with current legislation and only discharge their holding tanks when they are over three nautical miles off shore. In order to encourage such responsible behavior, there has been a concerted effort to establish more pumpout facilities and to try to ensure that they remain operational.

This study indicated that a high percentage of vessels that had an installed MSD were already equipped with Type III MSDs. However, there were still a few boats equipped with Type I and Type II MSDs and, while this may not be ideal from an environmental standpoint, it is important to realize that some boaters will continue to favor such systems. This study also showed that there were a large number of boaters who had elected not to have an onboard MSD but to rely instead on porta potties. Boaters who use porta potties or onboard treatment systems must also act responsibly and responsible boating is the key to reducing boat pollution. It is essential to encourage such behavior through outreach and education efforts.

While current, and future, boaters must clearly be the focus of any educational efforts, there are other groups who cannot be ignored. Marina operators are one such group. Not only can marinas themselves be significant sources of pollution but the staff at such facilities may be the first point of contact that a transient boater will have when they arrive. It is clear from this study and previous work by the Urban Harbors Institute that a great deal of information circulates around the boating community by word-of-mouth. Marina operators are in an ideal position to inform new or visiting boaters about local regulations, pumpout facilities etc. However, it is essential that the marina operators are up-to-date on the current issues and the status of local pumpout facilities. If they are not, visiting boaters may be given out-of-date information.

Those marinas offering pumpout services must also be kept up-to-date on new technology or best management practices as they are developed. Additionally, if operators are made aware of what other facilities are doing and how successful their efforts have been, it may be possible for them to implement successful programs, or at least not to make the same mistakes as others.

Education is also essential for those involved in developing regulations at municipal, state and federal levels. As new science is conducted or new technology developed, it is important that the decision-makers are kept informed. For example, this study has shown that the EPA and CVA guidelines used to determine how many pumpout stations are needed to service adequately a boater population may underestimate the number. Similarly, the marine industry must be educated about new scientific research and it must better educate others about developments within their industry.

Education and outreach must also be focused at the general public. When it comes to enforcing existing regulations that restrict sewage discharges, it is essential that the public are informed about how to identify a possible illegal discharge of sewage and, more importantly, to whom to report such an incident. Generally, people are quick to report when they see oil in the sea. Such spills clearly fall under the jurisdiction of the US Coast Guard. As discussed previously, people's instincts are often to report suspected illegal sewage discharges to the Coast Guard. However, the Coast Guard does not have jurisdiction over such matters and therefore passes these reports on to state agencies. Previous work by the Urban Harbors Institute revealed that, even within state government itself, there was some confusion as to who ultimately had jurisdiction over illegal sewage discharges. Once it has been defined, it will require some outreach within state government to ensure that each agency is aware of where the jurisdiction lies.

3-2 The Organizers of Education and Outreach Efforts

As discussed above, the target audience for outreach efforts associated with pumpout services is diverse. So too are the groups that can organize the efforts. Once again, this will largely depend on who is being targeted and the issue at hand. However, the main educational drive to promote pumpout services was established through the federal Clean Vessel Act.

3-2-1 Federal / State Government

The Act is administered by the US Fish and Wildlife Service (FWS) and provides a portion of its total funding for educational outreach regarding the effects of boater sewage and the means by which boaters can avoid improper sewage disposal. The goals of this outreach are to:

- Inform boaters of the importance of proper boater sewage disposal.
- Inform boaters and marina operators regarding sewage disposal problems. The goal is to educate them on the use and advantages of pumpout and dump stations, where best to locate such stations, and the fact that discharging untreated sewage inside the three nautical mile territorial limits of the United States is illegal.

The CVA educational outreach program was launched in February 1995 and provides grants to state and local authorities to conduct educational outreach regarding pumpouts through advertisements in magazines, newspapers and on television.

The FWS also established partnerships with the US Coast Guard, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, marine industry organizations and others to assist with outreach efforts. Together, these agencies and organizations work with marine interests to distribute materials and educate boaters on the use of pumpout and portable toilet dump stations.

The FWS is also a sponsor of the National Clean Boating Campaign, which is the Marine Environmental Education Foundation's annual campaign that partners over 650 federal, state and local agencies, and marinas, boatyards, boat dealers, trade associations, environmental organizations, Sea Grant programs, and individuals dedicated to clean boating. The Clean Boating Campaign distributes fact sheets, which include information on boat sewage control. The FWS is also helping the Foundation to develop and implement a National Environmental Excellence Award program, which will recognize marinas, boatyards, boat dealers, yacht clubs and others for operating clean facilities.

Major national CVA educational products include a poster distributed to more than 22,000 marinas, press and training packets, and funding various public service announcements for radio, television and print media. In order to facilitate locating pumpout services NOAA will mark pumpout stations on its nautical charts. Additionally, boaters can find the location of pumpout stations by calling 1-800-ASK-FISH, a toll free number established by the Sport Fishing Promotion Council. In Massachusetts, problems with pumpout services should also be reported to the Division of Marine Fisheries on (508) 563-1779.

The Marine Environmental Education Foundation, Inc. has an extensive bibliography of National Clean Boating and Clean Marina websites at: <http://cleanboating.org/bibliography/index.html>.

State government generally coordinates CVA efforts in individual states, although this is not always the case. In order to ascertain if other states had organized initiatives that had been particularly effective, interviews were conducted with the following personnel associated with CVA efforts in nearby states:

- **Rick Huntley**, Connecticut CVA coordinator.
- **Pam Parker**, Pumpout Grant Coordinator, Maine DEP.
- **Lisa Van Alstein**, New York CVA Coordinator.

While the focus of these interviews was pumpout education and outreach, other subjects were also discussed. Points of particular interest, whether relevant to outreach or not, are outlined in the summaries below.

Key Points of Interview with Rick Huntley:

- While he does not know of any formal research regarding the effectiveness of various types of educational materials, from personal experience he feels the most effective method of education is through face-to-face talking to boaters and marina operators.
- Connecticut has a "Dock Walker" program that is part of their Clean Marina strategy. Dock Walkers are paid on a seasonal basis using state and federal funds. These individuals contact boaters at every type of boat facility from state operated boat launches to private yacht clubs/marinas. They distribute educational materials and talk to boaters about the importance of using pumpout stations or the responsible disposal of sewage from other MSDs and porta potties. In addition to educational materials, they also pass out oil absorbent pads, brochures, pamphlets and other items that promote responsible boating.
- Connecticut has an advantage in that all its natural resource, environmental regulation and coastal management agencies are under one commissioner. This means that programs that involve a number of agencies can still be efficiently coordinated.
- He feels that the most important message to emphasize is that even though the volume of sewage from one boat may be small, it is very concentrated and therefore can cause problems. Boaters have a tendency to think that their little bit won't matter.
- Connecticut has put up signs (2 feet by 3 feet) with the national pumpout logo, to assist boaters in locating a pumpout facility. They also have smaller signs on pilings near to pumpouts acknowledging the CVA for contributing.
- He has found that a series of mobile pumpout boats are more effective than stationary pumpout as boaters generally find them more convenient. In his opinion, non-mobile pumpout systems are only effective when installed at fuel docks, due purely to reasons of convenience.
- Pumpout boats in Connecticut are paid for with operation and maintenance grants from the state, using CVA (federal) funds.
- Most of the pumpout boats are operated by local authorities, except for one which is run as a commercial enterprise in a particularly busy marina, and one run by a not-for-profit organization called *Soundkeeper*.
- *Soundkeeper* regularly sends a person out to educate boaters and to do outreach.
- The commercial pumpout enterprise charges \$5 per pumpout and is successful as many boaters are unwilling to move their boats unnecessarily in the congested marina. Clearly the convenience out-weights the cost of the pumpout service.
- He feels that Public Service Announcements are more effective than videos as he finds it hard to imagine people getting together just to watch a video promoting the use of pumpouts.

Key Points of Interview with Pam Parker:

- Although she has little empirical data, apart from an informal survey of recreational boaters' use of pumpouts conducted three years ago in only two harbors, she feels that vessel owners generally know about the laws. The major complaints were about the difficulty in accessing the pumpouts and that pumpouts were not functioning properly.
- From her experience, people generally do not want to deal with sewage. The use of a Type I or Type II MSD means that boaters do not have to deal with holding tanks. She termed this the "Silver Handle Syndrome" – i.e. we pull the silver lever and it all goes away.
- She is thinking of doing a survey to find out how many boaters have Type I and Type II MSDs but guesses that it is about 40%.
- There are about 350 harbors in Maine. The recent strategy has been to rank these based on criteria such as boat traffic, availability of other boat services, flushing, ecological sensitivity,

water quality etc. This ranking produced a list of the top 100 harbors where a pumpout service should be available. The availability of a pumpout was arbitrarily determined as being within four miles of a key harbor. This was felt to be reasonable since a sailboat may take about an hour to cover such a distance.

- Pumpout boats are very effective, especially in more remote areas.
- Currently, a tri-fold publication on the impacts of bacterial contamination to educate the recreational boating public is being developed. Maine also has a pumpout directory available online at: <http://www.maine.gov/dep/blwq/topic/vessel/pumpout/pumpoutlist.pdf>. The list is also included in the Maine Cruising Guide.
- Her experience with Public Service Announcements (PSAs) is that it is difficult to get radio stations to play them.

Key Points of Interview with Lisa Van Alstein:

- In New York State, most educational efforts have been done at the local level. One town did a 15 second radio announcement about using pumpouts that was well received.
- Other municipalities have printed brochures and many of these are given out when boaters come in for licenses. However, there has not been much feedback for these.
- Another town is preparing a video which will be shown on a television spot. This was prepared with help for Sea Grant and includes participation of politicians.
- Signage has been used successfully including floating signs to alert boaters to that fact that the discharge of any sewage is prohibited within a NDA.
- Some towns conduct workshops for marine operators, which include sessions on the use of pumpouts.
- Municipalities are being encouraged to have at least one web page as part to their municipal websites that cover the subject of pumpouts including maps, signage, information on reasons for using pumpouts etc.
- There are also plans to place advertisements in regional newspapers. They have done this for the Hudson River area in two publications: "Boating World" and "Boating on the Hudson". She plans to do the same for other areas, such as for Long Island Sound.
- Other plans include a statewide website that would have information grouped by region. Users will be able to see area maps and link to specific pumpout facilities that would include a picture so that boaters could easily locate where the pumpout is situated.
- Pumpout flags are already being used. Boaters can display a pumpout flag on their vessels and pumpout boats can then service the boat without the owner being around. A larger version of the same flag will be used to indicate stationary pumpouts.
- Most pumpout boats are run by municipalities who also handle the education and outreach.
- She feels that the main reason that boaters do not use pumpout services is that they are inconvenient. Stationary pumpouts are used more if associated with fuel docks. Additionally, generally boaters are more inclined to use the service if it is staffed and they can have somebody else do the pumping. Some boaters prefer to use 24-hour stations as they can access them at times when they are not too busy.

In Massachusetts, the CVA Program is coordinated by the Division of Marine Fisheries which promotes the use of pumpouts and provides assistance to those wishing to establish a facility. The Office of Coastal Zone Management is also involved in promoting the use of pumpouts as part of its continuing programs addressing water quality, nonpoint source pollution and clean marinas.

3-2-2 Municipal Government

Many of the pumpout facilities in the study area are run at a municipal government level and those operating the facilities are frequently the local Harbormasters. Local officials are also the people who are most likely to be aware of any local issues associated with nearby pumpout facilities. It is therefore not surprising that many of the outreach efforts are coordinated at this level.

