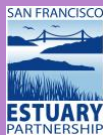




Boater Sewage Disposal Survey Report

California Clean Vessel Act

California Boating Clean and Green Program
San Francisco Estuary Partnership
The Bay Foundation



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Sun Harbor Marina
Marina Harbor Anchorage
City of Santa Barbara Waterfront Department

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Introduction

Background

California has one of the highest levels of recreational boating in the nation. With 1,100 miles of Pacific Ocean coastline and hundreds of inland navigable rivers and lakes, as well as the Sacramento-San Joaquin Delta (Delta), there are numerous recreational opportunities for its four million recreational boaters¹. Consequently, this combination of vast recreationally available waterways, high recreation demand, and mild climate places a severe demand on California's water resources. Untreated sewage discharged from boats can cause localized effects on water quality and public health, particularly in semi-enclosed marinas and harbors where minimal water flushing occurs. Protecting water quality is essential to maintaining healthy habitats and is in everyone's best interest.

In 1992, Congress passed the Clean Vessel Act (CVA) to help reduce pollution from vessel sewage discharges into United States (U.S.) waters. The grant program established by the Act helps fund the construction, renovation, operation, and maintenance of sewage pumpout stations, dump stations, and floating restrooms to service recreational vessels. The CVA Program also provides grant funding for boater education programs to promote public awareness about boat sewage and its proper disposal. As part of its commitment to provide clean, safe, and enjoyable recreational boating in California, the California State Parks Division of Boating and Waterways (DBW) serves as the State grant coordinator utilizing federal Sport Fish Restoration and Boating Trust Fund grants to implement the CVA Program. The CVA identifies vessel sewage discharge as a "a substantial contributor to localized degradation of water quality in the United States." Although it is illegal to discharge raw sewage into U.S. territorial waters, discharges still occur and have a significant adverse impact on local waterways.

In 1997, the California Boating Clean and Green Program (BCGP) was established as a statewide program with the main objectives of educating boaters about clean and safe boating practices and providing technical assistance to marinas and local governments to increase the accessibility of environmental services for boaters. The California State Parks and the California Coastal Commission implement the BCGP jointly. The program uses a multifaceted outreach approach to fulfill its objectives and has four main components: 1) research; 2) networking; 3) technical assistance; and 4) education and outreach.

The Bay Foundation (TBF) is a non-profit environmental organization founded in 1990 with a mission to restore and enhance Santa Monica Bay and its watershed. TBF's Boater Education Program was initiated in 1996 and is dedicated to the reduction of ocean pollution generated by boating activities. The Boater Education Program utilizes collaboration, direct outreach, and technical assistance to implement effective public engagement in Southern California's coastal

¹ California State Parks, 2017.

boating communities in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties. Hundreds of thousands of boaters have been engaged using an adaptable strategy based on 1) support for the provision of facilities like sewage pumpout and dump stations; 2) creation of educational materials; 3) a partnership approach that amplifies statewide clean boating messages and campaigns; and 4) strong relationships with the boating industry, boating public, marinas, yacht clubs, and other organizations throughout the State. Funding for this program is mainly provided by DBW through the CVA grant program.

The San Francisco Estuary Partnership (SFEP) was established in 1998 as a collaboration of local, state, and federal agencies, NGOs, academia, and business leaders working to protect and restore the San Francisco Bay-Delta Estuary (Estuary). For more than two decades, SFEP's CVA Program has been working in the 11 counties adjacent to the Estuary to promote clean boating and environmental stewardship to boaters and marinas. In partnership with DBW, TBF, the Coast Guard Auxiliary, and an array of other partners, the CVA Program has engaged boaters, marinas, and other stakeholders through in-person boater education, regional capacity building, and pumpout network enhancement. The combination of boater and marina education and capacity building serves to address the complex nature of sewage discharge by providing boaters with the information they need to make correct decisions and provide marinas with the tools they need to work with boaters to proactively prevent sewage discharge.

Survey Purpose

Between October 2020 and February 2021 BCGP, SFEP, and TBF (project partners) implemented the statewide Boater Sewage Disposal Survey (survey). The aim of the Boater Sewage Disposal Survey was to collect information on California boaters' sewage disposal norms and preferences. Project partners sought to find out how boaters currently dispose of boat sewage, if they were satisfied with this method, if they preferred another method, and how they search for information about sewage pumpout and dump stations, and clean boating resources. Survey findings were analyzed to summarize boaters' preferred sewage disposal method and help partners gain insight into how disposal needs are currently being met. Analysis of this information can inform future outreach programs that serve the boating community and help protect the shared resource of California's waterways.

Methodology

Research Questions

The survey and results presented in this report included questions developed by the project partners. The following questions were asked:

1. What is the region where you most commonly boat?

2. What is the length of your boat?
3. What do you most commonly use your boat for?
4. What type of head is on your boat?
5. How do you dispose of your boat sewage? (If applicable)
6. How satisfied are you with (current sewage disposal method)?
7. How can this rating be improved?
8. In a perfect world, if all ways to service your boat were FREE, what would you choose?
9. How important is it that your marina/yacht club provides a way to service your boat without having to go somewhere else? (If applicable) *
10. Would you be willing to pay more if your marina/yacht club had a (ideal service method chosen)? (If applicable)
11. How do you find (your ideal service method) when you're in an unfamiliar area?
12. What, if anything, would you see worthwhile or beneficial about NOT discharging sewage overboard? *
13. Is it important that marinas/yacht clubs you use discourage dumping sewage (treated or not) overboard? (If applicable) *
14. Anything else about boat sewage you want us to know? *

** Indicates an optional question.*

Beta Test Survey

The Boater Sewage Disposal Survey (survey) was first distributed as a beta test survey to marina managers, mobile pumpout companies, and boaters. In the Fall of 2020, 34 people received the beta test survey. The project partners received 16 responses. The final version of the survey reflected beta tester feedback that improved the flow of questions and captured additional detail.

Survey Sample Size

According to the *California Vessel Waste Disposal Plan*, there are 862,722 registered vessels and 80,812 total slips in California, for a total population size of 943,531². A sample size of 384³ was established based on a margin of error of 5% and a confidence level of 95%, and the project partners set a goal of reaching 400 total survey responses.

Virtual and Physical Outreach

For 112 days project partners digitally surveyed California boaters. Due to the COVID-19 pandemic and restrictions, partners used both virtual and socially distanced physical outreach strategies to solicit survey participation. Socially distanced outreach occurred with the distribution and posting of promotional flyers featuring a QR code at Southern and Northern California

² California Vessel Waste Disposal Plan (unpublished), 2020.

³ Custom Insight, 2021.

marinas. Virtual outreach occurred through organic and paid social media posts, Google advertisements, email blasts, and newsletters. Appendix 1 includes the following promotional items: *The Changing Tide*, social media outreach, email campaigns, and flyer display. Examples of targeted audiences for paid advertising included people with the following interest(s) and/or affiliation(s):

- Fishing
- Outdoor Recreation
- Yacht Clubs
- Boating
- Boat Shows
- Marinas
- U.S. Coast Guard
- Sailing Instructor
- Boat Captain

Paid Facebook and Instagram advertisements reached 54,230 people in Southern California, with 11,102 directly engaging with the ad⁴. The majority of those that engaged with the Southern California ad identified as male (63%), mostly between the ages of 25 and 34. Project partners in Northern California promoted the survey through organic and paid ads on Facebook, Twitter, and Google. Cumulatively through Facebook advertisements, 121,271 people were reached and 11,381 engaged with the posts. The largest demographic for the Northern California Facebook ad was male users in the age group of 55 and over. The total number of people reached on Facebook throughout California was 175,501, out of which 22,483 were engaged. Northern California Twitter impressions totaled 39,956 and included 799 engagements. Additionally, the Northern California Google ad impressions amounted to 168,014.

Two email campaigns promoted the survey and were sent to over 4,500 people. The first email campaign was sent to 2,276 people, 396 opened it for an open rate of 19%. A second email campaign was sent out towards the end of the survey period and was sent to 2,374 people, 449 people opened it for an open rate of 20%. The overall average email open rate for the two campaigns was 20%⁵.

Survey information was included in California Clean Boating Network's virtual publication *The Changing Tide*. *The Changing Tide* was released in December 2020 to 1,526 people and had an open rate of 17%. *The Changing Tide* was distributed by all three program partners, likely furthering survey reach and engagement.

⁴ Facebook, 2021. Ad engagement is defined as the number of actions people took involving the ad, such as commenting on, sharing, or clicking the link.

⁵ Constant Contact, 2021.

Survey Software

The survey was created using an interactive web-based platform that was customizable based on the response a participant selected, and captured metrics including the number of views, responses, completion rate, and the average time to complete the survey. The platform uses logic jumps (logic) to funnel survey respondents into the *path, or branch*, most relevant to them while completing the survey. This logic function offered by the platform was beneficial for the survey design since there are several sewage disposal methods depending on the presence or absence of a marine sanitation device, and responses are specific to a specific method of disposal. For this survey, these different *paths* are captured in this report as “Boater Groups” and are summarized as follows:

Boater Group 1 (n=316): respondents with a marine sanitation device onboard and a holding tank that can be pumped out.

Boater Group 2 (n=54): respondents with a port-a-potty onboard, marine composting toilet or simple bucket.

Boater Group 3 (n=13): respondents with a flow-through marine sanitation device system onboard without a holding tank.

Boater Group 4 (n=41): respondents with no head onboard.

Survey Results & Analyses

Overview

Throughout the survey's 112-day distribution period, a total of 424 responses were submitted. The survey received a total of 895 initial starts, with a survey completion rate of 47.5%.

Based on the initial survey question "What type of head is on your boat?" and its potential response:

- head with a holding tank (needs to be pumped out),
- port-a-potty,
- marine composting toilet,
- a trusty bucket,
- head WITHOUT a holding tank,
- I do not have a head on my boat.

The participating boater was taken down one of three possible "logic paths" and put into one of four *Boater Groups*, as described above. In each of these three paths, only relevant questions were asked based on their initial head (toilet) response (Reference Appendix 2, Survey Tree for details). For example, if a boater selected *head WITHOUT a holding tank (needs to be pumped out)* or *I do not have a head on my boat*, the survey software skipped all non-applicable questions on sewage disposal and one's corresponding to satisfaction rate. Participants without a holding tank or head on their boat were only asked questions about green practices, how they find boating resources, and additional optional comments. For further clarification on this sequencing, please see Appendix 2 for a spreadsheet of all survey questions and their corresponding boater group based on their head categorization. The following results are summaries of the responses received.

Boater Information

Regional Distribution

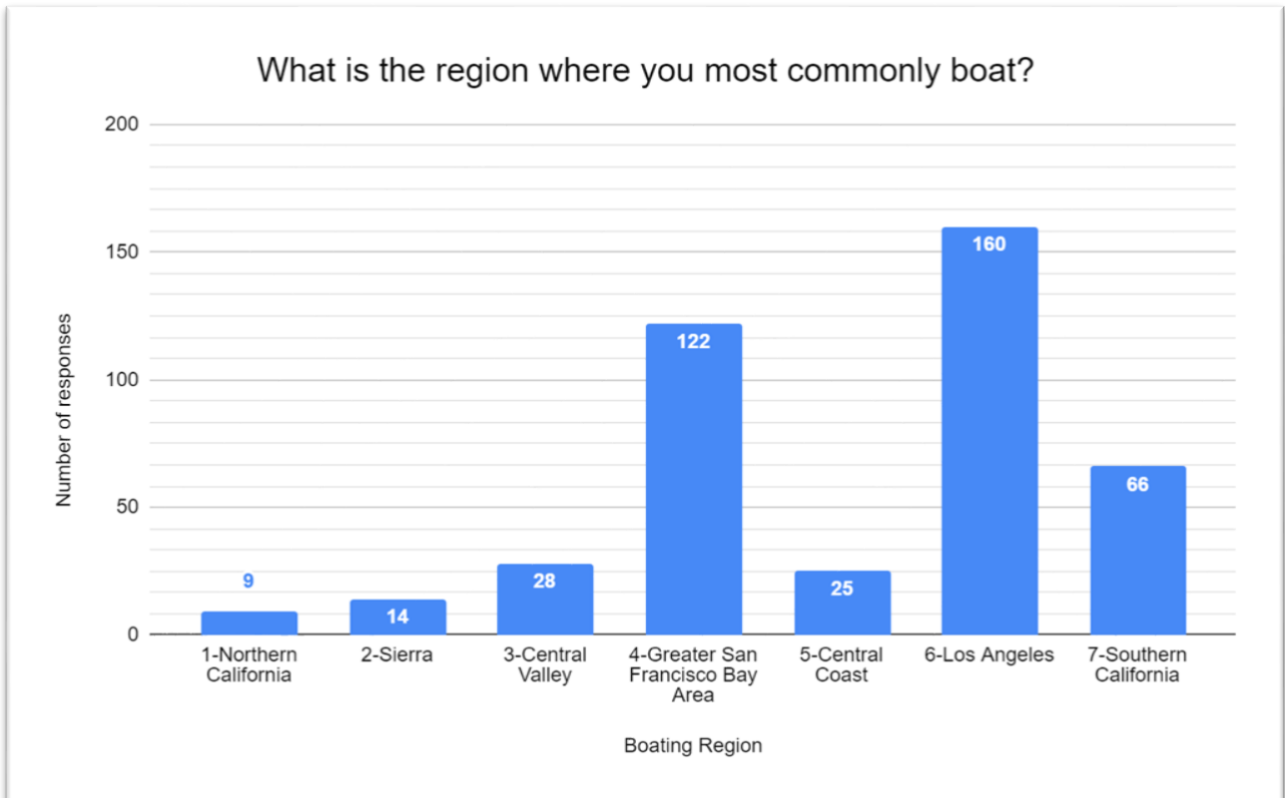


Figure 1 - Regions where survey respondents commonly boat.

In response to the question “What is the region where you most commonly boat?” the highest response was *Los Angeles* (160 or 37.7%), which for this survey included Los Angeles and Ventura County. The second highest response was the *Greater San Francisco Bay Area* (122 or 28.7%), which included the following Counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Solano, and Sonoma. The third most boated region was *Southern California* (66 or 15.6%) which included Imperial, Orange, Riverside, San Bernardino, and San Diego Counties. The least commonly boated region was *Northern California* (9 or 2.1%), which included the following Counties: Del Norte, Humboldt, Lake, Lassen, Mendocino, Plumas, Shasta, and Trinity (**Figure 1**).

Length of Boat

When asked, "What is the length of your boat?" over half (241 or 56.8%) of the respondents answered 25-40 feet. Only 14 or 3.3% of respondents indicated that their boat was over 60 feet (Figure 2).

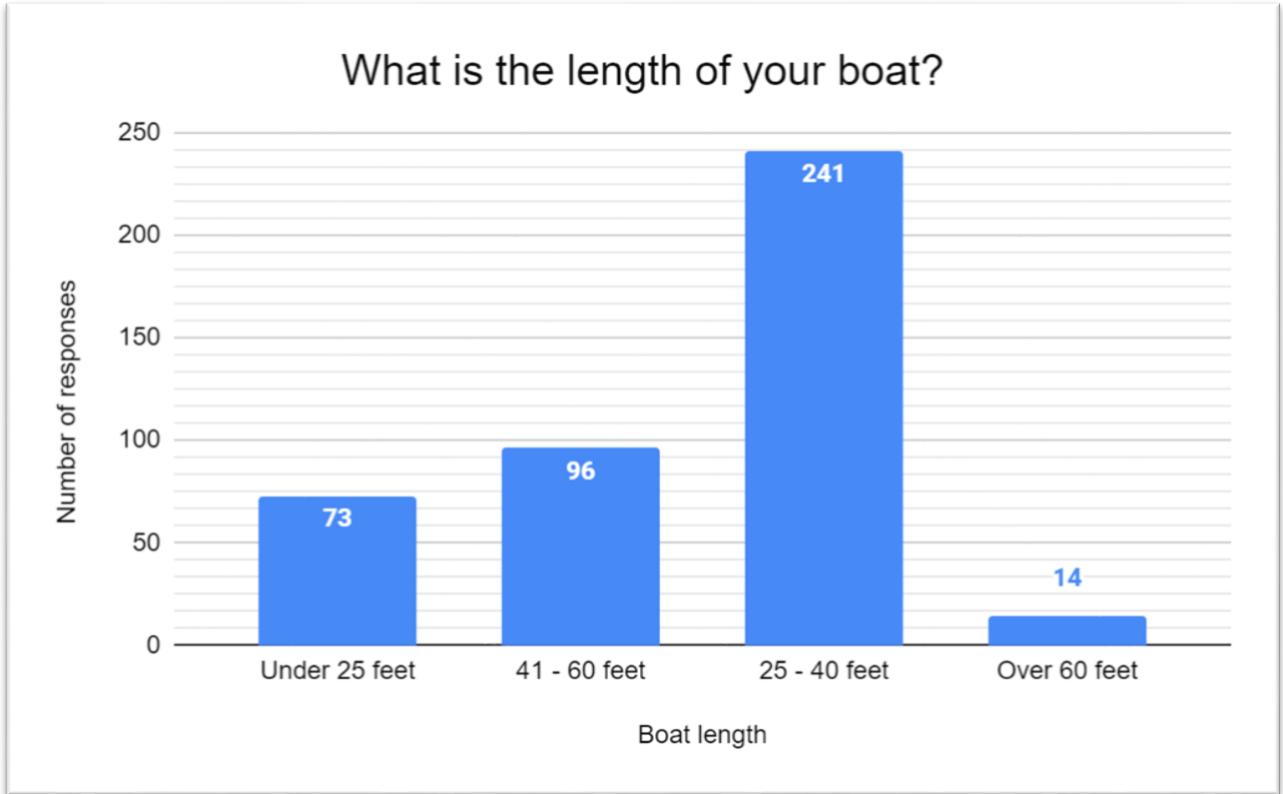


Figure 2 - Length of survey respondents' boats.

Predominant Use

When asked, “What do you most commonly use your boat for?” more than two-thirds (289 or 68.2%) of the respondents indicated they use their boats for *leisure cruising*. The second most common activity was *fishing* (74 or 17.5%). The least common activities included: *boat camping* (19 or 4.5%), *skiing* (8 or 1.9%), *swimming* (2 or 0.5%), *wakeboarding* (0 or 0%). 32 or 7.5% of respondents noted they used their boats for *other* activities (**Table 1**).

Boats Common Usage	Count	Percent (%)
Leisure Cruising	289	68.2
Fishing	74	17.5
Swimming	2	0.5
Skiing	8	1.9
Boat Camping	19	4.5
Wakeboarding	0	0.0
Other	32	7.5
Grand Total	424	100

Table 1 – Most common activities conducted on survey respondents’ boats.

Written in responses under “Other” included the following common uses: *home, live aboard, racing, sailboat racing, sailing, staying over on the weekends, workboat, and yacht racing.*

Type of Head

When asked, “What type of head is on your boat?” the majority of respondents (316 or 74.5%) answered *head with a holding tank (needs to be pumped out)*. The next largest number answered, *I don’t have a head on my boat* (41 or 9.7%), followed by 34 or 8% selecting *port-a-potty*. The least common type of heads on boats was *head WITHOUT a holding tank* (13 or 3.1%), a *trusty bucket* (10 or 2.4%), and *marine composting toilet* (10 or 2.4%) (**Figure 3**).

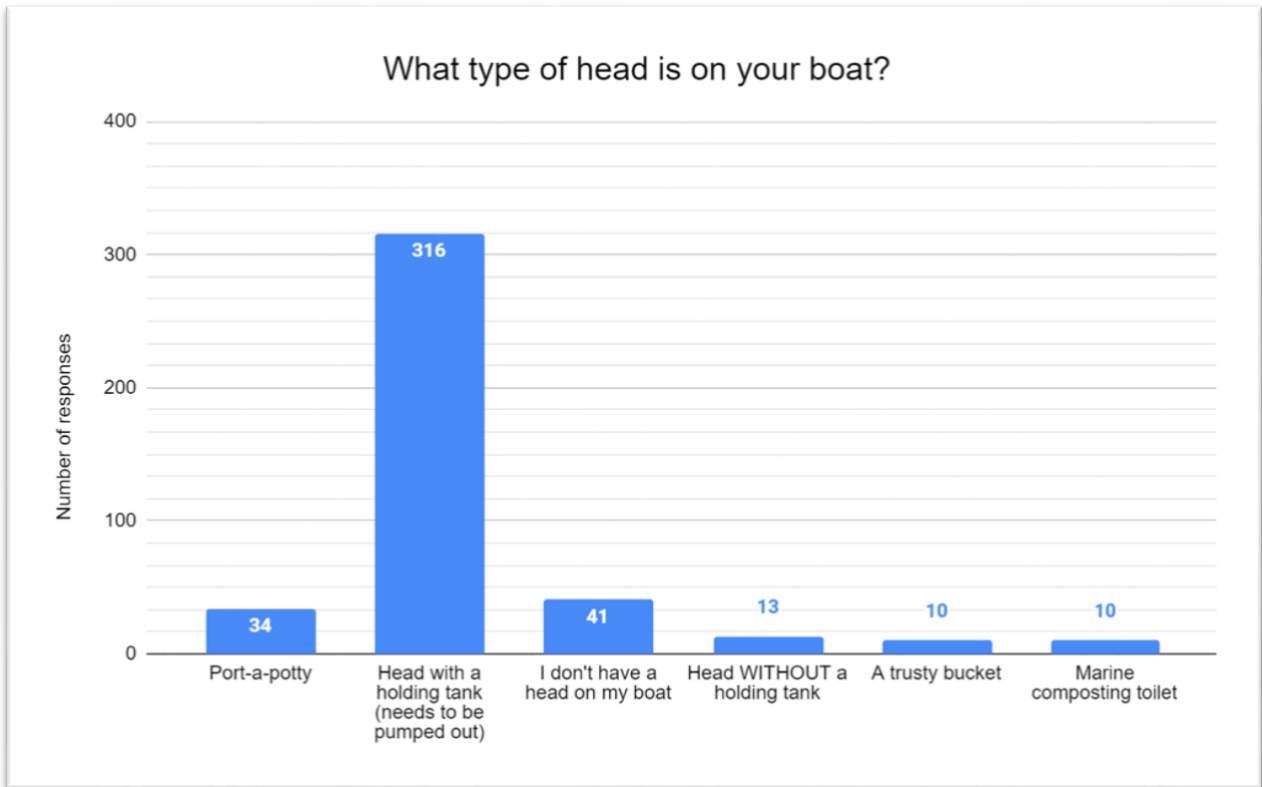


Figure 3 - Type of head on survey respondents' boats.

From this section on, the survey questions differed based on the respondent's answer to “What type of head is on your boat?” The sections below include responses based on whether they fell into:

- Boater Group 1** (head with a holding tank),
- Boater Group 2** (port-a-potty, composting toilet and bucket users),
- Boater Group 3** (head without a holding tank), and
- Boater Group 4** (no head).

Current Boat Sewage Disposal Methods

Boater Group 1 - Head with a holding tank (Needs to be pumped out)

The 316 respondents who answered they have heads with holding tanks were then asked, “How do you dispose of boat sewage?” More than half (191 or 60.4%) indicated they use *stationary sewage pumpouts*. The second most common response was that they use a *mobile pumpout boat* (56 or 17.7%). The least common methods of disposing of boat sewage were *discharge overboard* (37 or 11.7%) and *in-slip sewage pumpout* (26 or 8.2%). Only 6 or 1.9% responded with *I don't use my boat's head* (**Figure 4**).

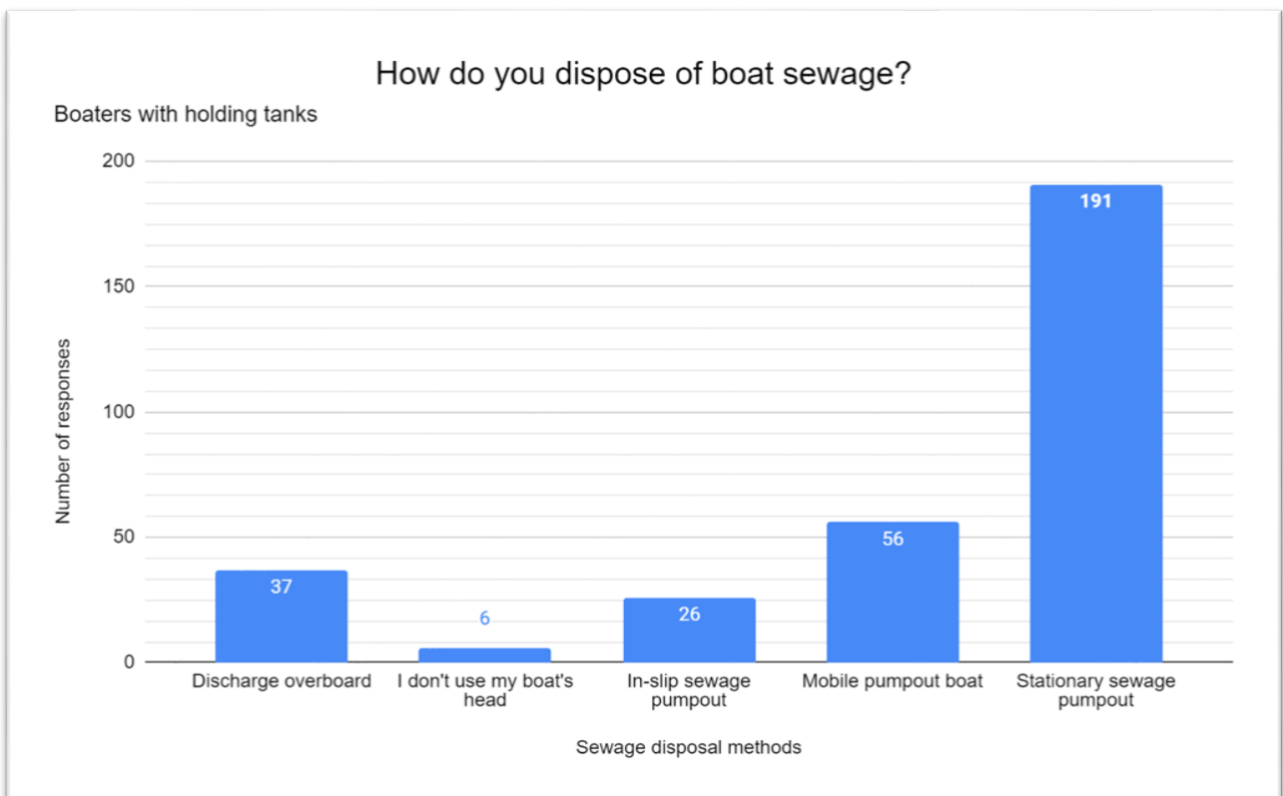


Figure 4 - How respondents from Boater Group 1 dispose of boat sewage.

A follow up question for **Boater Group 1** asked how satisfied they were with their usual disposal method. Respondents were directed to select a number from 0 to 5, with 0 being very unsatisfied and 5 being very satisfied.

Those that submitted a satisfaction rate of 4 or less were asked “How can this rating be improved?” with the following options: *increased accessibility, improved cleanliness, better functionality, lower price, and other*.

- ***In-slip pumpouts users (n=26) had an average satisfaction rate of 4.3 out of 5.***
 - Respondents with a satisfaction rate under 4 (n=12) said that this rating could be improved by:

- *better functionality* (6 or 50%),
 - *lower price* (3 or 25%), and
 - *increased accessibility* (2 or 16.7%).
 - The one *other* respondent commented on wanting clearer instructions (1 or 8.3%).
- **Mobile pumpout boat users (n=56) had an average satisfaction rate of 4.4 out of 5.**
 - Respondents with a satisfaction rate of under 4 (n=23) said that this rating could be improved by:
 - *lower price* (10 or 43.5%),
 - *increased accessibility* (8 or 34.8%),
 - *better functionality* (2 or 8.7%), and
 - *improved cleanliness* (2 or 8.7%).
 - The one *other* respondent indicated a desire for professionalism (1 or 4.3%).
- **Stationary sewage pumpout users (n=191) had an average satisfaction response of 3.7 out of 5.**
 - Respondents with a satisfaction rate of under 4 (n=120) said that this rating could be improved by:
 - *increased accessibility* (61 or 50.8%),
 - *better functionality* (39 or 32.5%),
 - *improved cleanliness* (12 or 10%), and
 - *lower price* (5 or 4.2%).
 - The three *other* (3 or 2.5%) responses included *ensuring people know how to use it, and how to clean after use, have someone else do it for me, and more pump out facilities.*
- The 37 boaters who responded that they discharge overboard did *not* get asked a to rate their satisfaction with that method.
 - The six boaters who responded that they do not use their boat's head did *not* get asked to rate their satisfaction with that method.

Boater Group 2 - Port-a-potty, marine composting toilet, and trusty bucket

The 54 respondents who indicated they use port-a-potties, marine composting toilets or trusty buckets were asked how they disposed of boat sewage. Half of the respondents (27 or 50%) said *land-side restrooms*. The second most common response was that they *discharge overboard* (11 or 20.4%). 9 (or 16.7%) responded that they use *port-a-potty dump stations*, 2 or 3.7% stated *they do not use their port-a-potty, bucket, or composting toilet*, and 5 or 9.3% said they use *other* methods. “Other” methods that were written in include: *city sewage, bring it home to dump, dumpster for compost, and ‘fluids in the restroom, solids bagged up and used as compost or disposed in the garbage* (Figure 5).