Information posted on a town's website is easily accessible and can quickly be updated. If municipalities were to list the local pumpout services, as well as their operational status, this would aid boaters in locating a service.

Municipal governments can also publicize pumpout facilities through their publications and fact sheets and by posting signs with the details of the location and contact details for the facilities, as well as the cost of the service (if applicable).

Harbormasters can ensure that signs and buoys clearly direct boaters to nearby pumpout facilities.

3-2-3 Marina Operators

Marina operators and others associated with the boating industry need to be both the targets of outreach efforts, as well as the initiators. The fact that so much information is exchanged by word-of-mouth within the boating community and that almost all boaters will visit a dock or marina on a regular basis, means that marina operators can play a crucial role in keeping boaters informed. As they are in direct contact with the boaters and are frequently asked for information, it is essential that operators are kept informed about current regulations and provided with the latest outreach materials. However, it is important to remember that they are trying to run a business and therefore have limited time to spend on outreach. It is common to find display racks at marinas that offer a variety of leaflets and brochures making them an ideal distribution point for outreach materials.

Pumpout facility operators need to ensure that there are signs, flags or buoys advertising the fact that the service is offered. The pumpout stations themselves should also be clearly identifiable within the marina.

3-2-4 Other Groups and Organizations

A variety of other groups are involved in outreach efforts associated with boat sewage and pumpout services. This would include non-profit groups who target boaters with materials that address specific issues. Another important group is marine educators. While they may not be specifically addressing the issues associated with pumpout services, they are in an extremely powerful position when it comes to educating a large number of future boaters about what they can do to protect the marine environment.

As with the marina operators, these groups must also be the targets of outreach efforts to ensure that they have up-to-date information and are aware of emerging issues.

3-3 The Focus of Education and Outreach Efforts

Clearly there is a wide range of groups that could benefit from education and outreach regarding sewage pollution from boats. There is also a wide range of issues and information that needs to be explained and disseminated. It is reasonable to assume that different boaters may be in need of different types of information. What a transient boater needs to know is not necessarily the same as what a local needs. For example, responsible transient boaters may not require information on the environmental effects of sewage or how pumpouts work. What they may need to know is simply the location and hours of operation of a nearby pumpout facility that can accommodate their boats. Or experienced local boaters may not need to know the details of how to maintain a MSD, but may need the implications of a NDA designation explained to them.

There are numerous types of boaters and there are also varied levels of knowledge and different interests. Bombarding boaters with information from too many sources and on too many topics is likely to be counterproductive. It is more effective to target specific groups of boaters and to provide them with clear information that will prove helpful to them.

Appendix 1 contains examples of some past and present outreach materials aimed at boaters. These were from various states and were produced by a variety of agencies and organizations. They illustrate a number of areas on which outreach and education efforts may focus. While there is frequent overlap in the topics discussed, they are generally aimed to address the following:

Regulations – Federal and state laws can be extremely difficult to understand and it is essential that materials are developed that clearly explain what boaters can and cannot do. More importantly, it is important to explain the reasoning behind the regulations. If boaters can be encouraged to support regulations and believe that they will benefit from them, then they are more likely to comply (pages A to D of the Appendix 1). Such outreach is particularly important when there are changes to regulations that will affect boaters, such as NDA designations.

Responsible Boating – While many boaters are concerned about the marine environment, outreach material is frequently designed to remind them of what they can do on a day-to-day basis to help protect it. These are generally “best practices” for responsible boaters (pages E to H).

Guides to Sewage Pumpout – These guides provide general information on how to use pumpouts and, in some cases, the environmental and regulatory reasoning to utilize them (pages I to K). These materials do not list pumpout facilities.

Pumpout Guides and Facility Locations – These provide a brief explanation of why boaters should use pumpout and the location and contact information for the local pumpout stations (pages L to O). The *Guide to Tides & Pumpout Facilities* produced by the Massachusetts Office of Coastal Zone Management and the Division of Marine Fisheries is also an example.

Marina Guides – These provide detailed listings either of those marinas providing pumpout services, or all marinas (pages P and Q show the front covers and a representative page from two such guides).

Reminders – This category includes items that can remind boaters to be responsible and use pumpout. Frequently these would be items that are boat related (such as the floating key chain from Delaware) but could also include Public Service Announcements, flags, stickers etc. (pages R and S).

Frequently a number of these are combined with safety and navigation information and are distributed as Boater Guides.

A final focus for outreach efforts is Advertising (pages T and U). This allows the operators to let boaters know that pumpout services are available and how to access them. Advertising may take the form of flyers, posters, advertisements in local newspapers, or signs or buoys within the harbor. Frequently these will use the well-recognized pumpout logo (as shown on the flag on page S in Appendix 1).

Based on the interviews and research into existing publications, it is clear that there are many sources of educational materials available. Activities such as the National Clean Boating Campaign regularly distribute information that reminds boaters how to responsibly dispose of sewage etc. State government agencies, municipal governments, non-profit groups and others also produce a wide variety of outreach material. There are examples that employ cartoons and snappy catch phrases to try to grab people's attention, while others are more serious and technical. The variety of available information means that it is possible to find existing materials suitable for most target audiences or to cut and paste together new materials from those that already exist. Pages I through K of Appendix 1 illustrate this clearly. The literature from Boat US, the Maryland Department of Natural Resources and the New Hampshire Department of Environmental Services all incorporate the same series of pictures and almost identical text depicting how to use a pumpout. Additionally, a comparison of the Maryland and New Hampshire materials will quickly reveal that they are obviously adapted from the same source as the text and layout are almost identical.

3-4 Effective Education and Outreach Methods

It is not possible to definitively identify what is the most effective way of informing boaters about particular issues. Not only will the most effective method be dependent on the target audience, but there have also been few studies that have aimed to assess these methods. The question is further complicated by the fact that it is common for more than one method to be employed. For example, outreach materials may be distributed to marina operators but followed up with telephone calls or site visits. While it may be

possible to discover how many of the recipients were now aware of the topic being addressed, it is more difficult to ascertain if this awareness was a result of reading the literature, or of talking to someone. Another major consideration is more practical in nature, and that is how much time and money the coordinating group has at their disposal. Placing literature in racks or erecting signs generally takes less time and money than numerous site visits or employing people to be “dock walkers”. Talking to boaters can be extremely informative for both parties but it is very time consuming and it is difficult to catch boaters at a time when they are willing to stop to talk. However, there are a number of outreach methods that have generally been those employed when addressing boaters and others associated with pumpout services.

3-4-1 Distributing Literature

This is a common and relatively inexpensive method by which boaters have been informed about specific issues and some research suggests that this is one of the most effective methods of outreach. However, there are some important considerations when designing such materials and these may be dependent on how the literature is being distributed. If literature is going to be placed in display racks at marinas and other areas where boaters gather then it is important that the design is eye catching. If a rack contains many different brochures it is unlikely that boaters will take one of each. They will probably just grab a few that catch their eye. If the literature is to be included in mailings or as inserts into marina billing statements then the need to catch the boater’s eye is less critical.

The literature must be worded in a way that clearly emphasizes the key points and uses terms that the audience is likely to understand. Baffling boaters with scientific terms is unlikely to aid their understanding. Previous research by the Urban Harbors Institute have shown that some boaters do not understand terms such as “nutrients”, “fecal coliforms” or “eutrophication” and quickly become confused and lose interest when terms are used with which they are not familiar. If such terms are used it is essential that they are explained. The literature reproduced in Appendix 1 has a number of examples that illustrate well-worded text that explains the issues and problems, without simplifying it to a level that may cause offense.

It is equally important to keep the text concise. Most boaters will not take the time to read lengthy explanations of the issues. Additionally, bulky materials are not appreciated by boaters and therefore most of the existing literature consists of flyers and folded, letter-sized sheets. If the literature contains information that the boater may want to refer to frequently (such as the location of pumpout facilities) then waterproofing will help it survive on a boat.

It is also important to assess what literature is already in circulation. Boaters do not need to read five different leaflets on the issues associated with sewage discharge. This is especially true when the text in these documents is frequently from the same sources, and therefore almost identical from one leaflet to another. If good literature is already in circulation then it may be more effective to simply increase its circulation.

3-4-2 Posting Signs, Flags and Buoys

Posting signs and other visual aids has long been recognized as a means of informing boaters and research suggests that it is highly effective and relatively inexpensive. Many signs direct boaters to facilities or advertise the fact that a marina offers pumpout services. These are crucial in aiding boaters find pumpout stations with the minimum of inconvenience. Not only should these signs direct boaters to the marinas that offer pumpout services, but within the marina they should clearly direct them to the station’s location.

Signs relating to pumpout services should prominently display the pumpout logo. Marina operators should also consider flying flags with this logo in a position that can be seen from outside the marina. The use of such flags might also allow operators to lower the flag when the pumpout is closed or out of operation. This would inform boaters to seek pumpout services at an alternative location and thus reduce the frustration that they might feel if they were to try to access the service, only to find it closed.

Buoys can also be used to direct boaters, or to inform them if they are entering a NDA.

Posters and other smaller signs can be used to provide the telephone number of the pumpout services and the VHF channel that they monitor. Such signs should be posted in areas frequented by boaters so that the information is readily available to them. Within marinas and at other pumpout facilities, small posters (example on page U of Appendix 1) can inform boaters of the location, contact details and hours of operation of pumpout services. If the service is free then this fact should be highlighted. Operators should also consider including the contact information of alternative, nearby services. This would aid boaters if one service were out of operation, closed or too busy.

3-4-3 Advertising in Newspapers

Pumpout services should regularly be advertised in local newspapers. Pumpout operators should consider running an advertisement at the start of each season to remind boaters of their hours of operation and to inform them of any changes from the previous season (a template press release that could be used is included in Appendix 2). Additionally, if the service is out of operation for a prolonged period, using newspapers to inform potential customers will reduce the number of boaters who will be inconvenienced and, hopefully, maintain customer satisfaction. Most reasonable boaters will accept the fact that pumpout systems break down. They only become dissatisfied when they have no way of knowing the fact and have specifically traveled to the marina to access the pumpout, only to then discover that it is not operational.

3-4-4 Internet

The internet offers a cheap way to keep boaters informed. Municipal websites should carry up-to-date information on the available local pumpout services. These should include all the necessary information and links to the individual marina websites. If marinas have their own websites they should include a photograph of the facility as harbors can have many marinas and distinguishing the particular one that offers pumpout services can be difficult. Operators should also keep the information up-to-date and post a notice if anything changes during the season (e.g. unexpected closures, changes in operating hours etc.).

Operators should also ensure that their facility is listed in online marina guides.

The internet is a powerful tool for informing boaters about issues.

3-4-5 Boater Guides

As with the internet, pumpout operators should ensure that they are listed in boater guides and that their information is updated each time the guides are re-published.

Boater guides also offer a direct way to keep boaters informed about current issues and reminded of best practices. They often contain a wealth of information and are booklets that boaters will refer to regularly.

3-4-6 Radio and Television

Public Service Announcements may reach a large audience and can be used to keep the public informed about changes in regulations and remind them of best practices. However, producing a high quality PSA is a skilled and relatively costly undertaking. Radio and television stations may not be particularly interested in airing such PSAs as sewage disposal is not necessarily their favorite topic.