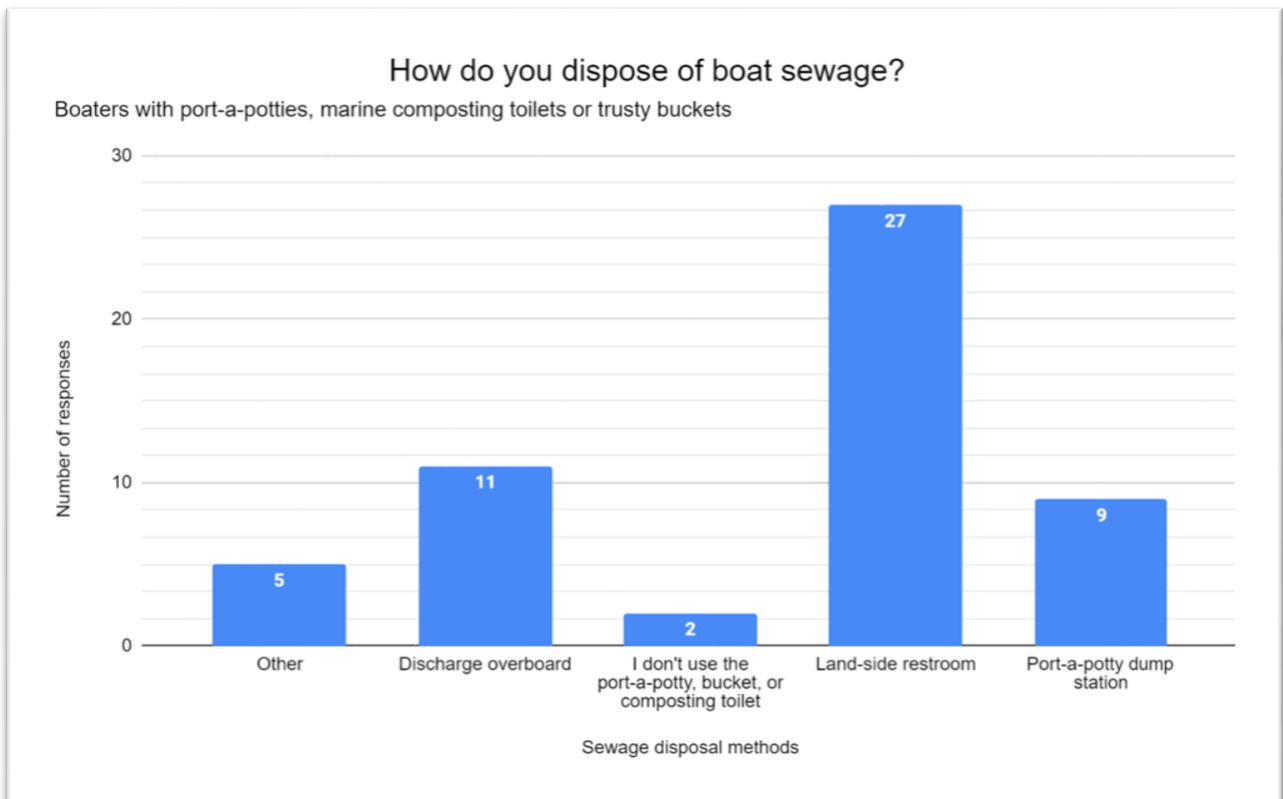


Figure 5 - How respondents from Boater Group 2 dispose of boat sewage.

- **Land-side restroom respondents (n=27) had an average satisfaction rate of 3.7 out of 5.**
 - Respondents with a satisfaction rate under 4 (n=18) stated potential improvements could include:
 - *increased accessibility* (9 or 50%),
 - *better functionality* (7 or 38.9%), and
 - *improved cleanliness* (2 or 11.1%).

- **Port-a-potty dump station respondents (n=9) had an average satisfaction rate of 3 out of 5.**
 - Respondents with a satisfaction rate under 4 (n=6) noted desired improvements such as
 - *increased accessibility* (4 or 66.7%),
 - *improved cleanliness* (1 or 16.7%), and
 - *lower price* (1 or 16.7%).

- **The five boaters that responded with other methods of disposal had an average satisfaction of 3.8 out of 5.** The *other* methods written-in include:
 - Bring it home to dump: 5/5.
 - Dumpster for compost: 5/5.
 - Trash waste and landside toilet: 5/5.
 - Fluids in restroom, solids in bagged up and used as compost or disposed in garbage: 4/5.
 - City sewage: 0/5.

- The two boaters that responded they don't use their port-a-potty, bucket, or composting toilet did *not* get asked to rate their satisfaction with their method.
- The 11 boaters that responded that they discharge overboard did *not* get asked to rate their satisfaction with their method.

Boater Group 3 and Boater Group 4 – Head WITHOUT a holding tank and no head

The 13 respondents who indicated they have a head WITHOUT a holding tank (Boater Group 3, assumption: these boaters have a flow-through system with no holding tank) and the 41 respondents who indicated they do not have a head on their boat (Boater Group 4) were *not* asked the following questions relating to a user with a holding tank:

- How do you dispose of your boat sewage?
- How satisfied are you with (current sewage disposal method)?
- How can this rating be improved?
- In a perfect world, if all ways to service your boat were FREE, what would you choose?
- How important is it that your marina/yacht club provides a way to service your boat without having to go somewhere else?
- Would you be willing to pay more if your marina/yacht club had your ideal service method?
- How do you find sewage pumpouts when you're in an unfamiliar area?
- What, if anything, would you see worthwhile or beneficial about *not* discharging sewage overboard?

Boat Sewage Disposal Preference Questions per Boater Group

The boat sewage disposal preference section of the survey had follow-up questions directly related to boaters current and ideal disposal method responses, therefore the following subsections detail several survey results per Boater Group.

Boater Group 1 Responses - Head with a holding tank (Needs to be pumped out)

Boater Group 1 – Ideal boat sewage disposal method

When Boater Group 1 respondents (n=316) were asked, “If all ways to service your boat were FREE what would you choose” most respondents answered *mobile pumpout boat* (127 or 40.2%) followed by *in-slip sewage pumpout* (103 or 32.6%) and *stationary sewage pumpout* (86 or 27.2%) (Figure 6).

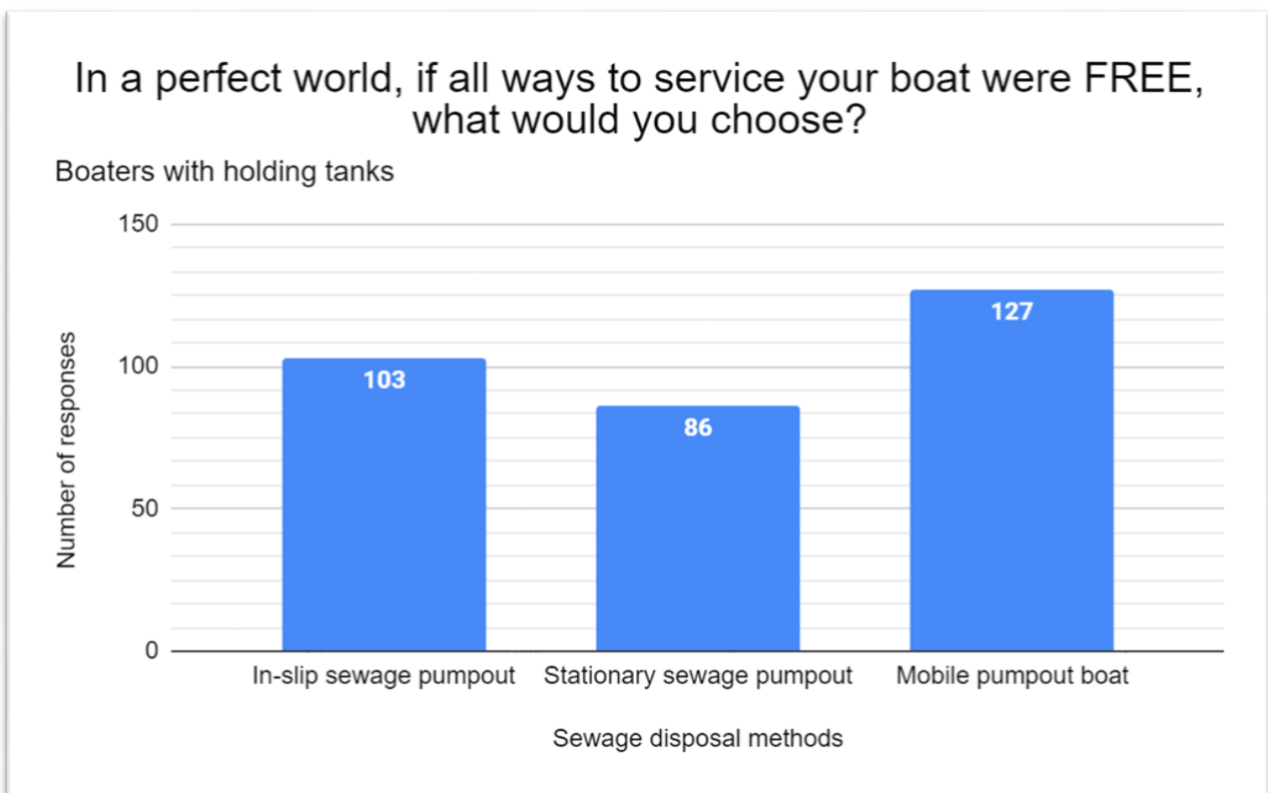


Figure 6 - Ideal sewage disposal method for boaters in Boater Group 1 if all options were free.

Boater Group 1 – Would boaters be willing to pay more for their ideal sewage disposal method?

As a follow-up, these respondents were asked, “Would you be willing to pay more if your marina/yacht club had your ideal service method?” There was a nearly even split between yes (141 or 44.6%) and no (140 or 44.3%) with some selecting “N/A” if this question did not apply to them (35 or 11.1%) (**Figure 7**).

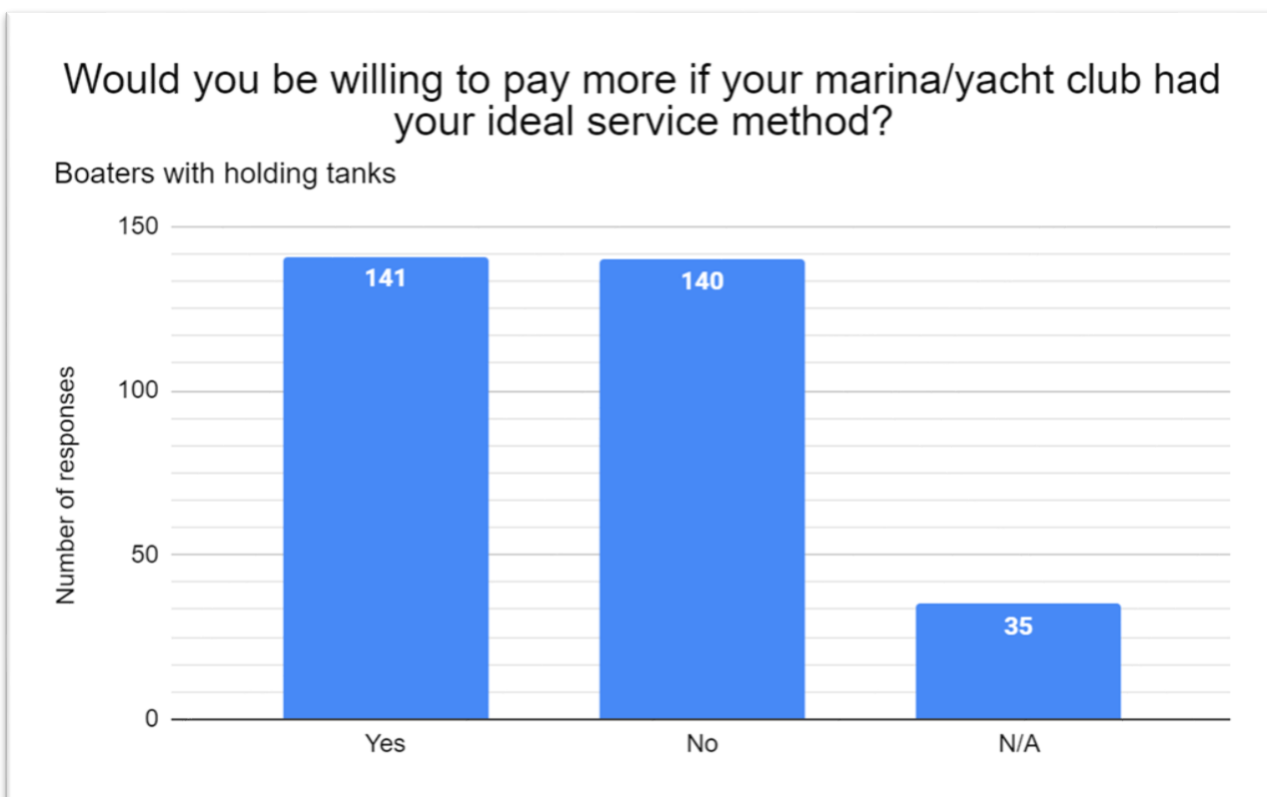


Figure 7 - How many boaters from Boater Group 1 would be willing to pay more for their ideal service method.

Boater Group 1 - Marinas/yacht clubs discouraging dumping sewage

When asked the optional question, “Is it important that marinas/yacht clubs you use discourage dumping sewage (treated or not) overboard?” 308 out of 316 respondents answered. Respondents were directed to select a number 0 – 5, with 0 being *not important* and 5 being *very important*. The average rating was 4.5 out of 5.

Boater Group 1 - Finding sewage pumpouts

When asked, “How do you find sewage pumpouts when you’re in an unfamiliar area?” respondents had the option to select multiple answers which included: *ask marina staff*, *web search*, *ask fellow boaters*, *use the free CA Pumpout Nav App*, *signage*, *boating newspaper/magazine*, and *other* for which they could type in their own response. Respondents could select more than one answer and a total of 316 responses were received, with several boaters choosing multiple methods.

The two most popular methods of finding a sewage pumpout station were *asking marina staff* (122 or 25%), and *web search* (114 or 23.4%). *Asking fellow boaters* (86 or 17.6%) and *using the free CA Pumpout Nav App* (77 or 15.8%) followed. *Signage* (57 or 11.7%), *boating newspaper/magazine* (17 or 3.5%), and *other* (15 or 3.1%) were the least common methods of finding sewage pumpout units (**Figure 8**).

“Other” responses totaled 15 and written-in responses included: *use the booklet you publish, maps in marinas, I do not leave my bay often, look around, rarely need to pumpout in different harbors (we pump overboard when offshore), I don’t I just dump, hold until I get home, local knowledge, sea discharge, Navionics-marina details show available facilities, N/A, have large enough holding tank to wait till I get back home, there are none, and there is no good way to get an answer.*

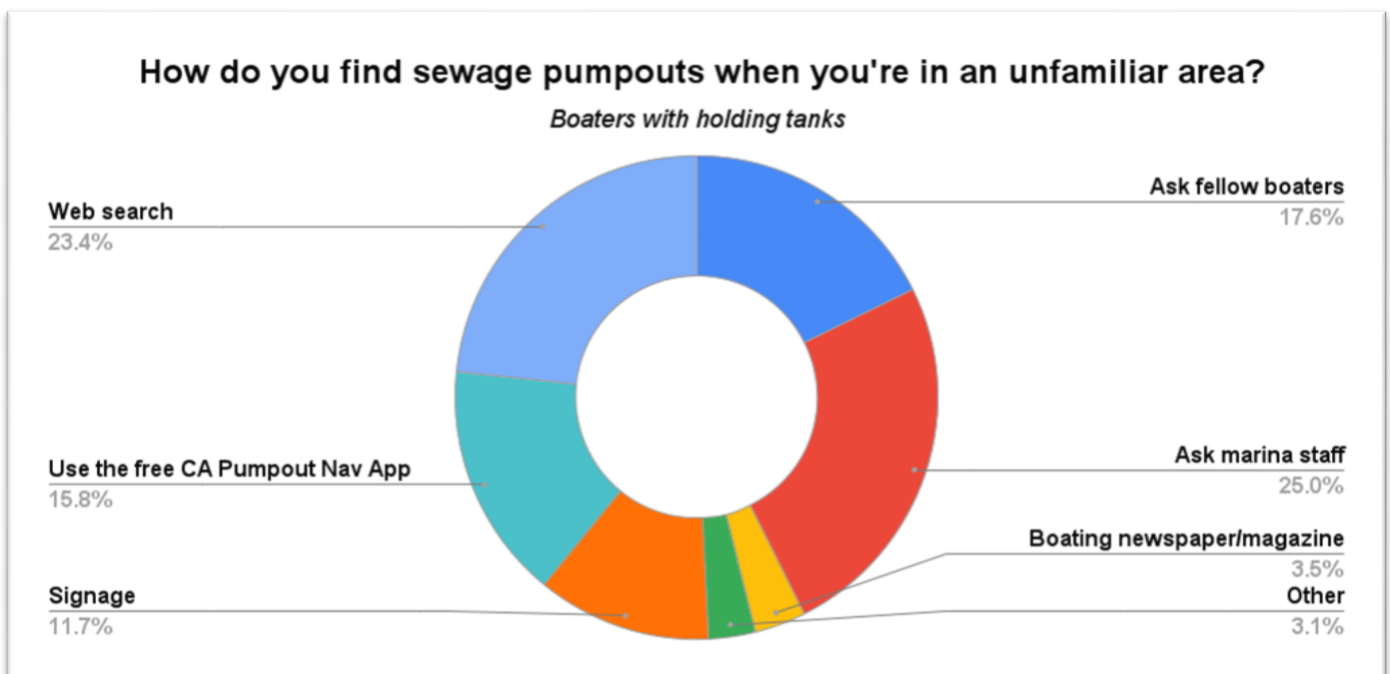


Figure 8 - How boaters from Boater Group 1 find sewage pumpouts when they are in an unfamiliar area.

Boater Group 2 Responses - Port-a-potty, marine composting toilet, and trusty bucket

Boater Group 2 - Ideal boat sewage service method

When Boater Group 2 (n=54), those with a port-a-potty, composting toilet or bucket on board were asked, “If all ways to service your boat were FREE what would you choose?”, the majority selected *port-a-potty dump station* (36 or 66.7%) and the remaining chose *land-side restroom* (18 or 33.3%) (**Figure 9**).

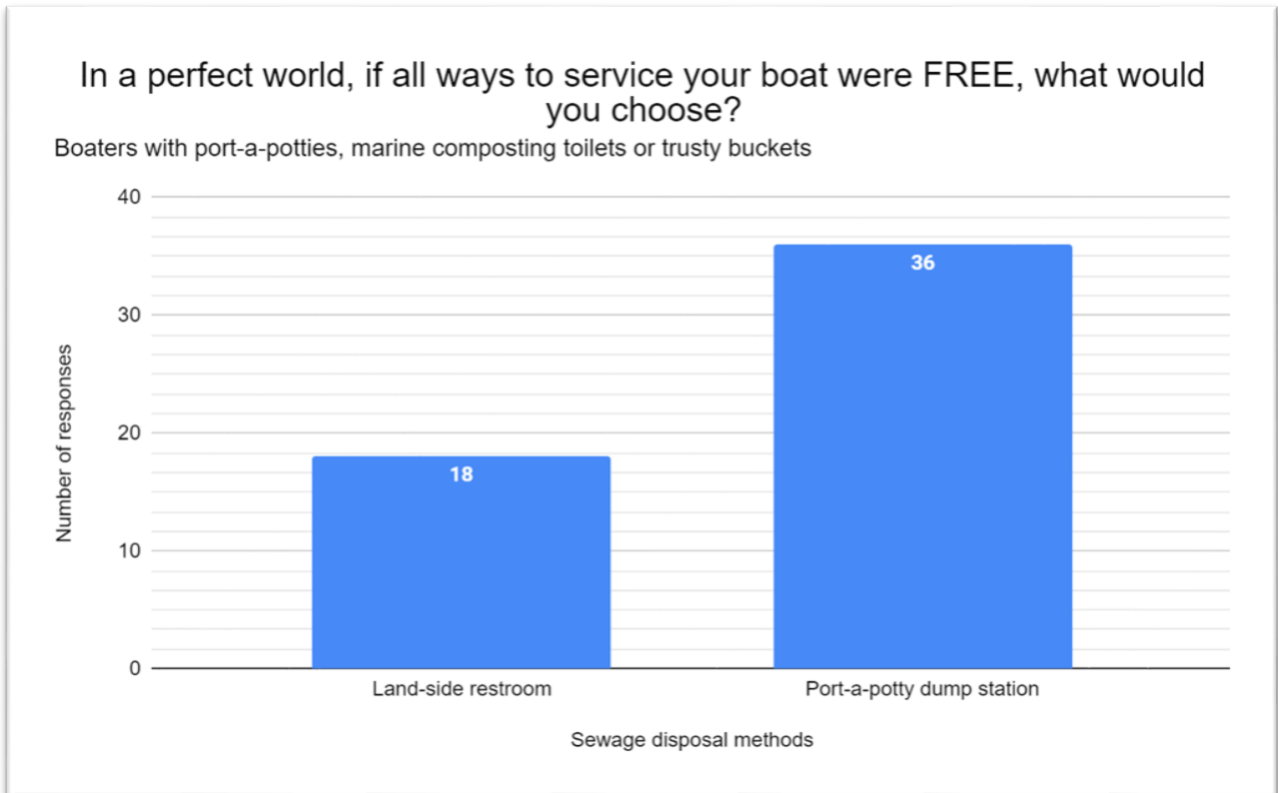


Figure 9 - Ideal boat sewage disposal method for boaters in Boating Group 2 if all options were free.

Boater Group 2 - Would boaters be willing to pay more for their ideal method?

As a follow-up, these respondents were asked, “Would you be willing to pay more if your marina/yacht club had your ideal service method?” There was a nearly even split between *yes* (24 or 44.4%) and *no* (22 or 41%), with 8 or 15% selecting this question was not applicable (N/A) to them (**Figure 10**).

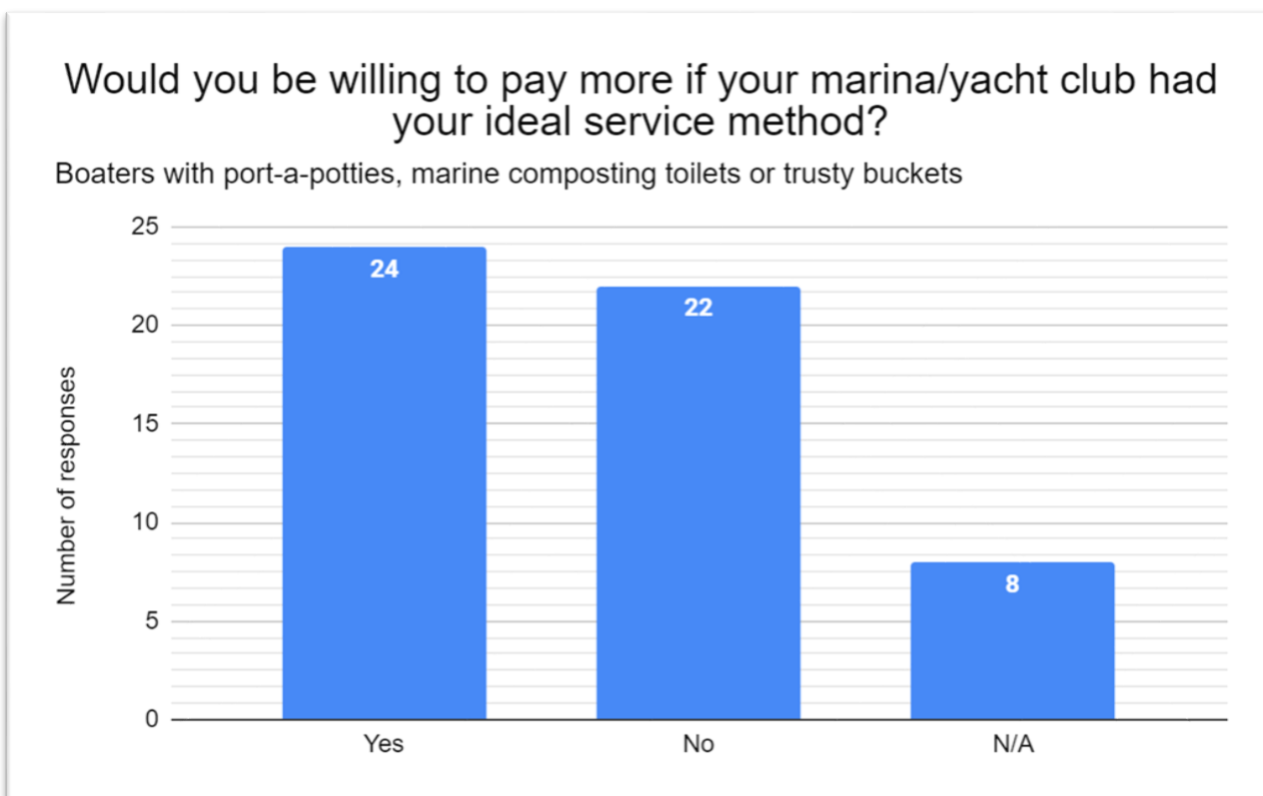


Figure 10 - How many boaters from Boater Group 2 would be willing to pay more for their ideal service method.

Boater Group 2 - Marinas/yacht clubs discouraging dumping sewage

When asked the optional question, “Is it important that marinas/yacht clubs you use discourage dumping sewage (treated or not) overboard?” 51 out of 54 respondents provided an answer. Respondents were directed to select a number from 0 to 5 with 0 indicating *not important* and 5 indicating *very important*. The average rating was 4.5 out of 5.

Boater Group 2 - Finding sewage dump stations

When asked, “How do you find dump stations when you’re in an unfamiliar area?” respondents had the option to select multiple answers which included: *ask marina staff*, *web search*, *ask fellow boaters*, *use the free CA Pumpout Nav App*, *signage*, *boating newspaper/magazine*, and *other* for which they could type in their own response. Respondents could select more than one answer and a total of 54 responses were received, with several boaters choosing multiple methods.

The most popular method of finding a dump station was *ask marina staff* (19 or 26.8%), the second most common was *signage* (17 or 23.9%) and the third was *web search* (16 or 22.5%). *Ask fellow boaters* (7 or 9.9%) and *use the free CA Pumpout Nav App* (6 or 8.5%) followed. *Boating newspaper/magazine* (2 or 2.8%) and *other methods* (4 or 5.6%) were the least common methods of finding dump station units.

“Other” responses that were written in included: *don’t need it, I am familiar with all the areas I use, the head when we return, and “The U.S. Coast Guard”* (Figure 11).

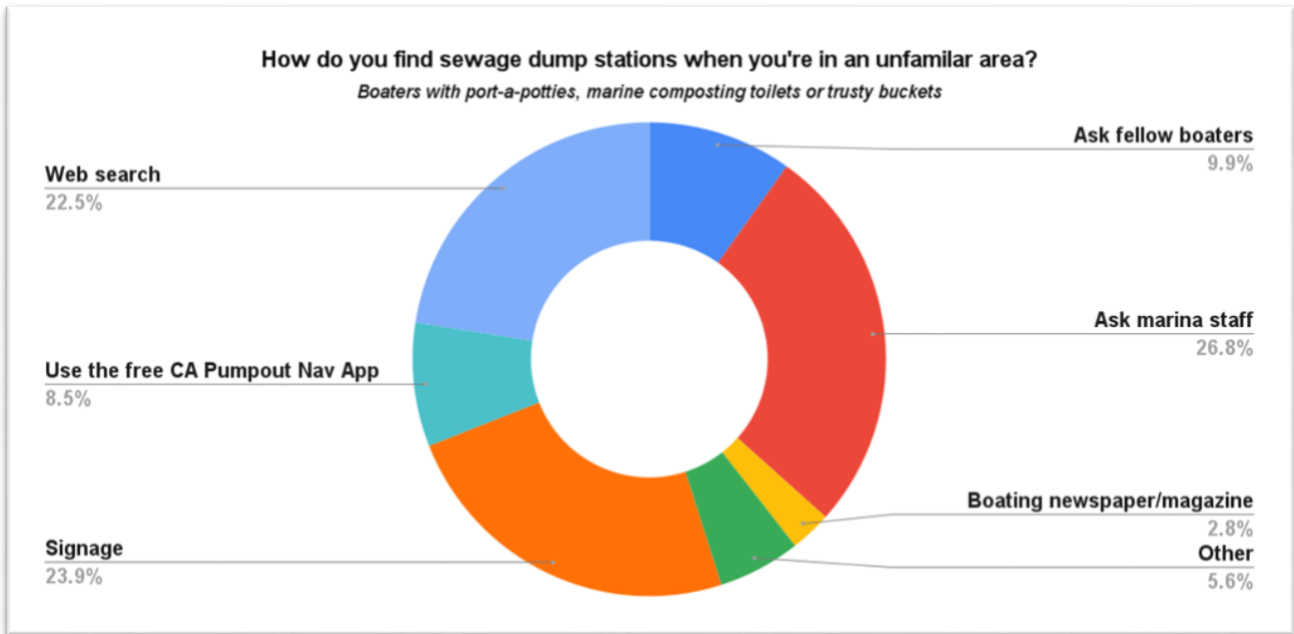


Figure 11 - How boaters from Boater Group 2 find disposal units in an unfamiliar area.

Boater Group 3 Responses – Head WITHOUT a holding tank

Boater Group 3 - Marinas/yacht clubs discouraging dumping sewage

When Boater Group 3, those with a head without a holding tank (n=13) were asked the optional question, “Is it important that marinas/yacht clubs you use discourage dumping sewage (treated or not) overboard?” 13 respondents answered. Respondents were directed to select a number 0 – 5 with 0 being *not important* and 5 being *very important*. The average rating was 3.2 out of 5.

Boater Group 3 - Finding clean boating information

When asked, “How do you find clean boating information when you’re in an unfamiliar area?” the respondent had the option to choose multiple answers which included: *ask marina staff, web search, ask fellow boaters, use the free CA Pumpout Nav App, signage, boating newspaper/magazine, social media, and other*. Respondents could select more than one answer, and 13 responses were received, with some boaters choosing multiple methods.