3-4-7 Workshops

Generally workshop attendances are low for boaters and other such groups. It is difficult to convince boaters to sacrifice their time for such events. When targeting marina operators it may be possible for state agencies to organize workshops. However, they are unlikely to attend these during the boating season due to commitments at work.

Workshops are more effective when people can attend as part of their jobs.

3-4-8 Public Meetings

Public meetings can also suffer from poor attendance. However, if the issue under discussion is of great interest then attendance rates will increase and such meetings can be a useful forum for informing boaters and for discussion.

Outreach efforts may be possible at events that are convened for other reasons. For example, a short presentation may be made at the annual meetings of local marine industry associations or watershed associations.

3-4-9 Face-to-Face Meetings

Talking to boaters is often very effective and informative for both parties. Generally, this method of outreach should be encouraged and employed whenever possible. However, such meetings are time consuming and each one reaches only a small number of boaters. Additionally, it is difficult to find the right time to approach boaters. Boaters are generally alongside the dock prior to departing or when returning and at neither time are they inclined to stop to talk. They are more likely to do so if samples are being distributed. Such items could include bilge socks etc. Boaters may also be approached out on the water but once again a limited number of boaters can be approached and the costs of such a method are increased due to the need to use a boat.

The "Dock Walker" program in Connecticut is interesting in that the walkers are paid using state and federal funds. While such a program may be extremely useful, it is likely to be an expensive method that will only capture a relatively limited number of boaters. A benefit of such a program is that it allows for information to be gathered from the boaters that may provide insight into issues that are of concern to them.

3-5 Education and Outreach Conclusions

From the interviews conducted and the research undertaken it seems that in general boaters know what they should be doing when it comes to the responsible disposal of sewage and what the local regulations are. Almost 94% of those boaters who responded to the question stated that they were aware of the local regulations. Additionally, 95% of boaters who had a Type III MSD were aware of the availability of local pumpout facilities and 94% knew how to access them. Responsible boating literature should continue to be distributed on a regular basis to remind boaters of what they should be doing and also to educate new boaters. Additionally when regulations change, such as the designation of a NDA, clear outreach materials must be developed and distributed so that boaters remain up-to-date and can comply. This material should also be readily available to all boaters, but particularly to transient boaters in the form of leaflets at marinas and other locations that they will frequent.

Boaters are generally aware of the environmental issues associated with sewage and understand that excessive amounts of sewage, particularly untreated sewage, can be harmful to the environment and that this in turn will potentially reduce the enjoyment that they derive from boating. While this suggests that past outreach efforts have largely been successful on many counts, it is important that outreach efforts continue so that new boaters are educated and other boaters are reminded of the issues. However, there is an underlying feeling that as an individual boater, their contribution to the problem is small. As is often the case, cumulative impacts are hard to measure and no one boater will feel that they are a major part of the problem. There are existing programs that remind boaters about best practices etc. and there is ample information available that details the environmental effects of excessive pollution. Perhaps the focus of new outreach needs to be the fact that, while one individual flush of a head may not contribute much to the problem, as the number of boats increases, especially in an enclosed or poorly flushed area, water quality is likely to become degraded. This is especially true if boaters are illegally emptying Type III MSDs overboard. The EPA publication *Using Your Head to Help Protect Our Aquatic Resources* poses the following question:

Did you know that the amount of bacterial pollution (fecal coliforms) from one weekend boater's discharge of untreated sewage is equal to the amount from the treated sewage of 10,000 people during the same time period?

Information may be effective is getting a boater's attention. Especially as boaters are often unaware of the fact that the contents of a Type III holding tank are often septic and the irresponsible disposal of it will have a greater environmental impact than the discharge of a similar volume of treated sewage. If a boater empties a holding tank into the sea after a weekend on board, it is not the same as having flushed the sewage through a Type I or Type II MSD over the same time period.

While generally boaters seem to be aware of the issues associated with boat sewage and local regulations, this does not necessarily mean that they comply with the regulations. The three people interviewed in other states all concluded that the main reason that people do not use pumpout stations is because of they are inconvenient. While this survey revealed that 82% of the boaters felt that the local pumpout facilities were convenient, there will always be some degree of inconvenience associated with using a pumpout station. What is important is to try to reduce the inconvenience to a level that means that most boaters will use them. To some extent this can be done through advertising pumpout services and aiding boaters locate the facilities through signs, flags, posters, advertisements in local papers etc. While details of pumpout facilities are readily available in boating guides, pumpout guides and the internet etc., it is important that boaters can readily identify their location. This means not only the location of the marina which offers pumpout services, but also where within the marina the pumpout station is located. To this end, marinas and municipal governments should focus on making all pumpout facilities as high profile as possible with signs and buoys clearly on display to direct boaters to local pumpout stations.

Boaters are particularly inconvenienced when problems occur with the pumpout that they are trying to access. In this study, 49% of respondents reported that they had experienced problems at a pumpout facility. Of the problems that had been experienced, the most common was that the pumpout boat had not been available (47%). But between a quarter and a third of the boaters had found the pumpout broken, not staffed, inaccessible or that the wait was too long. One way to reduce the number of occasions that boaters are inconvenienced in this way is to promote use of the 1-800-ASK-FISH hotline and to remind boaters that they should report malfunctioning pumpout to the Division of Marine Fisheries on (508) 563-1779. Additionally, where possible, the names and contact details of alternative pumpout facilities should be widely publicized. Posters and flyers advertising pumpout services (such as the one on page U of Appendix 1) should not only include the location, hours and contact details of the pumpout but the fact that the service is free (or the cost if applicable) but also the names and contact details of other nearby services. If possible, pumpout operators should be encouraged to talk to each other so that they are all aware if one facility is not operational. An ideal situation would be that they would keep each other informed as to how busy they are so that boaters can be redirected to less busy facilities. In general, cooperation between operators should be encouraged when it comes to pumpouts as efficient pumpout services are likely to enhance the area's reputation with boaters. As so few operators charge, they are clearly not offering pumpouts for direct financial benefits.

If outreach materials are being developed that are intended for boaters to have onboard it is important to remember that for them to last, they must be somewhat waterproof. Additionally, as there is often limited space on board a boat, bulky publications are unlikely to be greatly appreciated by boaters. Therefore, keeping materials concise and removing unnecessary content is preferable. The Massachusetts *Boater Guide to Tides and Pumpout Facilities* is a good example of a small, useful piece of information that a boater can either keep onboard or carry in a wallet. It combines a list of pumpout facilities with tide information for the boating season, therefore increasing the likelihood that boaters will keep it to hand.

Where Can I Get More Information?

For information on:

- The Maryland and federal law
- Pumpout stations and maps
- Marina pumpout station grants
- "How-to" guide for installing a holding tank
- Schedule of workshops on installing a holding tank
- Other questions

Call the Department of Natural Resources at 410-260-8770 or Maryland Natural Resources Police at 410-260-8880.

Visit our Internet site at: http://www.gacc.com/dnr/Outdoor_Recreation/Boating/

For location of pumpout and dump stations nationwide: 1-800-ASK-FISH

Boaters

Maryland Law Effective July 1, 1997

What you need to know about proper sewage disposal



What's New?

Federal regulations regarding vessels with installed toilets have been in effect since 1980 and have been enforceable by the U.S. Coast Guard. Effective July 1, 1997, a Maryland law (Natural Resources Article §6-741) allows the Natural Resources Police to enforce these requirements. Violators are subject to a fine not to exceed \$2,000.


What Does the Law Say?

1. If a boat has an installed toilet, it must be equipped with a Coast Guard approved marine sanitation device (MSD).

2. There are three types of MSDs. Type I and Type II MSDs are systems that treat the sewage to meet certain standards before discharging it into the water. A Type III MSD is a holding tank. Vessels 65 feet and under may have any of the three types. Vessels over 65 feet must have either a Type I or a Type II.

This brochure was funded under the Clean Vessel Act by your purchase of fishing equipment and motorboat fuel.



Maryland Department of Natural Resources
650 Traylor Avenue
Annapolis, Maryland 21401

Perry N. Glendening
Governor

Frequently Asked Questions:

What Does the Law Say?

1. Type I and Type II MSDs must have a certification label affixed by the manufacturer. Type III MSDs do not need a certification label.

2. If a vessel has a holding tank, all pathways for the overboard discharge of raw sewage must be blocked or secured by disconnecting or physically blocking those onboard sewage lines or hull fittings.

3. A "Y" valve (which by-passes a holding tank) is allowed, however, it must be secured to prevent the overboard discharge of raw sewage. Acceptable methods of securing the "Y" valve include the use of a non-reusable nylon tie (known as a wire tie), a padlock, or by removing the valve handle.

4. For any vessel offered as a noncaptained charter, the leasing entity must ensure that the vessel is in compliance with this law and include in the lease agreement, signed by the leasing party, a paragraph outlining the operator's responsibilities under this law.

Q. What is a no discharge zone (NDZ) and does this law establish any NDZs in the Maryland portion of the Chesapeake Bay?

A. A no discharge zone (NDZ) is an area of water where no boat sewage, even if it is treated by a certified Type I or Type II MSD, may be discharged. This law does not establish any NDZs in the Maryland portion of the Bay. NDZs are, however, an option that may be considered in the future.

It is important to remember that it is illegal to discharge raw sewage from a vessel within U.S. territorial waters (including the entire Chesapeake Bay).

Q. Is a recreational vessel required to have a toilet?

A. No.

Q. Does this law apply to vessels with portable toilets?

A. The law does not apply to vessels with portable toilets, however, the waste contained in portable toilets must be brought ashore for proper disposal.

Q. What type of MSD is recommended for vessels with installed toilets?

A. It is highly recommended that vessels with installed toilets be equipped with holding tanks (Type III MSDs). Holding tanks (and portable toilets) can be emptied at conveniently located marine sewage pumpout facilities.

Q. Does the law apply to gray water (waste from sinks, showers, etc.)?

A. No. The law only applies to human waste (black water).

Q. Is there a "grandfather clause" that exempts older boats from these requirements?

A. No. All boats with installed toilets must be in compliance.

Q. Is a macerator considered to be an approved Type I or Type II treatment system?

A. No. A macerator only grinds sewage - it does not treat it. Any system that allows for the direct overboard discharge of raw (untreated) sewage is illegal.

Q. My boat has some type of treat & discharge system but I'm not sure it's legal. How can I tell?

A. All approved Type I and Type II MSDs have a certification label affixed by the manufacturer. If you can't find a label, you have an illegal system. Holding tanks (Type III MSDs) are not required to have a label.

Brochure from Maryland explaining regulations.

Q / WHY WOULD ONE ENHANCEMENT BE RECOMMENDED FOR A PUMPOUT AND NOT ANOTHER?

ANSWER: In addition to the formula of at least one pumpout per 300 mooring slips, the decision as to whether a pumpout station should be sited in a particular enhancement has been tempered by the fishing characteristics and other water quality characteristics, and the amount of current and tidal flow use (in many high-use areas it is not uncommon to encounter rapid and multiple ebbing, which is not recommended or identified in the riparianity flow). Other considerations included community commitment to improving water quality as expressed by existing and proposed "No Discharge Areas" and other pumpout/reception projects.

Q / IF AN ENHANCEMENT WAS NOT INCLUDED IN THE FIRST GRANT PROPOSAL, CAN IT EVER MORE TO BE AVOID CVA FUNDING?

ANSWER: YES. The CVA Boat Pumpout Program is an evolving program with three additional grant rounds. DFWFLE is working further with the U.S. Fish and Wildlife Service over the degree of flexibility that the state may have with the administration of funds within each round.

Q / WHO SHOULD TAKE THE LEAD ON THE LOCAL LEVEL?

ANSWER: Proposals for development of pumpout and waste reception facilities can be marine owners and operators, harbormasters or other town officials (from one or several communities). Participation partnerships are especially encouraged. Rather than several individual proposals from each enhancement, interested parties should work together to develop the best possible facility for their enhancement.

Q / WHERE SHOULD THE FACILITY BE LOCATED?

ANSWER: The pumpout or waste reception may be placed at either a publicly-owned or privately-owned site, but must be situated such that it is easily accessible and made available to the boating public. DFWFLE and MCDM recommend "free" use of pumpout facilities with the program subsidized by an increase in the annual and transient mooring/docking fees, but if a fee is deemed a funded regulation prohibits applying to receive of \$5 per slip.

Q / SHOULD THE PUMPOUT/RECEPTION FACILITY BE STATIONARY OR PORTABLE?

ANSWER: For most of the enhancements, Massachusetts has recommended choosing mobile pumpout stations with a shore-side building tank. Compliance will be relaxed if the facility comes in the form of a trailer, rather than the other way around — an auto, no-cost way for boaters to solve their sanitary waste problems. The latter merely calls the harbormaster or participating marina for a pumpout. Mobile shore-based facilities also land themselves in "shored" or more readily than fixed facilities.

Q / HOW DOES AN ENHANCEMENT PUMPOUT PROJECT GET FUNDED?

ANSWER: The public and private entities involved in funding an enhancement should work together to write an intent letter to DFWFLE. Application packages will be sent to three parties they must the criteria for the program. Proposals must be able to provide at least a 25% match for the development of the pumpout and waste reception facility and develop a plan for operating and maintaining the system. Grants can be awarded to either public agencies or private facilities for the purchase, operation, or maintenance of a pumpout or waste reception facility.

Q / WHAT ARE WASTE RECEPTION FACILITIES?

ANSWER: Waste reception facilities are approved collection stations located either on shore, on a boat or floating into which boaters can empty portable tanks.

Q / WHO DEVELOPED THE MASSACHUSETTS PLAN?

ANSWER: The Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWFLE), the Department's Division of Marine Fisheries (DMF), and the Massachusetts Coastal Zone Management Office (MCDM) jointly completed a needs assessment and also added technical guidelines developed by the U.S. Fish and Wildlife Service utilizing survey data collected by DMF. The Massachusetts agencies collected information to identify areas where recreation boats congregated, and developed an education plan and funding mechanism for a coastal pumpout program.

Q / WHY NEED AN ENHANCEMENT BEING USED IN THE MAINTENANCE?

ANSWER: Coastal enhancement numbers do not correspond with political boundaries, yet for the purposes of pollution abatement they are the logical focus for decisions on pumpout facilities.

Q / WHAT WASTES WERE HIGH PRIORITY IN THE ENHANCEMENT?

ANSWER: High priority was given to collected wastes that are generally poorly handled: wastes of national significance (the area of the two National Estuary Programs — Buzzards Bay and Massachusetts Cape Cod Bay, and the Aquatic Invasive Species Research Network); other Areas of Critical Environmental Concern; the Commonwealth's Ocean-Summary waters of significant recreational value; productive shellfish areas; outstanding resource waters; and publicly owned shellfish and recreational (No Discharge Area).

Q / WHAT CONSTITUTES ADEQUATE REASONABLY AVAILABLE PUMPOUT STATIONS AND WASTE RECEPTION FACILITIES IN BOATING AREAS?

ANSWER: Going by integrated federal CVA guidelines, the Commonwealth's state determined that the demand for pumpout stations and waste reception facilities is one pumpout facility per 300 mooring slips or slips. Another important consideration was the amount of transient boat use.

Q / WHAT ARE IMPACTS OF TRANSIENT BOAT USE?

ANSWER: The data accumulated on transient slips and moorings with proximity to shellfish beds, and therefore reflect very conservative estimates for potential pumpout station usage. Transient transient boats are, however, more likely to be the frequent users of pumpout facilities because they are not being on board for extended periods of time. A typical transient boat, for example, which is used for day trips on weekends, might need to holding and pumped out once every three weeks or so, but if taken on a two week cruise, may need to tank pumped out facilities once every two or three days.

Q / WHO SHOULD BOATERS WANT TO USE PUMPOUT FACILITIES?

ANSWER: Not only is it the law, but it is the right thing to do. The boaters are both in line purchase boating hours sitting on line for a pumpout facility in just up. Several communities, such as Edgartown, South Zama and Hyannis, have taken the lead in buying the pumpout facility to the boat with the purchase of a mobile facility. Other options include mobile land-based pumpouts at marinas and easily accessible dock-side facilities. If it's easy to get in, and available as little as the rate, boaters will be much more amenable to using the facilities.

THE CLEAN VESSEL ACT



● Average contamination is measured in terms of fecal coliforms—bacteria produced in the intestines of all warm-blooded animals. Test results are expressed in the number of bacteria per 100 milliliters (ml) of water. Shellfish beds are closed when the total count reaches 14 per 100 ml of water. Public beaches are closed to swimming when the total count reaches 200 per 100 ml of water.

● In January 1991, the Journal of the American Medical Association reported that scientists at several grain processors in Hardin, Georgia and Iowa, reached a formula for conversion of raw corn.

was traceable to native sewage sludge dumped on a stream after harvesting in an Appleton, Wis., paper mill in 1965. In February 1965, the journal concluded the authors reached their disposal of sewage by commercial and residential houses, which contaminated the water body. Studies also show the possibility of soil leachates in industrial wastes.

- [illegible]

THE CLEAN VESSEL ACT



U.S. Department of the Interior
U.S. Fish and Wildlife Service
Bureau of Land Management
1666 North Washington Avenue
Denver, CO 80202
Tel: 303/238-2000
Fax: 303/238-2000
Web: <http://www.blm.gov>



■ Long-term private Pay-As-You-Go Act is VOTED TO help reduce pollution from second source discharges. The Act established a five-year phased grant program authorized by the U.S. Fish and Wildlife Service and authorized \$40 million from the Sport Fish Restoration Account of the Aquatic Resource Trust Fund for such by the State. Federal funds can contribute up to 75% of approved projects with the remaining funds provided by the States or municipalities.

- [illegible]

- The Institute gave priority consideration to grant requests which provide independent and/or sequential (if appropriate) and long medium and/or long-term follow-up plans. Proposals offering the greatest benefit to the intended patient and the general public also take precedence.

- [illegible]

-CLEAN BOATING TIPS-

Contain Trash -

- Do not let trash get thrown or blown overboard.
- If trash blows overboard, retrieve it.
- Pack food in reusable containers.
- Buy products without plastic or excessive packaging. Plastic is deadly to fish and birds.
- Do not toss cigarette butts overboard; they are made of plastic (cellulose acetate).
- Purchase refreshments in recyclable containers.

Recycle -

- Recycle cans, glass, plastic, newspaper, antifreeze, oil, and lead batteries.
- Bring used monofilament fishing line to recycling bins at your marina or tackle shop.

Fuel Cautiously -

- Remember, fuel expands as it warms up.
- Fill your tank just before leaving on a trip.
- If you do fill your tank upon your return to port, fill it to only 90% capacity.
- Use oil absorbent material to catch drips from the fuel intake and the vent overflow.
- Fill portable fuel tanks ashore.
- Add a fuel stabilizer to your tank if engine is used infrequently.

Control Oil in the Bilge -

- Keep your engine well tuned: no leaking seals, gaskets, or hoses.
- Place oil absorbent material or bio-remediating bilge boom in the bilge.
- Place an oil absorbent pad under the engine.
- Replace oil absorbent materials at least once a year.
- Check fuel lines for damage; replace with alcohol resistant hoses.
- Secure fuel hoses to prevent chafing and leaks.
- Never discharge bilge water with a sheen. It is illegal.

Properly Dispose of Oil-Absorbent Materials -

- If the pad is saturated with gas, allow it to air dry. Reuse.
- If the pad is saturated with diesel or oil, double bag it in plastic by placing one bag sealed inside another. Dispose in regular trash.
- Bio-remediating bilge booms should not be put in plastic bags. Discard in regular trash.

Clean Gently -

- Wash your boat frequently with a sponge and plain water.
- Use detergents sparingly.
- Use phosphate-free, bio-degradable and non-toxic cleaners.
- Wax your boat. A good coat of wax prevents surface dirt from becoming ingrained.

- Clean wood with a mild soap powder and a nylon brush.
- Conserve water. Put a spray nozzle on your hose.

Maintain Your Vessel Wisely -

- Collect all paint chips, dust, and residue. Dispose in regular trash.
- Share leftover paint and varnish.
- Bring used solvents and waste gas to local hazardous waste collection sites.
- Use less toxic propylene glycol antifreeze.
- Keep your engine clean so you can spot leaks.
- Slip a plastic bag over used oil filters.
- Consider alternatives to toxic bottom paints.

Sewage -

- Never discharge raw sewage in U.S. territorial waters.
- Use restrooms on shore.
- Under way, use approved Marine Sanitation Devices (MSDs).
- Discharge Type I or Type II MSDs over deep water. Avoid swimming areas, marinas, anchorages, and oyster bars.
- Establish a regular maintenance schedule for your MSD, based on manufacturer's recommendations.
- Pump out and rinse holding tanks regularly.
- Use enzyme-based products to control odor and reduce solids in holding tanks.
- Avoid holding tank products that contain quaternary ammonium compounds (QAC) and formaldehyde.

Dispose of Fish Waste Properly -

- Do not throw fish waste into marina waters.
- Discard waste over deep water or in the trash.
- Or, save waste and use as chum or bait.

Protect Sensitive Habitat -

- Proceed slowly in shallow areas.
- Do not disturb wildlife.
- Avoid contact with submerged aquatic vegetation (SAV).
- Watch your wake. It can lead to shoreline erosion.

Be a Responsible Boater -

- Learn about environmentally safe products and practices.
- Share the information with other boaters.
- Obey laws governing speeding, littering, and discharge.
- Encourage boating facilities to provide trashcans, recycling bins, and pumpout stations.
- Support marinas that are environmentally responsible.



-Printed on recycled paper-

Flyer on clean boating.

BOATER INFORMATION BROCHURE

What Does the Clean Vessel Act Do?

The primary goal of the Clean Vessel Act (CVA) is to reduce overboard sewage discharge from recreational boats. The CVA provides funds to assist the construction, renovation, operation, and maintenance of pumpout stations for holding tanks and dingy trailers for portable toilets.

Congress passed the CVA after finding that there was an inadequate number of onshore sewage disposal facilities in waters frequented by recreational boats and determining that these vessels may be a substantial contributor to localized degradation of water quality.

Under the Clean Vessel Act, \$40 million will be distributed to the states over the five-year period between 1993 and 1997. These funds come from boaters and anglers, through taxes paid on fishing tackle and motor boat fuel under the Federal Aid in Sport Fishing Restoration Program.

As a result of the CVA, boaters can expect to see more convenient and reasonably priced pumpout and dump stations, and cleaner waters, resulting in more healthy fish and shellfish populations.



The Clean Vessel Act
Pumpout Grant Program

Why Should I Worry About Boat Sewage?

No one wants to take a swim where they know there is raw sewage from boats. No one wants to eat raw shellfish that could be contaminated. No one has a lot about pollution in our water, but what can we, as individuals, do about that pollution? Properly managing sewage on our boats is something everyone can do right now to help improve local water quality.