The most popular methods of finding clean boating information were *asking fellow boaters* (6 or 24.0%) followed by *using the free CA Pumpout Nav App* (5 or 20.0%). *Ask marina staff* (4 or 16.0%), *signage* (4 or 16.0%), and *web search* (4 or 16.0%) were equally mentioned as common practices. The least common methods were *social media* (1 or 4.0%), and *boating newspaper/magazine* (1 or 4.0%).

Other was not selected by respondents in Boater Group 3 (**Figure 12**).

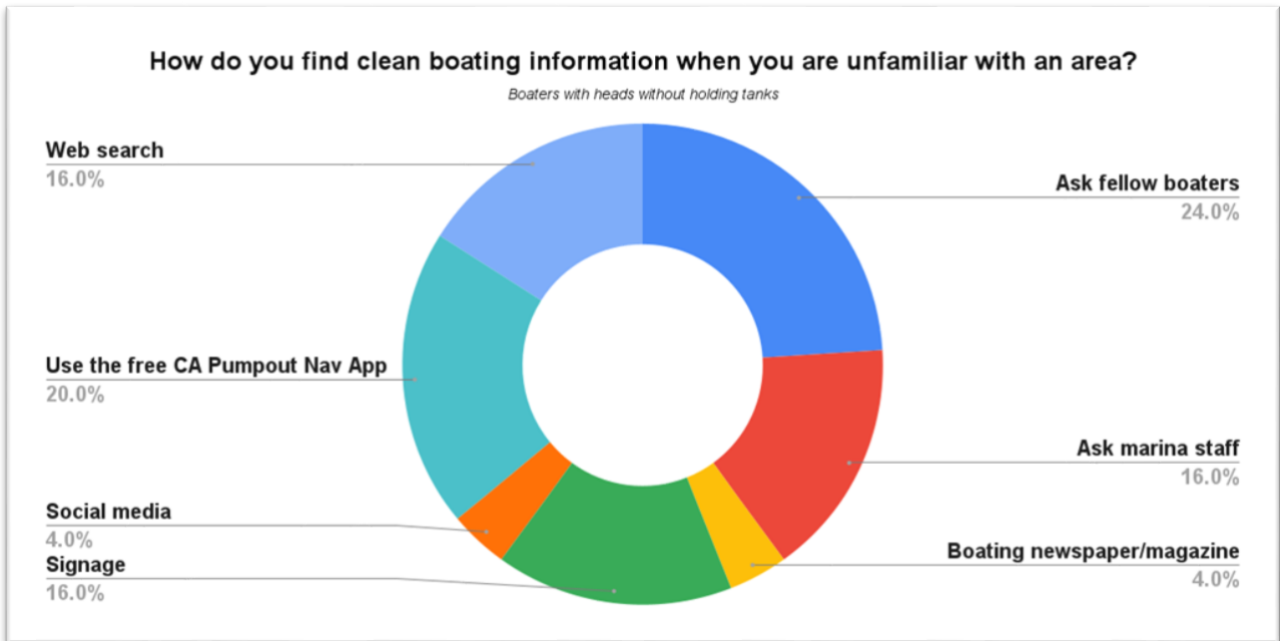


Figure 12 – How boaters in Boater Group 3 find clean boating information.

Boater Group 4 Responses – No head on boat

Boater Group 4 - Marinas/yacht clubs discouraging dumping sewage

When Boater Group 4, those with no head on their boat (n=41) were asked the optional question, “Is it important that marinas/yacht clubs you use discourage dumping sewage (treated or not) overboard?” 37 respondents answered. Respondents were directed to select a number 0 – 5 with 0 being *not important* and 5 being *very important*. The average rating was 4.3 out of 5.

Boater Group 4 - Finding clean boating information

When asked, “How do you find clean boating information when you’re in an unfamiliar area?” the respondent had the option to choose multiple answers which included: *ask marina staff*, *web search*, *ask fellow boaters*, *use the free CA Pumpout Nav App*, *signage*, *boating newspaper/magazine*, *social media*, and *other*. Respondents could select more than one answer, and 41 responses were received, some choosing multiple methods.

The most popular methods of finding clean boating information were performing a *web search* (19 or 28.4%) followed by *ask fellow boaters* (12 or 17.9%). *Ask marina staff* (12 or 17.9%) and *signage* (9 or 13.4%) were also common practices. The least common methods were *social media* (6 or 9.0%), *use the free CA Pumpout Nav App* (5 or 7.5%), and *boating newspaper/magazine* (4 or 6.0%).

Other was not selected by respondents in Boater Group 4 (**Figure 13**).

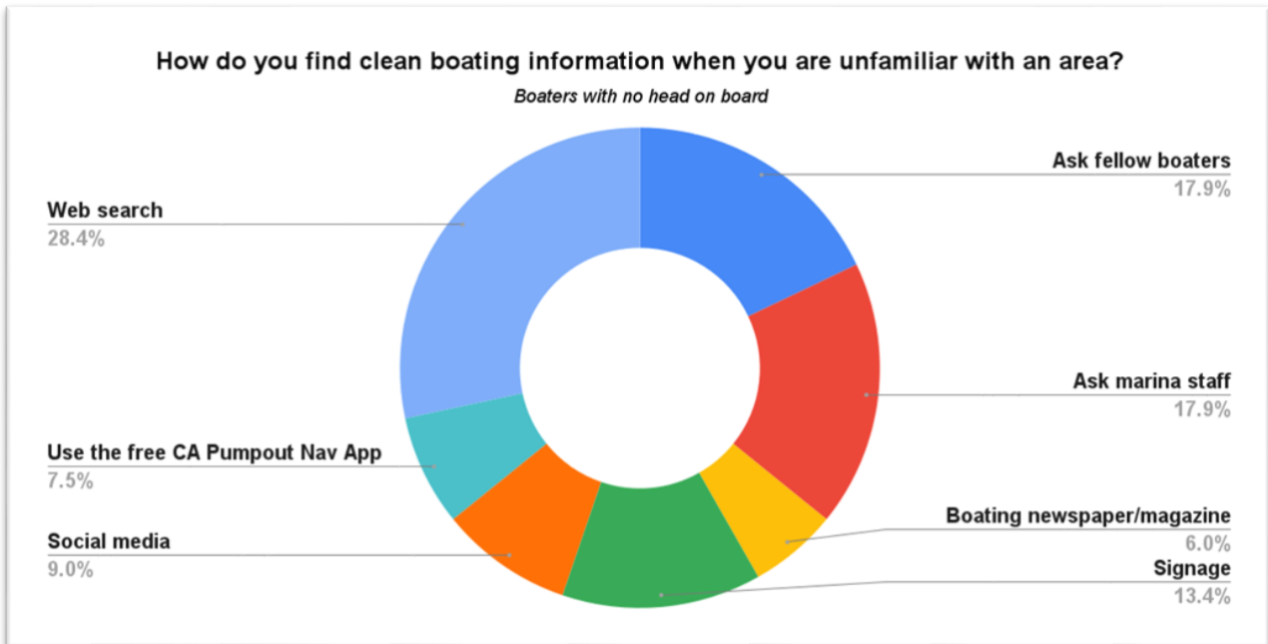


Figure 13 – How boaters in Boater Group 4 find clean boating information.

Open-Ended Boat Sewage Questions or Feedback

In addition to the multiple-choice questions reviewed above, survey takers in Boater Group 1 (Head with a holding tank) Boater Group 2 (Port-a-potty, marine composting toilet, or a trusty bucket), Boater Group 3 (Head without a holding tank), and Boater Group 4 (no head onboard) were posed with additional open-ended questions. Boater Groups 1 and 2 were asked about the benefits of not discharging sewage overboard (Boater Group 3 and 4 were not asked this question as it is not relevant to this audience), and all Boating Groups were asked for additional feedback concerning boat sewage in general. Both questions were optional and open-ended. Not all respondents to the survey submitted an answer and those who did may have answered out of context. Additionally, as this survey was asked to boaters statewide, many responses pertain to a specific geographic region. The full list of survey responses to the open-ended boat sewage questions can be found in Appendix 3 and Appendix 4.

Open-Ended Question 1: What, if anything, would you see worthwhile or beneficial about ***NOT*** discharging sewage overboard?

Boater Group 1:

166 people (of n=316) provided a response to this question. Responses were reviewed and categorized under similar themes including the following. A graphical representation of this breakdown can be found in **Figure 14**.

- water quality (70 or 42.2%)
- pollution prevention (26 or 15.7%)
- environmental impact (19 or 11.4%)
- clean water for recreation (18 or 10.8%)
- marine life/wildlife (12 or 7.2%)
- clean marina (7 or 4.2%)
- smell (6 or 3.6%)
- health (3 or 1.8%)
- everything (3 or 1.8%)
- fishing (2 or 1.3%)

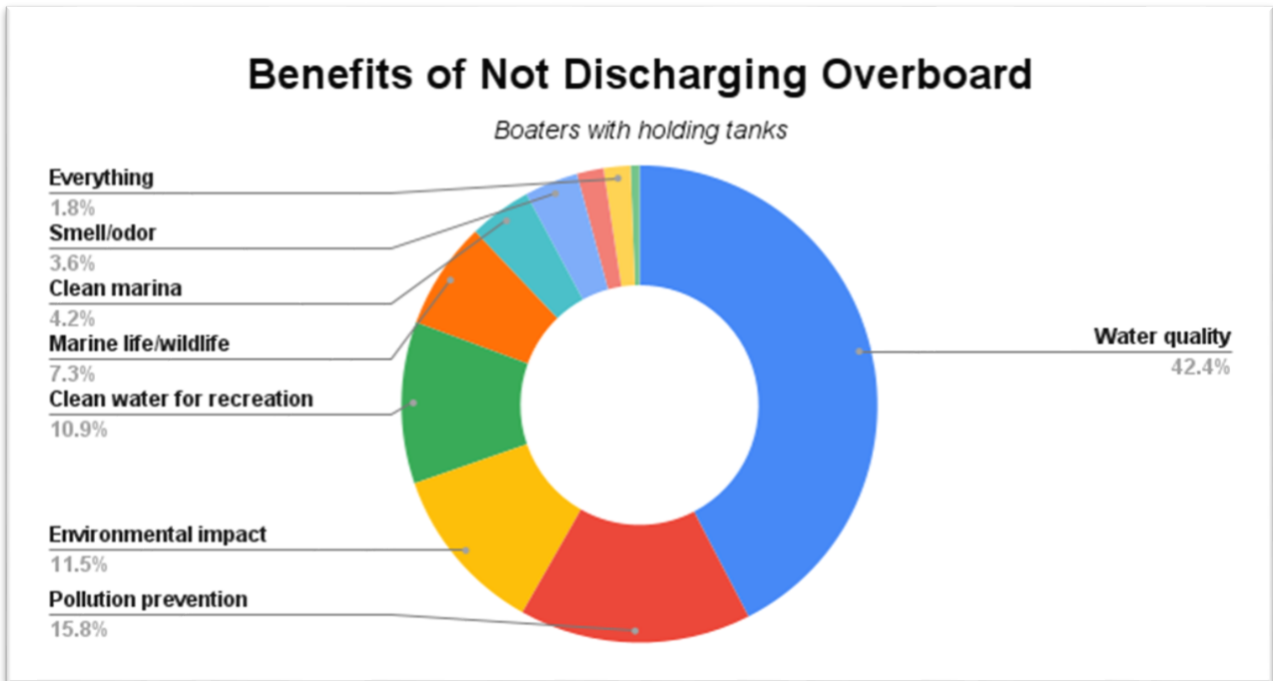


Figure 14 – Survey responses from Boater Group 1 broken down by theme concerning the benefits from not discharging sewage overboard.

Boater Group 2:

28 people (out of n=54) provided a response to this question. Responses were reviewed and categorized under similar themes including the following. A graphical representation of this breakdown can be found in **Figure 15**.

- water quality (11 or 39.3%)
- environmental impact (7 or 25.0%)
- clean water for recreation (4 or 14.3%)
- pollution prevention (2 or 7.1%)
- marine life/wildlife (1 or 3.6%)
- health (1 or 3.6%)
- tourism (1 or 3.6%)
- fishing (1 or 3.6%)

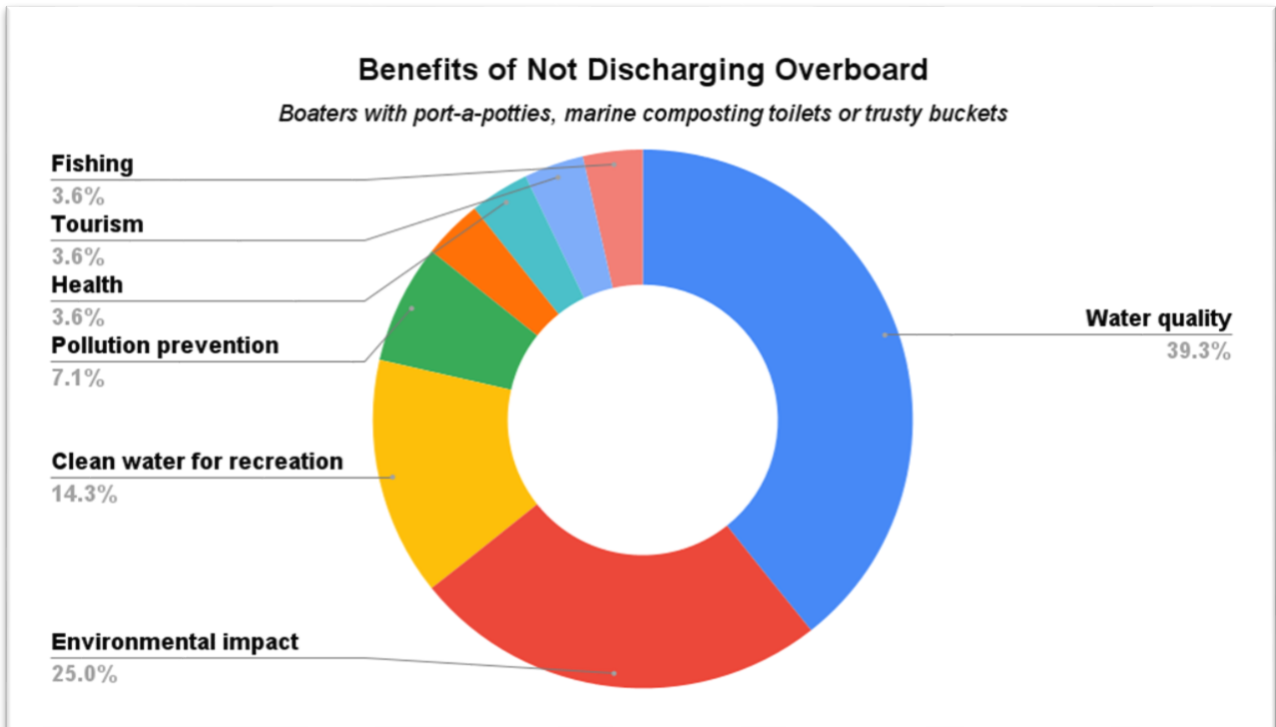


Figure 15 - Survey responses from Boater Group 2 broken down by theme concerning the benefits from not discharging sewage overboard.

Boater Group 3:

13 respondents (n=13) in Boater Group 3 were not asked this question.

Boater Group 4:

41 respondents (n=41) in Boater Group 4 were not asked this question.

Key Takeaways:

- The thematic responses between Boater Groups 1 and 2 are very similar with a few key categorical differences (i.e., “smell” for Boater Group 1 and “tourism” for Boater Group 2).
- We hypothesize that responses to this question were at times emotionally, environmentally, politically, or socially motivated. Concerns for the well-being of humans and wildlife were prevalent. See Appendix 3.

Open-Ended Question 2: Anything else about boat sewage you want us to know?

This optional, final survey question allowed for a wide range of responses from all four Boater Groups.

Boater Group 1:

Responses received included themes concerning:

Pumpouts/Disposal Methods

Boaters would like:

- More pumpouts to be installed, more free pumpout services, or more consistent pumpout access/service.
- The ability to report on inoperable pumpout stations.
- Better signage, instructions, and wayfinding to pumpout stations.
- Increased mobile pumpout services and associated costs incorporated into boater agreements.
- Redundancy of options for sewage disposal.

Marinas

Boaters want:

- Marina staff to provide education and outreach about safe and environmentally friendly sewage disposal.
- Community support and for marina staff to foster change through relationship building between marina staff and boaters.
- Marinas to impose or provide regular pumpouts of liveaboard vessels and more regular holding tank checks.

Behavior

Boaters:

- Are frustrated over irresponsible behaviors by fellow boaters.
- Want encouragement to report on those dumping overboard.
- Want access to helpful tools such as dye tabs to identify leaks.
- Are frustrated with leniency with anchor-outs that may be dumping overboard.
- Want a better understanding of small vs. large vessel sewage management needs and resources.

Regulation

Boaters:

- Are frustrated with overregulation and the high price of boat ownership and maintenance. These are prohibitive to the non-wealthy.
- Would like better enforcement of fines for dumping overboard.

Environment & Society

Boaters:

- Are concerned for the health of wildlife and humans.
- Want education around biodegradable alternatives for vessel care.
- Are concerned about the impacts of homeless on regional watersheds.

Boater Group 2:

Responses received included themes concerning:

Marina Systems:

Boaters find:

- Difficulty with using waist-high machines for dumping, the benefits of built-in floor sink closets for accessibility.
- Inconveniences posed on smaller vs. larger boats (i.e., long distances to travel to dump stations).

Behavior:**Boaters promoted actions such as:**

- Taking preventative measures (i.e., using on shore facilities before launching).
- Consistently checking that sewage facilities are available where boaters will be recreating.
- Promotion of education and resources at boat shows is necessary.

Environment:**Boaters expressed:**

- Hope for regenerative processes (i.e., compost turned into soil for use by marinas).
- A need for better promotion of composting toilets and their benefits.
- Encouragement for the use of eco-friendly products in heads.

Boater Group 3:

Responses received included themes concerning:

Marina Systems:

- **Boaters voiced complaints** about the inconveniences posed on smaller vs. larger boats (i.e., long distances to travel to dump stations, dump stations behind fuel docks).

Boat Systems:

- **Boaters were frustrated** with MSD 1 or 2 users who claim their sewage is treated and can be discharged anywhere legally.

Behavior:**Boaters expressed:**

- Concerns that boat owners are breaking rules or feigning head malfunction.
- Worry about sewage discharge outside of boater responsibility (i.e., from uncontrolled storm runoff or municipal treatment plants).
- A need for more emphasis on community vigilance.

Environment:

- **Boaters showed concerns** for wildlife that may be ingesting or being harmed by sewage.

Boater Group 4:

Responses received included themes concerning:

Accessibility:

- **Boaters touted** the importance of landside restrooms, and that they intentionally boated where they knew facilities existed.

Behavior:

- **Boaters promoted** the continued discouragement and penalization of dumping blackwater in open waterways and marinas.

Key Takeaways:

- As the largest contributing group to this survey, Boater Group 1 represented the largest and most varied span of responses thematically.
- All four boater groups responded with concerns for boater behavior and included recommendations on changes to marina and community interaction to influence behavior change.
- Boater Groups 2 and 3 voiced that there is a large distinction between smaller vessels (less likely to have an installed head on board) and larger vessels (more likely to have an installed head on board). There is shared concern that marinas cater to larger vessels with the placement of their pumpout stations, and that dump stations are hard to access and farther away for people with porta-potties and detachable cassettes to access.
- Boater Group 4 acknowledged the frustrations of boaters with heads on board while also noting the responsibility those boaters have to keep sewage out of public waterways.
- All Boater Groups shared a concern for the environment and the flora and fauna (including humans) that are impacted by untreated sewage and the chemicals in vessel care products.

Conclusion

Collecting surveys through the surveying platform, Typeform, proved to be user friendly and interactive for users as the project partners met the goal of reaching 400 total survey responses. The survey platform allowed respondents to view a different set of questions based on their initial answers. The result was detailed survey responses that were relevant to a specific type of boater. Through the voluntary survey, participants were asked about their various methods and motivations around boat sewage disposal and the team was able to analyze the data based on each type of boater and their boating practices. Overall, the project partners were satisfied with the survey format and saw the benefit of segmenting our boating audience based on their answers, allowing for more detailed insights that could help serve each type of boater better.

Findings

Boater Information

Just over a third of boaters surveyed often boat in the Los Angeles region (160 or 37.6%) with the Greater San Francisco Bay Area (122 or 28.7%) following close after. The fewest response came from Northern California (9 or 2.1%) **(Table 2)**. More than half of boaters (241 or 56.9%) answered that their boats' length was 25-40 feet, followed by boat lengths of 41-60 feet (96 or 22.6%) **(Table 3)**. The most common use for boats was *leisure cruising* (289 or 68.2%) followed by *fishing* (74 or 17.4%) **(Table 4)**. More than half of the respondents had a *head with a holding tank that needs to be pumped out* (316 or 74.5%). The least common types of heads were *does not have a head on their boat* (41 or 9.7%), *head without a holding tank* (13 or 3.1%), *A trusty bucket* (10 or 2.4%), and a *marine composting toilet* (10 or 2.4%) **(Table 5)**.

Ranking	Region
1	Los Angeles
2	Greater San Francisco Bay Area
3	Southern California
4	Central Valley
5	Central Coast
6	Sierra
7	Northern California

Table 2 – Region in which survey respondents' boat in most often.

Ranking	Length of Boat
1	25 – 40 Feet
2	41 – 60 Feet
3	Under 25 Feet
4	Over 60 Feet

Table 3 – Boat lengths of survey respondents.

Ranking	Boat Use
1	Leisure Cruising
2	Fishing
3	'Other' Category
4	Boat Camping
5	Skiing
6	Swimming

Table 4 – The most common use for boats.

Ranking	Type of Head
1	Head with a holding tank (needs to be pumped out)
2	Does not have a head on their boat
3	Port-a-potty
4	Head without a holding tank
5	A simple bucket
6	Marine composting toilet

Table 5 – Types of heads survey respondents' have on their boats.

Boater Groups 1 and 2 - Boat sewage disposal methods

For those in Boater Group 1, the most common way to dispose of boat sewage was using a *stationary pumpout* (191 or 60.4%) and they had a satisfaction average of 3.7 out of 5 for this method. The least common sewage disposal methods were *discharging overboard* (37 or 11.7%) and using an *in-slip pumpout* (26 or 8.2%). A few said that they *do not use their boat's head* (6 or 1.9%). Those that responded with *discharge overboard* and *that don't use their boat's head* were not asked how satisfied they were with their current disposal method (N/A).

Around half (27 or 50%) of those in Boater Group 2 responded that they use a *land-side restroom* to dispose of boat sewage and gave this method a satisfaction rating of 3.7. The second most common method was *discharging overboard* (11 or 20.4%). If they responded with *discharge overboard*, they were not asked the satisfaction rating of this method (N/A). Some stated that they use *other* methods such as taking their boat sewage home to discard of it or bag it and throw it in the trash (5 or 9.1%) (**Table 6**).

Ranking	Boater Group 1: Head with a holding tank	Boater Group 2: Port-a-potty, marine composting toilet, or a trusty bucket
1	Stationary sewage pumpout (3.7)	Land-side restroom (3.7)
2	Mobile pumpout boat (4.4)	Discharge overboard (N/A)
3	Discharge overboard (N/A)	Port-a-potty dump station (3)
4	In-slip sewage pumpout (4.3)	'Other' methods (3.8)
5	I don't use my boat's head	I don't use the port-a-potty, bucket, or composting toilet

Table 6 - Boat sewage disposal methods and average satisfaction rates for those methods.

Boater Groups 1 and 2 - Ideal boat sewage service method

If all methods of servicing boats were free, most respondents with a holding tank (Boater Group 1) said that they would prefer a *mobile pumpout boat* service (127 or 40.2 %) followed by a preference for *in-slip sewage pumpouts* (103 or 32.6%) and *stationary sewage pumpouts* (86 or 27.2%).

For users with port-a-potties, composting toilets, or buckets (Boater Group 2) more than half said their preferred method would be using a *port-a-potty dump station* (36 or 66.7%) and the remaining expressed a preference for *land-side restrooms* (18 or 33.3%) (**Table 7**).

Ranking	Boater Group 1: Head with a holding tank (Needs to be pumped out)	Boater Group 2: Port-a-potty, marine composting toilet, or a trusty bucket
1	Mobile pumpout boat	Port-a-potty dump station
2	In-slip sewage pumpout	Land-side restroom
3	Stationary sewage pumpout	

Table 7 – Ranking of ideal boat service method for Boater Groups 1 and 2.

Boater Groups 1 and 2 - Would boaters be willing to pay more for their ideal boat sewage disposal method?

The results were about evenly split between *yes* and *no* for both respondents in Boater Group 1 (141 or 44.6% *yes* and 140 or 44.3% *no*, respectively) and those in Boater Group 2 (24 or 44.4% *yes* and 22 or 41% *no*, respectively). The remaining 26.1% said that this question did not apply to them (**Table 8**).

	Boater Group 1: Head with a holding tank (Needs to be pumped out)	Boater Group 2: Port-a-potty, marine composting toilet, or a trusty bucket
Yes	44.6%	44.4%
No	44.3%	41%
N/A	11.1%	15%

Table 8 – Percentage of boaters from Boater Groups 1 and 2 that would be willing to pay more for their ideal boat sewage disposal method.

Boater Groups 1, 2 and 3 - Is it important that marinas/yacht clubs you use discourage dumping sewage overboard (treated or not)?

Across the board, most boaters said that it was important that the marina they use discourages dumping sewage overboard (treated or untreated). A rating of at least 4 out of 5 was given by all boaters surveyed (Table 9).

Boater Group	Group Qualifications	Average Rating
Boater Group 1	Head with a holding tank (Needs to be pumped out)	4.5
Boater Group 2	Port-a-potty, marine composting toilet, or a trusty bucket	4.5
Boater Group 3	Head without a holding tank (dumps overboard)	3.2
Boater Group 4	No head on board	4.3

Table 9 – Average rating (from 1 to 5) of boaters from all Groups on how important it is that marinas/ yacht clubs they use discourage dumping sewage overboard (treated or not).

Boater Groups 1, 2, 3, and 4 - How boaters find sewage pumpouts, dump stations, or clean boating information

Respondents could choose more than one response to this question (Table 10). Boater Group 1 finds sewage disposal units through several different methods, with the top three being *asking a marina staff member, web search, and asking fellow boaters*. Using the free California Pumpout Nav mobile application, signage, and boating newspaper/magazine were the less common methods for this group). The top three methods for Boater Group 2 were *asking a marina staff member, web search, and signage*. For Boater Groups 3 and 4 the top three methods of finding clean boating information were *web search, asking fellow boaters, and asking a marina staff member*. Although the free California Pumpout Nav mobile application could provide users with information about the nearest participating sewage pumpout, dump station, or floating restroom, it was not in one of the top three ways of finding resources. This indicates there could be more continued promotion around this useful resource.

Ranking	Boater Group 1: Head with a holding tank	Boater Group 2: Port-a-potty, marine composting toilet, or a simple bucket	Boater Group 3: Head without a holding tank	Boater Group 4: No head on board
1	Ask marina staff	Ask marina staff	Web search	Web search
2	Web search	Signage	Ask fellow boaters	Ask fellow boaters
3	Ask fellow boaters	Web search	Ask marina staff	Ask marina staff
4	Use the free CA Pumpout Nav app	Ask fellow boaters	Signage	Signage

5	Signage	Use the free CA Pumpout Nav app	Use the free CA Pumpout Nav app	Social Media
6	Boating newspaper/magazine	Other	Social media	Use the free CA Pumpout Nav app
7	Other	Boating newspaper/magazine	Boating newspaper/magazine	Boating newspaper/magazine

Table 10 – Ranking of how Boater Groups 1, 2, 3, and 4 find clean boating resources including pumpouts, dump stations, and educational information.

Boater Groups 1 and 2 - What boaters considered beneficial about *not* discharging overboard

This was an open-ended and optional question with many various responses received, some of which were not on topic or useful information (examples include: "Silly question!" and "yep") and therefore omitted from the results. Responses were grouped based on the most common themes. The most popular reasons that boaters found beneficial about *not* discharging overboard was the impact on water quality, preventing pollution, and the overall environmental impact. Most responses were positive and conscious about the impacts discharging overboard (**Table 11**).

Ranking	Boater Group 1: Head with a holding tank (needs to be pumped out)	Boater Group 2: Port-a-potty, marine composting toilet, or a simple bucket
1	Water quality	Water quality
2	Pollution prevention	Environmental impact
3	Environmental impact	Clean water for recreation
4	Clean water for recreation	Pollution prevention
5	Marine life/wildlife	Tourism, fishing, marine life, and health
6	Clean marina	
7	Smell	
8	Health and everything else	
9	Fishing	

Table 11 – Ranking of what Boater Groups 1 and 2 consider beneficial about *NOT* discharging overboard.

Recommendations

The findings from the 424 survey respondents revealed several insights.

Some general recommendations for a future study include:

- Analyses per boater group by region (at least northern and southern California) and by age to be able to target more specific education and outreach strategies, tools, and messaging.
- Boaters from current Boater Group 3 and Boater Group 4 should be asked how they dispose of boat sewage.