Most of the areas where boats congregate—harbors, anchorages, and marinas—are usually sheltered and semi-enclosed. That means these sheltered areas also are not flushed as well as more open waters. The end result is that any pollution we put there ends up staying there. Bacteria, chemicals, and nutrients contained in human waste from boats can overload small, poorly flushed waterways and cause local water quality problems.

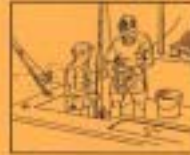
As we fish, swim, boat, sail, ski, or relax on our boats, we rely on having clean water. In fact, in a recent survey, more than 85% of boaters interviewed said they were concerned about the marine environment. Clean water makes all of our recreational activities more enjoyable, so let's all join in to help clean up our waterways.



The Green Issue

Raw sewage dumped into our waters may affect aquatic plants, fish, and other animals. The nutrients, microorganisms, and chemicals contained in human waste from boats have a negative impact on coastal and inland waters, particularly in sheltered or shallow areas not naturally flushed by tide or current.

- Sewage contains nutrients that facilitate algae in the water. This can make algae grow out of control, reducing the amount of light which reaches underwater grasses. Algae can also settle on the grass, smothering it. These grasses provide nursery areas for young fish and help prevent shoreline erosion.
- Flow-through treatment devices (Type I or II MSDs) reduce bacteria in the sewage but do not reduce the nutrients or organic matter going into the water.
- Organic matter in sewage is decomposed in the water by bacteria. During this process, the bacteria use oxygen. As a result, sewage in the water may deplete the water's oxygen level, starving fish and other aquatic animals that need oxygen to survive.
- Microorganisms from your digestive system are found in human waste. Once they are in the water, they can pass diseases like hepatitis to people in contact with the water. They also can contaminate shellfish beds, passing diseases on to people who eat raw oysters or clams.
- Chemical products used in onboard treatment devices, such as chlorine and formaldehyde, can be toxic to marine and estuarine life and could cause a problem in areas where boats congregate and where there is little tidal flushing action.



No Discharge Areas

The Clean Water Act establishes two categories of water where the discharge of all boat sewage is illegal. Not only must Type II Marine Sanitation Devices—containing untreated waste—be removed in these waters, but Type I and II—with treated sewage—also must be prevented from overboard-discharging.

These No Discharge Areas are:

- Boats without adequate navigation.
- All enclosed lakes and reservoirs not used for recreational water and where entry or exit by boats in the water is not possible, even through locks and dams; and
- Areas designated by states and approved by the U.S. Environmental Protection Agency (EPA), such as those near shellfish beds or drinking water intakes.

States may request EPA to approve No Discharge Areas when "the protection and enhancement of the quality of some or all of the water" within their boarders require such environmental protection and EPA agrees there are adequate boat sewage pumpout and dump stations in the area.

Currently, discharge of boat sewage has been prohibited in all or some waters of 14 states, including: Connecticut and Western Harbor in Massachusetts; all waters except tidal waters in New Hampshire; Lakes Champlain, George and Maligne in both New York and Vermont; and Rhode Island's Outer Salt Pond or Block Island.

As increased numbers of pumpout and dump stations funded by the Clean Vessel Act are built, recreational boaters can expect to see more No Discharge Areas created.

Are You in Compliance?

Equipment on Boat:	Legal?	Restrictions and Comments:
Installed toilet without MSD	No	
Installed toilet with incinerator	No	USCG regulations require that all installed toilets have an installed MSD. Incinerator doesn't count as MSD.
Installed toilet with Type I MSD*	Yes (But not okay in No Discharge Areas)	Okay on boats < 65'. Discharge is < 100 per 100 milliliters of fecal coliform bacteria with no readily identifiable floating solids.
Installed toilet with Type II MSD*	Yes (But not okay in No Discharge Areas)	Okay on any size boat. Based on larger boats because of electricity and space requirements. Discharge is < 100 per 100 milliliters of fecal coliform bacteria with < 100 milligrams of suspended solids per liter.
Installed toilet with Type III MSD*	Yes	Keeps waste out of water by using a holding tank. Discharge at onshore pumpout facility or via "Y" valve while more than 3 miles offshore in the ocean.
Portable toilet	Legal on any boat **	Doesn't fall under USCG regulations of MSD's.
No installed toilet	Yes	Remember the Discharge Area rules.

*Note: Even more boats are required to install. Not applicable in Florida. Incinerators may only have a Type II MSD on a permanent power line or above. Check on your state's laws.

**Not on USCG certified.

**See legal in the President of America.

Retrofitting Your Boat

Under U.S. Coast Guard regulations, if your boat has an installed toilet, you are required to have a certified Marine Sanitation Device (MSD). Type I or II MSD's treat sewage and discharge it into the water. Type III MSD's include holding tanks that retain and discharge untreated human body waste.

The sewage disposal system you select will depend on your boat's design, space configuration, and electrical system. Other considerations are cost and how often you boat in No Discharge Areas, where even treated sewage can't be dumped. Remember that any MSD you select must be certified by the U.S. Coast Guard.

Boaters can choose a treatment device, a holding tank, or a combination of the two. Holding tank capacity depends on the number of people customarily aboard, usual trip length, and whether you anchor or use marinas offering toilet and/or sewage disposal facilities. Other options include incinerator, chemical or recirculation toilets, pipes to house, and flushable or rigid tanks. Many owners of smaller craft can opt for less costly, overhauled portable toilets.



Your purchase of fishing equipment and motor boat fuel supports Sport-Fish Management and pumpout and dump station facilities.

For further information, contact the
U.S. Fish and Wildlife Service at
703-255-0945

Boater Information brochure.

Additional Ways to Help the Bay and Its Rivers


Get involved. Volunteer for clean-ups and restoration projects or contact an organization working to protect the Bay and its tributaries.

Conserve water by using it sparingly and fixing leaky fixtures promptly.

Support community recycling and composting programs. Buy recycled products.

Use non-toxic cleaning products and learn how to control pests naturally to keep toxic chemicals out of the Bay and its rivers.

Drive less by combining trips, carpooling, riding bicycles, and using mass transportation. Keep your vehicle tuned-up to reduce emissions.



Striped bass
(Morone saxatilis)

Contacts

Chesapeake Regional Information Service
1-800-682-CRIS

CRIS can provide you with the *Alliance for the Chesapeake Bay's Watershed Directory* of organizations and/or a calendar of clean-ups and other activities and events in your state. Also available is a guide to public access sites to the Bay and its rivers.

D.C. Department of Consumer and
Regulatory Affairs
(202) 727-1000

Maryland Department of Natural Resources
(410) 974-2667

Pennsylvania Fish and Boat Commission
(717) 657-4518


Virginia Marine Resources Commission
(757) 247-2200

Virginia Department of Game and Inland
Fisheries
(804) 367-1000

U.S. Coast Guard Boating Safety Hotline
1-800-393-5647


NCAA Chesapeake Bay Office
(for catch and release information)
(410) 267-5562

Chesapeake Bay Program
1-800-YOUR BAY
<http://www.epa.gov/chesapeake>



Established in 1983, the Chesapeake Bay Program is the cooperative partnership among the states of Maryland, Virginia, and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission, a bi-state legislative body; the U.S. Environmental Protection Agency, representing the Federal Government, and participating citizen advisory groups.

Boating Responsibly on the Bay and Its Rivers




The Bay And Its Rivers... Yours To Protect

The Chesapeake Bay and Its Rivers

Approximately 150 rivers, creeks and streams in the Mid-Atlantic region carry fresh water into the Chesapeake Bay, forming America's largest estuary. The water surface area of the tidal Bay encompasses more than 2,300 square miles, include the tributaries and that figure nearly doubles. Home to over 2700 species of plants and animals, the Bay is one of the most productive yet fragile ecosystems in the country. It provides habitat for animals, food and resources for people, plus recreational opportunities such as boating, fishing, swimming, and wildlife viewing.

Keeping the Bay and Its Rivers Healthy

Restoration efforts have helped to clean the Bay and enhance many of its resources; however, the battle is not over and a lot of work needs to be done. The truth is, it's not just big industry anymore, but also the everyday activities of ordinary people that are contributing to the Bay's problems—nutrients from fertilizers, insecticides, herbicides, and cleaning products, and sedimentation from erosion. We can lessen the impacts of our activities when on our boats and in our homes to help conserve the Bay and its rivers. Here's how:



Canada's Golden Plover

Boat Responsibly

Keep Waste on Board:

Raw sewage causes pollution that harms human and aquatic health. Keep waste on board in a portable toilet or holding tank to dispose of at an approved disposal facility. Encourage marina owners to maintain adequate pumpout facilities.

Slash the Trash:

Litter ruins the beauty of the Bay and some of it can kill birds and aquatic life. Keep all trash (especially plastics) on board to properly dispose of on shore.

Fish Responsibly:


Overfishing can deplete fish stocks. Learn proper catch and release techniques and limit your take - don't always take the limit.

Maintain Your Engine and Prevent Fuel Spills:

Engine exhaust and spilled fuel or oil pollutes the air and water and can harm aquatic life. When filling your gas tank, use a funnel to prevent spills. Also do not overfill the tank - leave space for gas to expand. Dispose of used oil at oil collection facilities.

Use the Bay and Its Rivers Safely and Respectfully:

Wakes from speeding boats and jet skis can cause shoreline erosion, stir up bottom sediment, and disrupt other boaters. Obey speed limits, be courteous to others, become familiar with the regulations concerning the waters you're using, and watch your wake.

Chesapeake Bay brochure on responsible boating.

Delaware Boaters Voluntary Code of Ethics

As a Delaware Boater I will do my best to keep Delaware Water's clean by:

1. Using an approved Marine sanitation Device (MSD) on my boat, such as a Porta-Pottie or Type I, II, or III MSD.
2. Emptying my sanitary waste at a Pumpout Facility located throughout Delaware.
3. Carrying and Disposing of garbage, trash and plastic on shore and not overboard.
4. Encouraging other boaters to take pride and to become stewards of Delaware's Aquatic Resources.



Delaware Division of Fish & Wildlife
PO Box 1401
Dover, Delaware 19903

Funded by the Sport Fish Restoration Act
Authorized by the Clean Vessel Act

The Department of Natural Resources and Environmental
Control is an equal opportunity employer.
Doc. No. 40-01/94/11/21

Delaware's Boaters Don't Dump-They Pump



Look for this symbol at designated Delaware Pumpout Facilities



Use an approved marine sanitation device such as a: Porta-Pottie, Type I, II or III marine head and dispose of our wastes at pumpout stations located throughout Delaware!

Delaware's Voluntary Code of Ethics for boaters.

THE BASICS



OF BOAT PUMPOUT

Keeping untreated sewage out of inland and sheltered shallow coastal waters is one of the biggest contributions boaters can make to local water quality... and it's the law.

See back for information on how to use pumpout stations.

Call 1-800-ASK-FISH to find the closest facilities.



The BOAT/U.S. Clean Water Trust is a national nonprofit organization promoting environmentally smart boating and angling through education. For more information contact 1-800-BOAT-USA.

How To Pump Your Boat's Holding Tank:

Since different machines vary slightly, read and follow posted directions! In general, here's how it works:

1. Remove cap from boat's deck waste fitting.



2. Insert pumpout hose nozzle into deck fitting.



3. Turn pump on. If there is a hose valve, open it to start suction.



4. When no waste is seen in sight glass, close hose valve and remove nozzle from deck fitting.



5. Put nozzle (with open valve) in bucket of water for 15 seconds to rinse hose. If desired, rinse boat's tank with water and pump dry.