Boater Group 1

- Of the 316 or 74.5% respondents who have a holding tank on board, 191 or 60.4% of these respondents prefer using *stationary sewage pumpouts* yet the average satisfaction rate for this method is 3.7 out of 5. Respondents indicated this rating could be improved by *increased accessibility* (61 or 50.8%) followed by *better functionality* (39 or 32.5%). **Expanding California's boat sewage disposal network** through the prioritization of CVA Installation grants for new pumpouts in subregions identified in the *California Vessel Waste Disposal Plan* that do not meet the recommended pumpout ratio⁶ is advised. Continuing CVA triannual pumpout and dump station monitoring⁷, developing relationships with marina staff informing them of the important role they play in educating their boaters, assisting marinas with minor repairs and pumpout/dump station equipment replacement, informing them of the CVA grant availability, and promoting of Pumpout Nav are key methods to improve pumpout station functionality.
- Boaters with holding tanks chose mobile pumpout services as their second preferred way of disposing their sewage. As described, there was a close split among respondents regarding their willingness to pay more for this service. This finding supports the need for sewage disposal resources that are cost effective. Given mobile pumpout service interest across the state, encouraging mobile pumpout services as a viable option, promoting existing resources, and highlighting examples of **successful programs and partnerships between marina and mobile pumpout companies are all important strategies**.
- The third most common way to dispose of sewage for boaters with holding tanks was *discharge overboard*. Despite this only accounting for only 37 or 11.7% of respondents, the environmental and public health impacts of overboard sewage are severe. Continuing education and outreach efforts are vital to raise awareness. **Implementing local social marketing studies and pilots** in targeted boating communities are recommended to analyze strategies for local recreational boating communities that foster behavior change.

⁶ California Vessel Waste Disposal Plan, 2020

⁷ Since 2008, SFEP and TBF have monitored public sewage pumpout stations throughout the state. In 2019, Morro Bay National Estuary Program began monitoring sewage pumpouts within Morro Bay Harbor. In 2020, monitoring partners began monitoring dump stations throughout the state. All monitoring is funded by California State Parks Division of Boating and Waterways through the Clean Vessel Act grant program.

- Respondents with holding tanks secondarily selected *in-slip pumpouts* as their ideal boat sewage method if all ways to service sewage were free. The satisfaction rate for boaters that secondarily prefer in-slip pumpouts was 4.3 out of 5, and 6 respondents or 50% noted better functionality would improve the rating. It is worth exploring how to **better support marinas in ensuring improved function** of these systems.
- For boaters with holding tanks, it is important (average rating of 4.5 out of 5) that marinas/yacht clubs **discourage dumping of sewage (treated or not) overboard**. Partnering with marinas to advocate and assist with the installation of sewage disposal units and require visiting vessels to add dye tabs to their holding tank, partnering with entities that track water quality, providing educational materials about best management practices, understanding what promotes behavior change, and marketing this stewardship are valuable and should continue to be prioritized.
- To locate sewage pumpout stations in unfamiliar areas, boaters with holding tanks *ask marina staff* (122 or 25%) *web search* (114 or 23.4%), *ask fellow boaters* (86 or 17.6%) and *use the free CA Pumpout Nav App* (77 or 15.8%). Distributing Pumpout Nav app promotional materials such as flyers, newsletter copy, and social media assets to marina staff, boaters, and relevant boating associations are recommended to **enhance the knowledge of the pumpout network as well as the Pumpout Nav app**. In addition to furthering the resource Pumpout Nav, marinas could leverage local sewage disposal listings and/or maps on their websites. Project partners have existing sewage disposal map assets that marinas could leverage and DBW additionally offers a statewide sewage disposal directory on its website. Additionally, since 23.4% of Boater Group 1 searches the web for information on sewage pumpouts locations, it is worthwhile to invest in and/or continue to invest in web and social media promotion for Pumpout Nav.

Boater Group 2

- For Boater Group 2 respondents, the second most common way of disposing of sewage was discharging overboard (11 or 20.4%). Given the severe water quality impacts sewage can have, **continuing education and outreach efforts** is vital to raise awareness. **Implementing local social marketing studies and pilots**, in targeted boating communities are recommended to analyze strategies **that foster behavior change**.
- Despite 20.4% of Boater Group 2 respondents commonly discharging overboard, this large subset of boaters indicates it is important for marinas/yacht clubs to discourage dumping sewage overboard (3.9 average importance rating). **Further research is recommended to study barriers to Boater Group 2**. Open-ended survey results showed that **boaters in Boater Group 2 commonly struggle with the services provided** at marinas they frequent, and sewage services do not meet their needs. These results point to the need for regional and Boater Group-specific studies on behaviors, motivations, and knowledge related to sewage disposal.
- Although half of Boater Group 2 respondents commonly use *landside restrooms* and only 9 or 16.7% indicated *port-a-potty dump stations* as their boat sewage disposal method, in an ideal free scenario, 36 or 66.7% would use a *port-a-potty dump station*. **Further study is needed to determine whether barriers are related to cost, accessibility, or other factors**.
- The most popular method of finding a dump station was *ask marina staff* (19 or 26.8%), the second most common was *signage* (17 or 23.9%) and third *web search* (16 or 22.5%). Again, marina staff **should continue to be engaged on Pumpout Nav to amplify the**

resource. There is also a potential opportunity to **deploy more internet and social media promotion** of Pumpout Nav's dump station information. Additionally, **signs** are popular to identify dump station locations, so distributing dump station signs to units where signs are missing or damaged is recommended.

Boater Group 3

- Boater Group 3 was not asked what the most common way for them to dispose of boat sewage, since they have a head on their boat, but no holding tank. It is therefore assumed that these boaters have marine sanitation devices that process their sewage, and then it is dumped overboard. **In future studies, it is recommended to ask this group what they do when they have to dispose of sewage from their vessel.**
- The most popular way for this group to find clean boating information was to ask fellow boaters (6 or 24%), second was using the free CA Pumpout Nav App (5 or 20%), and third was an even split between web search, asking marina staff, signage, and web search (4 or 16%). Some respondents answered that they use multiple methods. **Offering more boater educational social hours would be valuable for this group since they tend to turn to other boaters to learn about the resources available to them.** However, this was a small sample group (n=13), and further research is also recommended.
- When this group was asked on a scale of 1 to 5, "How important it is that their marinas/yacht clubs discourage dumping sewage (treated or not treated) overboard?", the average response was 3.4, which is lower than Boater Group 1 (4.5) and Boater Group 2's average (3.9). **To recommend a course of action, we would have to find out if and how they dispose of boat sewage when they are out on the water and if there are any motivators to not finding it as important as other groups. Further research is recommended.**

Boater Group 4

- Boaters in Group 4 rely on landside services or floating restrooms to manage their sewage. These services are not always readily available, making this group more susceptible to performing irresponsible behaviors with their sewage. **Therefore, partnerships with regional agencies should be developed or strengthened to help coordinate education and outreach around the impacts of improper sewage disposal, to promote land-based facility usage, and amass funding for additional landside and floating restrooms.**
- Boater Group 4 was not asked what the most common way for them to dispose of boat sewage, since they have no head on board. **In future studies, it is recommended to ask this group what they do when they have to use the restroom while on their vessel.**
- When asked the open-ended question, "Anything else about boat sewage you want us to know?" comments from this group included concerns about blackwater dumping, suggestions that all boaters use dye tabs in their holding tanks to track leaks, and encouragements to use landside facilities before launch, but also included mentions of simply jumping "in the water to do your business." These responses show both an awareness and confusion around the problems posed by raw sewage in public waterways. **Offering additional forums for boater connection – such as in digital chatrooms and educational events – on specific topics would be helpful for this group as they tend to**

get their boating information from searching the web or talking to other boaters. Boaters with different levels of education around sewage management could learn from one another and **may have a better impact at influencing behavior amongst the group than a government or community organization might through a formal presentation.**

Across all Boater Group respondents, **water quality seems to be a common benefit** to not discharging overboard. Similarly, across all respondents, it is important that marinas/yacht clubs **discourage dumping** of treated and untreated sewage overboard. Users in all Boater Groups also shared a concern for the environment and the flora and fauna (including humans) that are impacted by untreated sewage and the chemicals in vessel care products. Lastly, asking marina staff, asking fellow boaters and web searches are all top methods for finding sewage resource or clean boating information, indicating community interaction potentially informs behavior, and potentially behavior change. This underscores the importance of **engaging marina stakeholders** and the boating community **directly** to build and reinforce of environmental boating law compliance and stewardship.

Understanding how boaters do or do not utilize sewage disposal services is the first step in understanding what strategies can be employed to change behaviors around proper disposal. Many types of boaters and other users enjoy the State's many navigable waters. Future programming and resource allocation can be informed by this insight into norms, preferences, and potential opportunities to improve California's waterways.

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Appendix 1 - Promotional Items

Winter 2020 The Changing Tide



2020 Dockwalker Program Virtual Trainings Success

Continued from previous page

We would like to express our deepest gratitude to all Dockwalker partners and organizations that supported the Dockwalker program this year. In 2020, the program partners worked together again with the U.S. Coast Guard Auxiliary, U.S. Power Squadrons, Save Our Shores, Lake Berryessa Partnership, and many more organizations.

Visit the [Dockwalker Hall of Fame](#) to find the Dockwalkers who administered and returned the highest number of surveys and joined the ranks.

Thanks to our partners, the following awards were provided to the Hall of Fame recipients:

- Trader Joe's products
- Gift certificates to:
 - Starbucks
 - Chipotle Mexican Grill
 - Sprouts Farmers Market
- California State Parks annual passes
- Life jackets



Dockwalker Martin Mendoza (U.S. Coast Guard Auxiliary) in action

Photo: The Bay Foundation

Next year program partners will continue to offer more virtual trainings.

To learn more about the Dockwalker Program visit: www.BoatingCleanandGreen.com or contact Vivian Matuk at vmatuk@coastal.ca.gov.

The 2021 virtual trainings schedule will be posted in January 2021.

Boater Sewage Disposal Survey: We Need Your Input!



Photo: John Hollenbeck

To determine the boating communities sewage disposal norms and preferences, California State Parks Division of Boating and Waterways (DBW), San Francisco Estuary Partnership (SFEP), and The Bay Foundation (TBF) have developed an anonymous and interactive online survey. By completing this survey, boaters can use their expertise and provide us with input to improve our programs that benefit the boating community and our environment. Completing the survey takes no more than 5 minutes so we encourage you to complete it now: [Boater Sewage Disposal Survey](#).

The Bay Foundation (TBF) Paid/Organic Advertising

Facebook Paid Advertisement:

 **The Bay Foundation**
Published by Santa Monica · October 22, 2020 ·    


California boaters, we want your input! Please take two minutes maximum to complete this anonymous survey about boat sewage disposal habits and preferences. Your responses will help us identify the sewage disposal norms of California boaters and improve our programs to better serve the boating community 
<https://bit.ly/2H8WeUo>



This survey is funded by the California State Parks Division of Boating and Waterways' Clean Vessel Act Program and a federal Clean Vessel Act Grant... See More








54,230 People Reached 2,904 Engagements [Boost Again](#)


Instagram Organic Post:

 photo by: John Hollenbeck

 **thebayfoundation** 

 **thebayfoundation** California boaters, we want your input! Please take two minutes maximum to complete this anonymous survey about boat sewage disposal habits and preferences. Your responses will help us identify the sewage disposal norms of California boaters and improve our programs to better serve the boating community. Click the link in our bio to participate

 Liked by [sfestuarypartnership](#) and 15 others

OCTOBER 22, 2020

Twitter Organic Post:

 **The Bay Foundation**
@SMBRF 

CA boaters, we want your input! Please take 2 minutes max to complete this anonymous survey about boat sewage disposal habits & preferences. Your responses will help us improve our programs to better serve the boating community!  bit.ly/2H8WeUo



Photo by: John Hollenbeck

 DBW and 2 others

San Francisco Estuary Partnership (SFEP) Paid/Organic Advertising

Facebook Paid Advertisement:



San Francisco Estuary Partnership
Published by SF Estuary · January 12 ·

California boaters, help us make boating better! Please take this quick survey about your boat sewage habits 🗑️ Your responses will help us to increase pumpout availability around the state, improve our programs, and better serve the boating community 🌊. bit.ly/boatersewagesurvey

BOATER SEWAGE DISPOSAL SURVEY

Photo by: John Hollenbeck

27,464 People Reached 1,429 Engagements

Boost Again

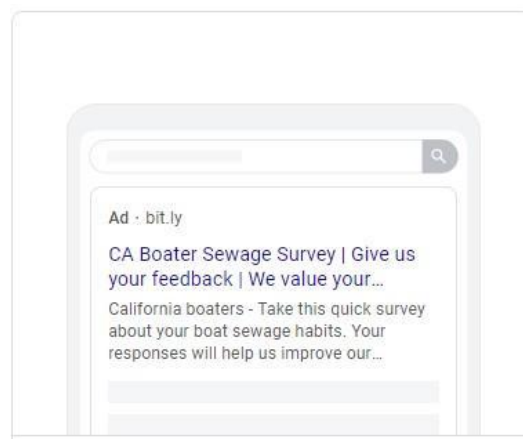
Twitter Paid and Organic Posts:



SF Estuary Partnership @SFEstuary

Welcome back to #CVAFriday! CA boaters, we want your input! Please take 2 minutes to complete this anonymous survey about boat sewage disposal habits & preferences. Your responses will help us improve our programs to better serve the boating community! <http://bit.ly/boatersewagesurvey> ...
pic.twitter.com/c7QdI9bfbB

Google Paid Advertisement:




Ad · bit.ly

CA Boater Sewage Survey | Give us your feedback | We value your...

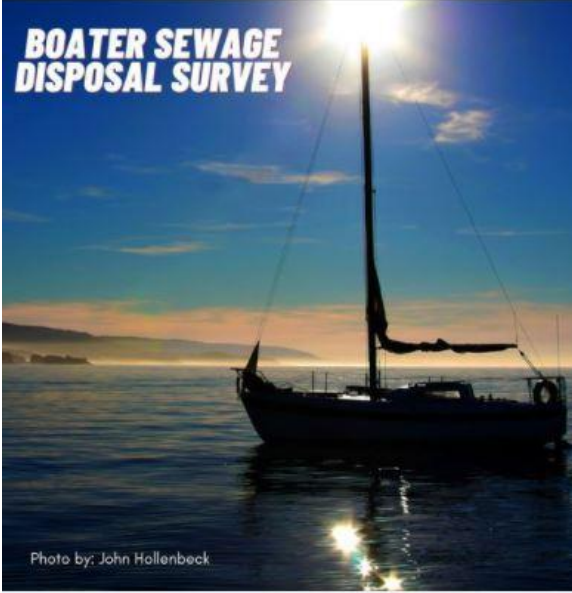
California boaters - Take this quick survey about your boat sewage habits. Your responses will help us improve our...

The California State Parks Division of Boating and Waterways (DBW) Posts

Facebook Post:

 **Boat California**
January 28 · 🌐

CA boaters, we want your input! Please take 2 minutes max to complete this anonymous survey about boat sewage disposal habits & preferences. Your responses will help us improve our programs to better serve the boating community! bit.ly/boatersewagesurvey



Boat California
Cause [Learn More](#)

Tweet:

 **DBW** @Boat_California · Jan 28

CA boaters, we want your input! Please take 2 minutes max to complete this anonymous survey about boat sewage disposal habits & preferences. Your responses will help us improve our programs to better serve the boating community! bit.ly/boatersewagesu...



🗨️ 2 ❤️ 11 🔄

Promotional Flyer



BOATER SEWAGE DISPOSAL SURVEY

Take 2 minutes to respond to this anonymous survey about boat sewage disposal habits and preferences and help us better serve the boating community bit.ly/boatersewagesurvey

California **BOATERS** we need your input!