6. Close valve. Put away hose. Turn off pump if requested. Replace deck fitting cap.



20% post-consumer waste

Flyer explaining the basics of pumpout from Boat US.

What Does The Law Say About Boats?

It is illegal to discharge raw sewage from a boat in Maryland waters.

If your boat has an installed toilet, federal law requires a U.S. Coast Guard approved marine sanitation device (MSD). If you have a Type I or II MSD, it must have a certification label.

The MSD either treats the waste and discharges it into the water (a Type I or II MSD), or holds the waste to be pumped ashore later (using a Type III MSD). Because Type IIIs keep waste out of the water, they are probably the best environmental option.

Federal law states that if you have a holding tank for untreated waste with a "T" valve, it must be secured in the closed position while operating in U.S. waters. Tying a non-releasable wire to, padlocking, or removal of the valve handle is considered adequate securing of the device.

You are not required to have an installed toilet on your boat. In fact, many people choose a portable toilet for their boat.

What Does The Law Say About Onshore Pumpout Facilities?

The 1992 Federal Clean Vessel Act provides five years of funds to the states to build more onshore disposal facilities for boat sewage. In Maryland, by July 1997, all marinas that berth boats over 22' and have at least 50 slips must have a sewage pumpout facility and portable toilet waste disposal capability.

As of October 1994, there are 117 pumpout stations in Maryland. Many of these facilities have portable toilet dumping capability. To obtain a list of these locations, call the Maryland Department of Natural Resources at (410) 874-2918. At your approach marinas by water, you should see a sign indicating pumpout availability.

First Timers:

When you want to pump out your boat for the first time, ASSE FOR HELP. It is no more difficult than pumping gasoline, but facilities and machinery do vary. Generally, the machines have instructions — if not, ask the manager to post them. In some marinas, dock staff will pump out the boat for you.

Advice From Marina Operators:

- Don't let the waste accumulate all summer before pumping out. It may compact and be much harder to remove.
- Pump out before you haul your boat for the winter.
- If you have any questions about the use of pumpout facilities, ASSE.
- Regularly maintain and clean the boat's plumbing and venting systems.
- If the hose nozzle does not lock in the dock fitting, hold the nozzle in place during the pumpout.

This brochure was produced by the BOATU.S. Clean Water Trust, and developed and distributed in cooperation with the Maryland Department of Natural Resources, Boating Administration, and the U.S. Fish and Wildlife Service. The BOATU.S. Clean Water Trust is a nonprofit educational organization working on environmentally sound boating. The Trust may be reached at (703) 424-8558.

For other information on boat sewage, the "Pump Don't Dump" program, or additional copies of this brochure, call the BOATU.S. Department of Natural Resources at (410) 974-2918.

Printed 100% on 100% recycled paper
(90% postconsumer waste) with soy-based ink.

The facilities and services of the Dept. of Natural Resources are available to all without regard to race, color, religion, sex, age, national origin, physical or mental disability.



A Boater's Guide to Sewage Pumpout



The state of Maryland holds many opportunities for boaters. With more than 17,000 miles of streams and rivers flowing into the Chesapeake Bay, and 37 lakes with boating access, you can enjoy fresh or salt water, and see hundreds of different plants and animals. There's a lot to enjoy!

Unfortunately, these waterways are not entirely healthy. One of the biggest problems is that too many nutrients are going into the Bay's waters. These nutrients come from a wide variety of sources, ranging from nutrient from farms, to failing sewage treatment plants, and acid rain. Boats pumping human sewage directly overboard also contribute to the nutrient problem.

When too many nutrients enter the water, several things happen. Algae grows out of control; dies, makes the water murky, and uses oxygen while decomposing. As sewage breaks down, it also uses up oxygen. The end result is that there isn't enough oxygen for animals to live in some parts of the Bay, and underwater grasses can't get enough light to grow.

National Geographic recently reported that during the summer, measurements in deep channels show that 13% of the Bay has little or no oxygen. As boaters, we witness oxygen problems when we see cloudier water and fewer underwater grasses.

While boats are only one source of nutrients in the Chesapeake, they are one source that can be easily controlled. Boats can also be a significant source of bacteria in areas where they gather and where there is little flushing of the water. Using a Type I or II marine sanitation device (MSD) to treat your sewage will reduce bacteria going into the Bay, while using a Type III (holding tank) will eliminate both bacteria and nutrients entering the water from your boat. Keeping untreated sewage out of the water is not hard, and it doesn't have to be expensive. With more than 192,000 registered boats in Maryland alone, we can all benefit from boaters' contributions to improving the Bay's water quality.

What Do I Need To Do?

In order to keep sewage out of the water, you'll need some equipment on your boat. If you want to retrofit your boat, read the booklet entitled "Sewage Holding Tank Systems for Recreational Boats", by the American Boat and Yacht Council in cooperation with the Department of Natural Resources. This booklet provides guidance about type and size of tanks, hoses, fittings, and plumbing arrangements best for you. Recent articles in national boating magazines will also help.



Signs like these are posted at Maryland pumpout stations.

Portable Toilets:

Portable toilets are generally made of three compartments: the bowl, the fresh water tank, and the waste container. Emptying the waste container isn't hard.

Some marinas have a separate dumping station just for portable toilets. Others use their standard pumpout machinery with a different hose attachment for portables.

If you cannot find an onshore dumping station, you can take the waste container home and dispose of the waste down your toilet. Just remember to dilute it, particularly if your home is connected to a septic system. You can also ask the marina if you can use their onshore restrooms.

Pumping A Boat's Holding Tank:

Since different machines vary slightly, read and follow posted directions! In general, here's how it works:

1. Remove cap from boat's deck waste fitting.
2. Insert pumpout hose nozzle into dock fitting. (You may need an adapter to make it fit. Marinas generally have them available. They are also for sale in boat stores.)
3. Turn pump on. If there is a hose valve, open it to start section.
4. When waste is no longer seen in sight glass, close hose valve and remove nozzle from dock fitting.
5. Put nozzle (with open valve) in bucket of water for 15 seconds to rinse hose. If desired, rinse boat's tank with water and pump dry.
6. Close valve. Put away hose. Turn off pump if requested. (Some are on timers.) Replace deck fitting caps.



Pumpout brochure from Maryland.

What Does the Law Say About Boat Discharges?

It is illegal to discharge raw sewage and gray water (shower and sink waste) from a boat in New Hampshire inland waters or to discharge raw sewage within 3 miles of the coast in tidal waters. N.H. is among 14 states that enforce "No Discharge" laws for inland waters. The U.S. Coast Guard enforces regulations under federal law for tidal waters.

You are not required to have any toilet on your boat. However, many people choose a portable toilet for their boat. If your boat has an installed toilet, it must be a U.S. Coast Guard certified marine sanitation device (MSD). Portable toilets are not regulated under federal MSD laws. The MSD either treats the waste and discharges it into the water (a Type I or II MSD), or holds the waste to be pumped ashore later, or discharged outside the 3-mile limit (a Type III MSD). Because Type IIIs keep waste out of sensitive waters, they are probably the best environmental option.

Federal law states that if you have a holding tank for untreated waste with a Y-valve, it must be secured in the closed position while operating inside the 3-mile coastal limit. Using a non-releasable wire tie, padlock, or removal of the valve handle are considered adequate methods of securing the device.

The 1992 federal Clean Vessel Act provides five years of funds to the states to build more onshore disposal facilities for boat sewage. As you approach marinas by water, you should see a sign indicating pumpout availability.

For more information, contact the N.H. Marine Patrol Bureau for a list of pumpout facilities at 293-2337.

First Timers

When you want to pump out your boat for the first time, ASK FOR HELP! It is no more difficult than pumping gasoline, but facilities and machinery do vary. Generally, the machines have instructions—if not, ask the manager to post them. In some marinas, dock staff will pump out the tank for you.

Advice From Marina Operators

- 1 Don't let the waste accumulate all summer before pumping out. It may compact and be much harder to remove.
- 2 Pump out before you haul your boat for the winter.
- 3 If you have any questions about the use of pumpout facilities, ASK!
- 4 Regularly maintain and clean the boat's plumbing and venting systems.
- 5 If the hose nozzle does not lock to the deck fitting, hold the nozzle in place during the pumpout.

For More Information

N.H. Department of Environmental Services
Biology Bureau or
Surface Water Quality Bureau
PO Box 95, 6 Hazen Drive
Concord, NH 03301
(603) 271-3500 or 271-2457

A Boater's Guide to Sewage Pumpout



Keep our water clean—
USE PUMPOUTS!

It's right in
New Hampshire



The state of New Hampshire holds many opportunities for boaters. In fact, New Hampshire harbors some of the best quality waterbodies in the country. With boating access to hundreds of lakes and ponds, rivers, and the Atlantic coastline, you can enjoy fresh or salt water, and see plants and animals of all variety. There's a lot to enjoy!

The New Hampshire Department of Environmental Services (DES) has a strong commitment to protect these resources. One way to inform boaters and others of pertinent legislation and to provide useful, environmentally-friendly advice for reducing and eliminating pollution to our waters.

One of the biggest problems for our waterways is controlling the amount of nutrients that enter them. These nutrients come from a wide variety of sources, ranging from manure from farms, to failing sewage treatment plants, and acid rain—commonly referred to as non-point source (NPS) pollution. Boats pumping human sewage directly overboard also contribute to the nutrient problem in our waters.

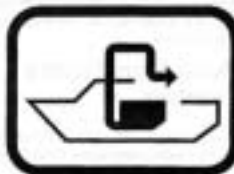
When too many nutrients enter the water, several things happen. Algae grows out of control, fish makes the water murky, and uses oxygen while decomposing. As sewage breaks down, it also uses up oxygen. The end result is that there isn't enough oxygen for animals to live.

While pollution caused by boating activities may seem minimal, every bit is a piece of the pollutant pie, and each piece eliminated helps improve the environment we live and play in.

What Do I Need To Do?

In order to keep sewage out of the water, you'll need some equipment on your boat. If you want to retrofit your boat, read the DES fact sheet #WSPCD-SWQS-1996-3 available

at the Department of Environmental Services' Public Information Office, (603) 271-2875. This fact sheet provides guidance about type and plumbing arrangements best for you. Recent articles in national boating magazines will also help.



Look for signs like this posted at New Hampshire pumpout stations.

Portable Toilets

Portable toilets are generally made of three compartments: the bowl, the fresh water tank, and the waste container. Allowable portable toilets must have a closed sewage compartment, particularly when being carried to the disposal location. The use of an open bucket, "baggie," camp toilet, or "potline seat" which use an open bucket for a base are prohibited.

Emptying the waste container isn't hard. Some marinas have a separate dumping station just for portable toilets. Others use their standard pumpout machinery with a different hose attachment for portables.

If you cannot find an onshore dumping station, you can take the waste container home and dispose of the waste down your toilet. Just remember to dilute it, particularly if your home is connected to a septic system. You can also ask the marina if you can use their onshore restrooms.

Pumping a Boat's Holding Tank

Since different machines vary slightly, read and follow posted directional in general, here's how it works:

- 1 Remove cap from boat's deck waste fitting.
- 2 With pump handle in the off position, insert pumpout hose nozzle into deck fitting. (You may need an adapter to make it fit. Most marinas generally have them available.)
- 3 Turn pump on. If there is a hose valve, open it to start suction.
- 4 When waste is no longer seen in sight glass, close hose valve and remove nozzle from deck fitting.
- 5 Put nozzle (with open valve) in bucket of water for 15 seconds to clean hose. If desired, draw boat's tank with water and pump dry.
- 6 Close valve. Put away hose. Turn off pump if required. (Hose are on liners.) Re-place deck fitting cap.

New Hampshire's version of the same brochure.

Boaters have long enjoyed the recreational possibilities found in the waters of Maine. Our pristine lakes and our coastal inlets and islands attract boats and boaters of all sizes, shapes and ages.

The Department of Economic and Community Development and the U.S. Fish and Wildlife Service would like to keep it that way. That's why both organizations are working with marinas, yacht clubs and communities to provide more pump-out stations for recreational boaters. We believe you will do the right thing if you know where pump-out stations are located, as listed on the back of this card.

Remember, the Clean Water Act prohibits the untreated discharge of sewage within three miles of the coast, or on inland waters. Vessels with an installed toilet must be equipped with a Coast Guard approved marine sanitation device designed to hold sewage for disposal at a pump-out station, or treat the sewage prior to discharge.

We're proud of our waters. Help us keep them clean.

Use Your Head.



Pump It Out.

MAINE Pump-out Stations

South Portland:
 Port Harbor Marine, Chs 9, 78 & 79 (207) 767-3254
 Spring Point Marina, Chs 16 & 80 (207) 767-3213
Falmouth: Handy Boat Service, Ch 9 (207) 781-5110
Yarmouth:
 Yarmouth Boat Yard, Ch 9 (207) 846-9050
 Yankee Marina, Ch 9 (207) 846-4326
Freeport:
 Brewer's South Freeport Marina, Ch 9 (207) 865-3181
Brunswick: Paul's Marina, Ch 16 (207) 729-3067
Robinhood:
 Robinhood Marine Center, Ch 16 (207) 371-2525
North Edgecomb:
 Eddy Marina, Ch 16 (207) 882-7776
Boothbay Harbor:
 Carousel Marina Ltd, Ch 16 (207) 633-2922
East Boothbay:
 C & B Marina, Chs 9 & 16 (207) 633-0773
Rockland:
 Rockland Landings Marina, Chs 9 & 16 (207) 596-6573
 Rockland Public Landing, Ch 16 (207) 594-0312
Camden:
 Wayfarer Marine, Chs 16 & 71 (207) 236-4378
Bangor: Bangor Town Dock, Ch 9 (207) 947-5251
Castine: Eaton's Boatyard, Ch 16 (207) 326-8579
Northeast Harbor:
 NE Harbor Municipal Dock, Chs 16 & 68 (207) 276-5737
Bar Harbor: Harbor Place, Chs 16 & 80 (207) 288-3346
Sebago Lake Area:
 Naples: Causeway Marina, (207) 693-6832
Raymond: Jordan Bay Marina, (207) 655-3845
Standish: Richardson's Marina, (207) 892-4913



Maine Department of
Economic & Community Development
(207) 624-6800

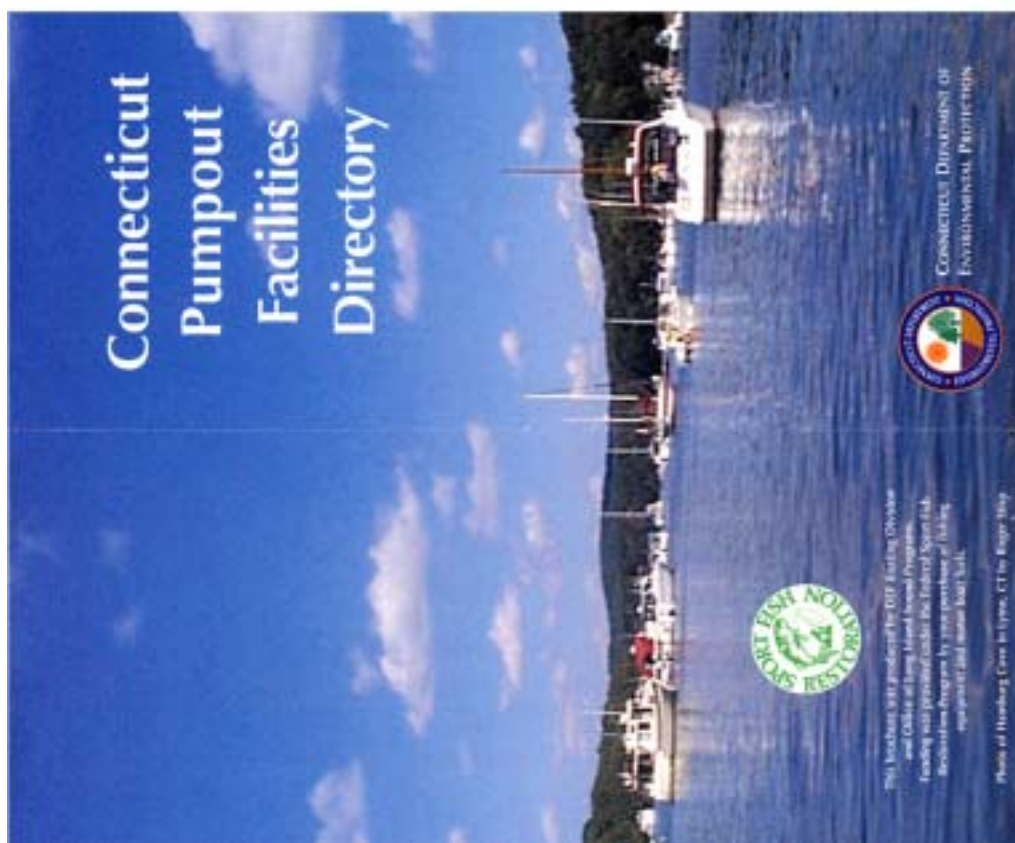
Maine's pumpout flyer with list of pumpout facilities.

Help us build a healthy future! Now that you know where the pump-outs are, you can keep boat sewage out of our fishing and swimming areas. So... **Please Pump Out!**



The Complete 1995 Boaters' Guide to Pump Out Facilities in the Coastal Waters of Massachusetts!

1. Facility expected to be operational this summer... please call ahead to confirm



Pumpout brochure with list of pumpout facilities from Connecticut.

A Boater's Guide to Sewage Disposal

Boaters share a common desire to play in and on sparkling clean waters. We can choose to pollute or not to pollute. We can do the right thing now, take action and obey the law! Good environmental citizenship will help assure our continued delight in clean waters.

The Facts

The Clean Water Act prohibits discharge of untreated sewage within three miles of the coast, called the U.S. Territorial Sea Demarcation Line. This includes all of Long Island Sound!

Boats with installed toilets must be equipped with a U.S. Coast Guard approved marine sanitation device that holds sewage for disposal at a pumpout station or treats the sewage prior to discharge.

Untreated overboard discharge of sewage threatens our waters with pathogens and nutrients. Poor water quality closes shellfish beds and swimming areas for public health reasons. Your actions control water quality. Be considerate of others and the environment. Use pumpouts and help keep our water clean.

Pump It Out – It's Easy

Use shore-side pumpout facilities listed in this brochure. Also, listed are pumpout boats that provide a convenient and efficient method of pumping out holding tanks. Hold them by VHF radio and they will come to your boat. The service is often free of charge.

Holding Tank Additives

Additives come in a variety of forms and chemical compositions. Harmful ingredients to avoid are formaldehyde, formalin, phenol derivatives, ammonia compounds, alcohol bases and chlorine bleach. These chemicals can damage your toilet system and harm the environment.

Use natural enzymes and bacteria that eliminate odors and liquify solid wastes without toxins or chemicals. These products are available at local marine supply stores. It is important to remember that holding tank disinfectors only reduce odors. They do not treat waste.

Boater's Tips

Use environmentally safe, fast dissolving toilet paper made especially for RVs and boats. Reduce odors by pumping out the holding tank often and flushing completely with water.

For more information on:

- Retrofitting your marine toilet system
 - Choosing a marine sanitation device
 - Holding tanks and pumpouts
 - The Clean Vessel Act
 - No Discharge Areas
- Call the Boating Division at 860-434-8638 or visit our website at:
<http://dep.state.ct.us/ofisp/cva/cva.htm>

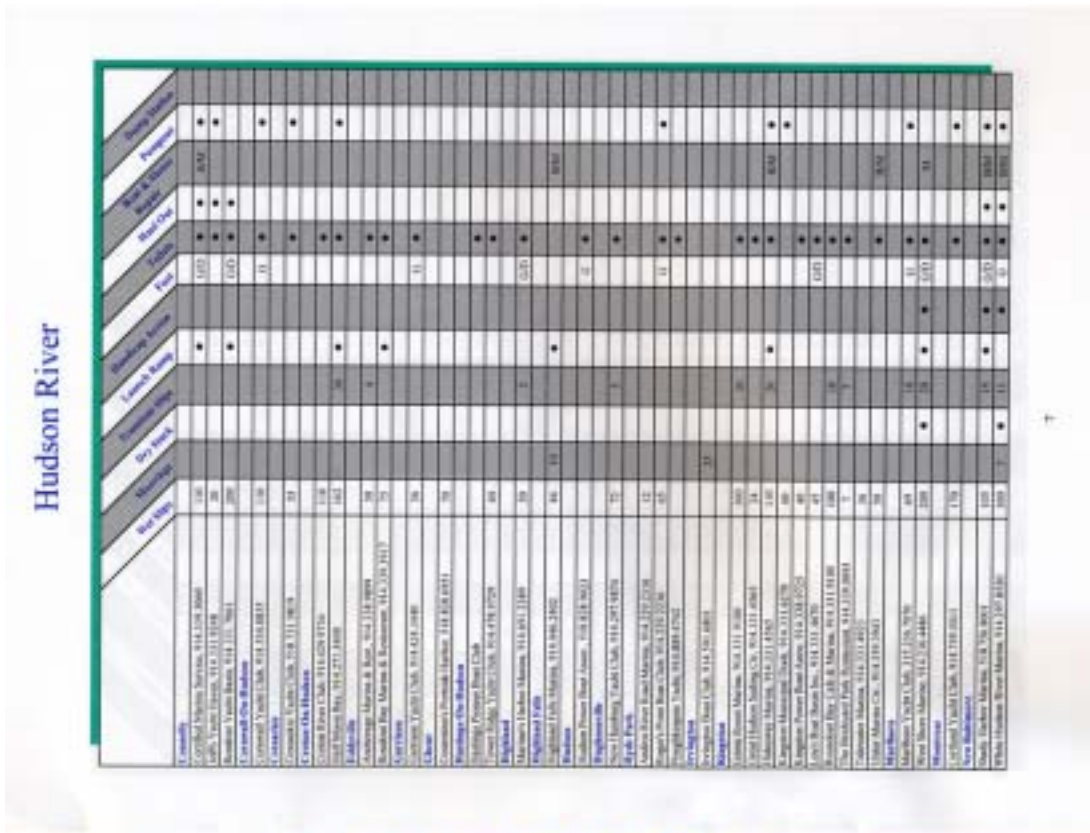
Make the Sound Choice –
Use Pumpouts!



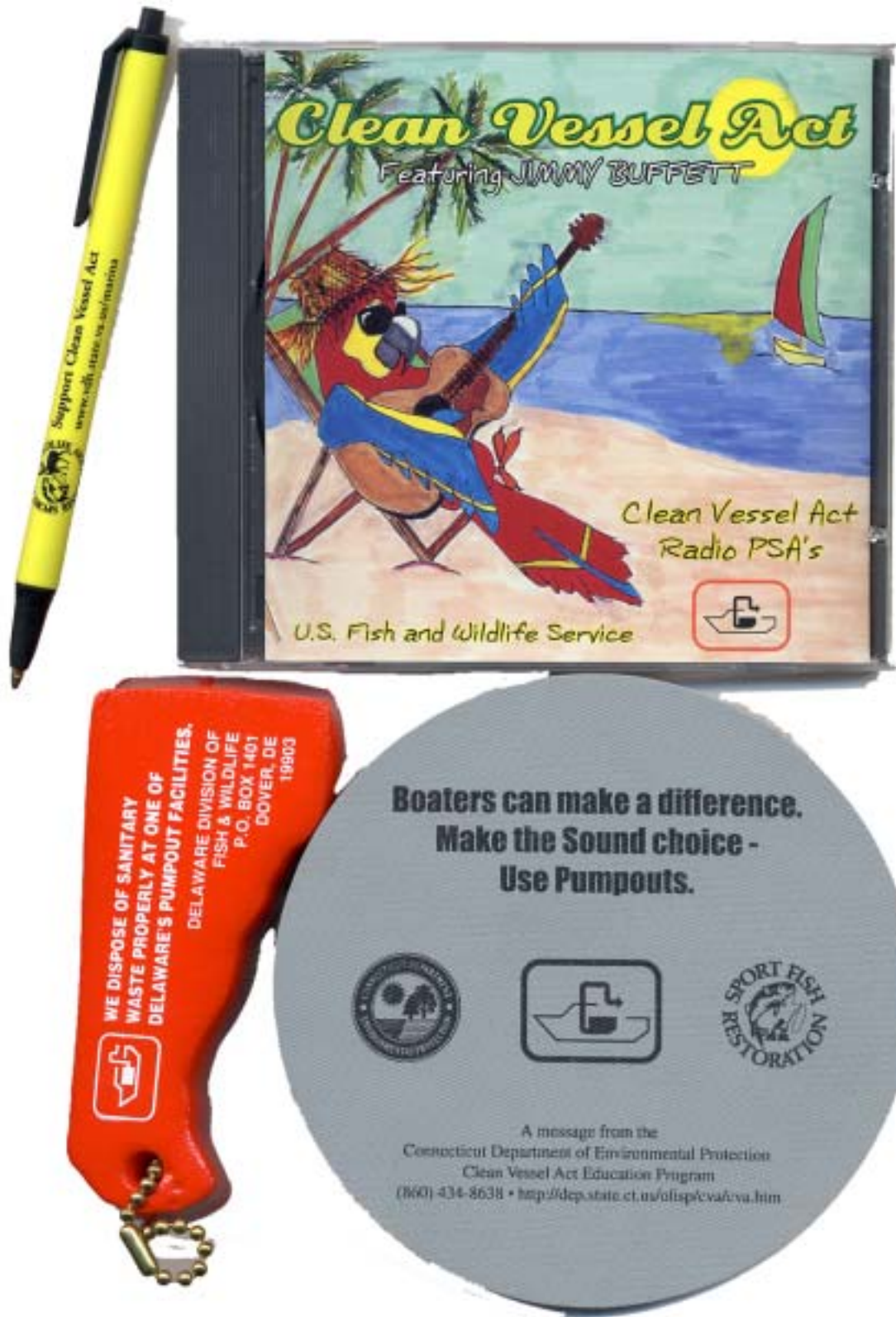
History Stations below are listed east to west.

History Stations below are listed east to west.





SOUTH SHORE VESSEL PUMPOUT EVALUATION AND OUTREACH PLAN
Prepared by Urban Harbors Institute and the North & South Rivers Watershed Association 06/30/2004



Other methods of reminding boaters to use pumpouts (CVA pen from Virginia, PSA announcements featuring Jimmy Buffett from the US Fish & Wildlife Service, floating key chain from Delaware and a "Magic Grip" jar opener from Connecticut).



Pumpout flag produced by the Massachusetts Office of Coastal Zone Management.

Town of Barnstable



Pumpout Boat

Cape Cod knows the value and importance of her coastal waters. Many earn or supplement a living from the sea. Visitors come from around the world to enjoy our beautiful beaches and sparkling waters. Because our coastal waters play such an important role in our lives, and in our livelihood, Cape Cod must preserve these beaches, bays and sounds from contamination.

Raw, untreated sewage from boats is a direct threat to the coastal waters that we all love and depend upon. A major source of this pollution has been the overboard discharge of raw, untreated sewage from boats.

The Town of Barnstable operates a pumpout boat for the benefit of boaters in the "3-Bay" area of Cotuit, North Bay and West Bay. The pumpout boat also services boaters on the waters of East Bay and the Centerville River by appointment, when requested.

The Barnstable Pumpout Boat is available during the boating season, and is on patrol throughout the operating area Wednesday through Sunday from 9:30 A.M. to 4:30 P.M. The Barnstable Pumpout Boat is a white, twenty-one foot, center-console with the lettering "HARBORMASTER" on both sides. The pumpout boat monitors VHF channels 9 and 16 during normal operating hours.

There are several ways to arrange for the pumpout boat to empty your holding tank:

First, you can simply flag down the pumpout boat on the waters of the 3-Bay operating area.

The Barnstable Pumpout Boat operates during the hours noted above and the operator will, if not enroute to a scheduled pumpout, immediately service a request.

Second, you can use your boat's VHF or marine band radio. To make arrangements call for the "Barnstable Pumpout Boat" on VHF marine radio via channel 9 (preferred) or 16. Because the pumpout boat monitors both 9 and 16, and the operator may not be in a position to see the channel number when your call comes over the air, be sure to state the channel number in your call. When you reach the pumpout boat (be patient, the operator may be busy when you call!), the operator will move you to a working channel (usually channel 69), and get the relevant information to complete the pumpout.

Third, you can phone the Barnstable Harbormaster office at 790-6273. The following information will be needed in order for the pumpout boat operator to locate and pump out your holding tank:

Name of boat: "Bonkers", "Serenity"

Name of Owner/Operator and Call back

Number: In case of the need to make contact

Size and Type of Boat: ex. 28' Powerboat, 32' Sailboat etc.

Color: ex. White w/blue trim, Green w/tan bimini etc.

Location: ex. Prince Cove, Ropes Beach, Cordwood etc.

This service is free to all boaters and we encourage you to use it.



**Harbormaster Division
Dept. of Health, Safety, and
Environmental Services**

Laminated flyer advertising the pumpout boat in Barnstable, MA.



Town Stratford
PUMPOUT BOAT SERVICE

On the Housatonic River
WEDNESDAY – FRIDAY

8 AM to 4 PM

SATURDAY & SUNDAY

10 AM TO 6 PM

**Call VHF Channel 68 for the current location and
availability**

Call 381-2049 to schedule an appointment

**Meet the Pumpout Boat at its Moorings when its
Yellow Light is Flashing**

Poster advertising the pumpout boat in Stratford, CT.

APPENDIX 2 TEMPLATE PRESS RELEASE

NOTE: This press release can be easily personalized for individual towns by replacing [South Shore] for the individual town name and deleting other towns from the table.

Pumpout Program for [South Shore] Boaters

The [South Shore's] abundant and diverse water resources offer endless recreational opportunities for residents and visitors alike. Our rivers, lakes, streams, bays, ocean and wetlands also provide quality habitat for hundreds of species.

The beauty and value of our waters can be compromised if not carefully protected. Sewage discharges from vessels can degrade water quality, adversely affect public health and wildlife, and close shellfish beds and swimming beaches.

To help keep our waters clean, the Clean Vessel Act Program (CVA), passed by Congress in 1992, provides funds for construction and operation of sewage pumpout stations and dump stations for recreational boats, as well as for information and education programs that encourage boaters to use pumpouts.

Since the CVA program's inception, Massachusetts' harbors have put more pumpout boats in service than any other state. During last year's boating season alone, these pumpout boats, coupled with the state's many shoreside facilities, serviced ##### vessels and pumped ##### gallons of sewage at a low cost or no cost to boaters.

No one wants to fish, swim or boat in polluted water. Using pumpout stations is an easy way to protect the South Shore's environment and natural resources. On the [South Shore], there are many pumpout boats and shoreside facilities available for boaters, including:

Town	Place	Facility type	Cost	Channel	Phone
Cohasset	Cohasset Harbor	Boat	Free	10	781-383-0863
Duxbury	Town Pier	Boat and Shoreside	Free	16	781-934-2866
Hingham	Hewitt's Cove Marina	Shoreside	Free	9, 16	781-749-2222
Hingham	Hingham Harbor	Boat	Free	9	781-741-1450
Hull	Nantasket Pier	Boat	Free	9, 16	781-925-0316
Kingston	Town Pier	Boat	Free	9	781-585-0519
Marshfield	Green Harbor (town)	Shoreside	Free	9, 16	781-834-5541
Marshfield	Mary's Boat Livery (N. River)	Shoreside	Free	9, 16	781-837-2322
Marshfield	White's Ferry Marina	Shoreside	Free	9, 11	781-837-9343
Plymouth	Brewer's Marina	Shoreside	\$\$\$	9, 72	508-746-4500
Plymouth	Plymouth Harbor	Boat and Shoreside	Free	9	508-830-4182
Plymouth	Town Pier	Shoreside	Free	16	508-830-4182
Scituate	Cole Parkway Marina (town)	Shoreside	Free	9	781-545-2130
Scituate	James Landing Marina (N. River)	Shoreside	\$\$\$	n/a	781-545-3000
Scituate	North River Marina	Shoreside	\$\$\$	9	781-545-7811
Scituate	Waterline Mooring	Boat	Free	9, 16	781-545-4154

Boaters can obtain a free guide that shows locations of *all* Massachusetts' pumpout facilities by contacting:

- MA Division of Marine Fisheries CVA Office at (508) 563-1779 x119, or
- MA Office of Coastal Zone Management at (617) 626-1200.

The guide is also available on:

- CZM's website (<http://www.mass.gov/czm/potoc.htm>); and
- DMF's website (<http://www.mass.gov/dfwele/dmf/programsandprojects/pumpout.htm#pumpout>)

The Clean Vessel Act Program is making a difference in the quality of our water resources, and you can, too. So remember, when you're out on the water, please be a safe boater and keep our waters clean - use pumpouts!

If you have any questions about the CVA program or CVA funded facilities, please call Vin Malkoski at (508) 563-1779 x119 or Tom Beaulieu at (617) 626-1525.

PUMP IT, DON'T DUMP IT

The TOWN of [name]'s

FREE

PUMPOUT BOAT SERVICE

Located in XXXXXXXXXX Harbor



Hours of Operation

8am to 4pm Monday - Friday

10am to 6pm Saturday & Sunday

Call

VHF CHANNEL 68

for the current location and availability

Call

(###) ###-####

to schedule an appointment

ALTERNATIVE PUMPOUT SERVICES ARE AVAILABLE AT

Marina X	Town Y	Phone number	VHF Channel	Hours of Operation
Marina X	Town Y	Phone number	VHF Channel	Hours of Operation
Marina X	Town Y	Phone number	VHF Channel	Hours of Operation

Template advertising material for a pumpout boat including the contact details for alternative local facilities.