SCAN THIS!



This survey is funded by the California State Parks Division of Boating and Watersports' Clean Vessel Act Program, and a Federal Clean Vessel Act (CVA) through the Sport Fish Restoration Program.

Electronic Newsletter (sent December 03, 2020)

BOATER SEWAGE DISPOSAL SURVEY

Photo by: John Hollenbeck

California boaters, we value your input and want to hear from you!

Please take two minutes maximum to complete [this](#) anonymous survey about boat sewage disposal habits and preferences. Your responses will help us identify the sewage disposal norms of California boaters and improve our programs to better serve the boating community!

[Click Here to Anonymously Participate](#)

This survey is funded by the California State Parks Division of Boating and Waterways' Clean Vessel Act Program and a federal Clean Vessel Act Grant through the Sport Fish Restoration Program.

Thank you in advance for your support!

For healthy waters and communities,

The Bay Foundation

www.santamonicabay.org



See what's happening on our socials:



Photo Credit: John Hollenbeck

Electronic Newsletter (sent February 03, 2021)



[Click Here To Be One Of The Final Anonymous Participants](#)

California boaters, in order to survey a representative sample of boaters, we set a goal of 400 total responses collected, which we have almost reached! Be one of the hundreds of boaters who have already completed the survey!

Please take two minutes maximum to complete [this](#) anonymous survey about boat sewage disposal habits and preferences. Your responses will help us identify the sewage disposal norms of California boaters and improve our programs to better serve the boating community!

This survey is funded by the California State Parks Division of Boating and Waterways' Clean Vessel Act Program and a federal Clean Vessel Act Grant through the Sport Fish Restoration Program.

Thank you in advance for your support!

For healthy waters and communities,

The Bay Foundation

www.santamonicabay.org



See what's happening on our socials:



Photo Credit: John Hollenbeck

Appendix 2 - Survey Tree

Holding Tank (needs to be pumped out) - Boater Group 1	Port-a-Potty/ Composting toilet/ Trusty Bucket - Boater Group 2	Head without a holding tank - Boater Group 3	I dont have a head on my boat - Boater Group 4	Notes
1 What is the region where you most commonly boat? 1-Northern California 2-Sierra 3-Central Valley 4-Greater San Francisco Bay Area 5-Central Coast 6-Los Angeles 7-Southern California				
2 What is the length of your boat? Under 25 feet 25 - 40 feet 41 - 60 feet Over 60 feet				
3 What type of toilet is on your boat? Head with a holding tank (needs to be pumped out)				Split here based on response <i>Order of responses:</i> - Head with a holding tank (needs to be pumped out) (Boater Group 1) - Head WITHOUT a holding tank (Boater Group 3) - Port-a-potty (Boater Group 2) - Marine composting toilet (Boater Group 2) - A trusty bucket (Boater Group 2) - I don't have a head on my boat (Boater Group 4)
4 How do you dispose of boat sewage? Stationary Sewage Pumpout In-slip Sewage Pumpout Mobile Pumpout Discharge overboard (if this is chosen it the survey skips to "In a perfect world, if all ways....") I don't use my boat's head Discharge overboard (if this is chosen it the survey skips to "In a perfect world, if all ways....")				Port-a-potty dump station Land-side restroom Discharge overboard (if this is chosen it the survey skips to "In a perfect world, if all ways....") I don't use the port-a-potty, bucket, or composting toilet (if this is chosen it the survey skips to "In a perfect world, if all ways....") Other(short form answer)
5 Rate how satisfied are you with (autofill response to answer 4) scale of 0 (very unsatisfied) to 5 (very satisfied)				
6 How can this rating improve? Increased accessibility Improved cleanliness Better Functionality Lower price Other (Please specify)				How can this rating improve? Increased accessibility Improved cleanliness Better Functionality Lower price Other (Please specify)
7 In a perfect world, if all ways to service your boat were FREE, what would you choose? Stationary Sewage Pumpout In-slip Sewage Pumpout Mobile Pumpout				Port-a-potty dump station Land-side restroom
8 How important is it that your marina / yacht club provides a way to service your boat (i.e. not having to go somewhere else)? (able to skip) Scale from 0 not at all important to 5 extremely important Not Applicable				
9 Would you be willing to pay more if your marina/ yacht club had a (recall info of preferred sewage disposal method), your choosen service method? Yes No Not Applicable				
10 Is it important is it that your marina/ yacht club discourage dumping sewage (treated or not) overboard? (able to skip) Scale from 0 not at all important to 5 extremely important Not Applicable				
How do you find sewage pumpouts when you're in an unfamiliar area? (multiple choice option) Ask fellow boaters Ask marina staff Use the Free CA Pumpout Nav App Web search Boating newspaper/ magazine Signage Other:				How do you find sewage dump stations when you're in an unfamiliar area? (multiple choice option) Ask fellow boaters Ask marina staff Use the Free CA Pumpout Nav App Web search Boating newspaper/ magazine Signage Other:
How do you find clean boating resources when you're in an unfamiliar area? (multiple choice option) Ask fellow boaters Ask marina staff Web search Boating newspaper/ magazine Social Media Signage Other:				How do you find clean boating resources when you're in an unfamiliar area? (multiple choice option) Ask fellow boaters Ask marina staff Web search Boating newspaper/ magazine Social Media Signage Other:
12 What, if anything, would you see worthwhile or beneficial about NOT discharging sewage overboard? (Able to skip) open ended				
13 Please provide us with any additional comments or suggestions about management boat sewage. (open ended and able to skip) open ended				
Key: All survey respondents were asked this question				

Appendix 3 - Full List of Responses for Open Ended Boat Sewage Questions

Question 1: What, if anything, would you see worthwhile or beneficial about *NOT* discharging sewage overboard?

Boater Group 1: Head with a holding tank

> The fact that humans should not dump waste directly into the ocean...
A clean lake No sewage in my swimming water
accessible and available pumpouts. Also random boat checks by officials. There is entirely too many boaters without consciousness pumping overboard without consequences. These are normally boats that never leave their slips.
All boats should have die put in them so now one pumps over board
Avoid water contamination with sewage
Benifit to water ways other boaters
Better flushing of tanks
Better for the environment
Better for the environment
Better for the environment
Better for the water and fish
Better harbor water quality
Better water cleanliness for aquatic life, people who go into the water, and those who ultimately use it.
Better water quality
Better water quality.
Caring about sea life
Change the criteria from 3 miles out to 5 miles out.
Clean bay
Clean bay water. This summer PGE accidentally turned off power to an EBMUD sanitation plant on Estuary and had to dump 50000 gallons of raw sewage. My boat is in Oakland Yacht Club across from there. Couldn't use kayak for weeks.
Clean healthy aquatic environment for humans and wildlife
Clean water
Clean water
Clean Water
Clean water

Clean water
Clean water
Clean water
Clean Water
Clean water and healthy animals
Clean water and healthy marine life
Clean water to swim in, Marina which does not stink of sewage
Clean water your not afraid to swim in or have children play in
Clean water
Clean waters
Clean waters
Clean waters
Cleaner environment for wildlife
cleaner for our oceans
Cleaner marina
Cleaner ocean
Cleaner oceans
Cleaner oceans
Cleaner waster, uncontaminated water
Cleaner water
Cleaner water
Cleaner water
cleaner water
Cleaner water
Cleaner water
Cleaner water
Cleaner water
cleaner water
cleaner water
Cleaner water
Cleaner water, more sea life
Cleaner water, safer for swimmers and the environment. Makes absolute sense and a responsibility.
Cleaner water

Cleaner water
Convenience
Convenience of not going out
Depending on the trip it may be necessary to dump overboard outside the restricted areas.
depends on tidal flow.
Depends on where you are -
Dirty water
Discharging in Marinas harmful to the enviroment and other boaters
do you think it is okay to pump e-coli overboard?
Don't have to swim in it.
don't pollute the water system
Don't do
Don't want to pollute the waters.
dont want to smell the fumes when discharging overboard
Dumb question
easy access to pumpout
Environment
Environmental impact
Environmental impacts
Everything
Everything is beneficial about NOT direct discharging sewage.
everything? cleaner water, better ecosystem, less ick.
For one overboard discharge is unlawful. It keeps our waterways clean and healthy for wildlife and our own enjoyment
Free pump service at slip
general environmental quality
Get rid of the sea lions. They discharge more in a day then all the boaters could do in a decade
Health, odor, attractive water
Healthier oceans
Human coliforms are potentially harmful to other species. I do NOT want to pollute the Bay.
I discharge off shore 3 + miles so I think this is fine however; we prefer a pumpout at the slip option instead. The marina has one pumpout station however; it's easier to use the off shore option
I discharge offshore 3 +miles in the ocean

I think grey water discharge is as bad as black water. Marina water is often poor with wildlife being impacted so perhaps improvement in this area will aid the health of wild and sealife
I discharge overboard when I'm out 3 miles. I want to keep our marinas and waterways clean
I don't have time for all the reasons. Less covid-19 in the water, less untreated pathogens of other types, less oxygen depletion, less over fertilizer for Bay, generally healthier for Bay and people using it.....
I don't want to pollute the water.
I don't want the marina or any other body of water to be contaminated and smelling like shit.
I don't want to swim in poop. I don't want others to swim in mine.
I dont
I find the wording for this question confusing so here is my opinion
I am for no discharge unless: 1: type 4 msd system which sanitizes all waste of 100% bacteria to meet before pumping overboard outside the 3 mile limit as stated by coast guard. 2. an incinerator toilet which needs no pumping overboard it's 100% ash and sanitary and can be dumped over in 3 mile limit or out (it's just ash and water vapor , I wish all toilets and city waste black water treatment were like this) 3. You are outside the 3 mile limit and offshore of any marine protected areas as stated by coast guard
I use public restrooms on land a lot and at marina, so safe protected dinghy access would stop people pumping overboard in my opinion as they have no need, I sometimes pay once a year a 49\$ fee for a pump out service or sail into slip and pump out
I fish, so clean water means a lot to me
I live on my boat most of the time. A person shouldn't go out and poop in their front yard and shouldn't discharge into the water they live on. It's the same thing. I don't understand why this is even considered a sane question.
I never discharge overboard
I occasionally dump my 25 gal. Tank 5-15 miles offshore maybe 2-3 times/year. I feel this amount of human waste pollution is extremely insignificant.
I pump overboard off shore while sailing.
I sometimes need to discharge overboard when I spend extended time in Catalina on the back side of the island. More pump outs available needed.
I swim in the water..
I use the equipment so regularly it is part of my boating day activity.
I would be able to swim freely.
I've never considered discharging sewage overboard in protected waters.
If it smelled bad - but I use aerobic bacteria and oxidizer so I pump out treated water. It's a non harmful act
If pumpout stations actually worked and were logically located (i.e., not on the winward side of the dock).
If the harbor patrol did the dye tablets in the head while anyone was anchored. Just like they do in Catalina
if there is a pumpout use it, 12 miles out is my option

In a marina, there is nothing beneficial pumping overboard.
Increased health and cleanliness of the waterways.
It doesn't belong in the marine environment.
It is extremely rare that a boat in our marina area pumps overboard. Most use a mobile service; some the pump out facilities. Friends with dockside pump outs report a lot of reliability issues.
It would be better not to pump overboard however the volume is so small the impact is low.
It's disgusting to pump overboard unless your at sea.
It's gross
It's hard to fix stupid, but we need to continue with the messages. Thanks!
It's super inconvenient to stop the boat in bumpy seas somewhere offshore and then have to open my engine compartment where my Y valve is located to have to get on my belly to flip the valve and wait while my macerator works it's magic. Huge PIA and not very yachtsman like. My old boat had a valve I could reach underway and it was much easier and my guests never knew I emptied the shitter
Its disgusting
Its easy to use pump out
Keep oceans and marinas clean
Keep our waterways clean
keep the ocean world safe and healthy.
Keep water clean and smell down
keeping harbors clean
Keeping our beloved ocean clean
Keeping our oceans and waterways clean for marine life and for the planet.
Keeping the oceans healthy
keeping the water clean
Keeping water clean
Keeping water that we enjoy clean
Keeps biohazards out of water
Keeps the Ocean clean, above and below.
Keeps water clean.
keppping my water clean
knowing that after all the hassle of getting my shit into municipal sewage that these municipalities often dump raw sewage in huge amounts into the bay anyway. stop scapegoating boaters.
Less pollution and disease
Less pollution of Santa Monica Bay
less pollution, better for marine life

Less pollution, cleaner waters
Less Unsanitary waterways and build up in marina. Environmental healthy conditions for wildlife and improved water quality
limited pollution
Local mobile pumpout
Lower bacteria levels and cleaner water.
Lower bacterial counts which are harmful for a number of reasons.
Maintaining modern society
Make it easier @ marina = cleaner water for all
Marina water would be cleaner, at sea in the area I boat, I see no problem now, but if the amount of boaters increased, it might affect water quality.
Marine life comes back to marinas
Must keep waters clean
NA
No crap in water
No having to go to open ocean
No ocean pollution, swimmer safety, clean harbors and beaches
No overboard
No sense in polluting the water
No TP in water.
Nobody likes the smell of sewage. It is best for everyone in the neighborhood to handle it properly.
none
none
Not a thing
Not creating a bio-hazard
Not polluting
Not polluting the inshore water, odor, health, scenery
Not polluting the water
Not polluting the water
Not polluting the waterways.
not sure
nothing
Nothing
nothing

Nothing
Nothing
Nothing
Nothing if off shore. The solution for pollution is dilution
nothing, discharging in open waters is a non issue
Nothing. Fish gotta eat too
Obviously not dumping shit in the water is better than dumping.
Ocean pollution
Only a narcissistic jerk would dump sewage
Paper
Pollution
Polution
Preserve water quality
Prevents boating thru other boats sewage
Protecting our water environment and resources
Protecting the environment for swimming.
Protects all of us and the environment from infection and pollution.
Protects both marine and human environments
pump out on every dock
Pumping sewage overboard is very bad for the environment.
Pumpout at dock doesn't foul water
Raw sewage in swimming, kayaking, surfing areas
Really? Shit in the water, that should never happen, how about the live aboards that always flush into the bay... regulate the live aboards and anchor outs, they are the filthy scum that pollute the bay
Reducing pollution
Save the environment, nothing goes overboard...
Save the sealife. Save the swimmers. Reduce grossness.
Saves marine wildlife, protects the ocean, saves marinas
Saving ocean animals from human waste pollution - we eat CRAP/Chemicals
saving the environment
Signage and Notice of FINES.
Silly question
silly question

Smell
Some people use chemicals not environmentally safe even some home made concoctions that can be very toxic, should be mandatory that boaters log all chemicals used on bouts there boat.
Stop/prevent the spread of diseases
Strangely worded question
Swimming comfort, habitat preservation
Swimming in clean water free of human waste.
The benefits to the environment and people using the water for recreational purposes.
The marine environment
The oceans have enough attack from other sources. Boaters should respect their playground enough to NOT discharge their sewage within 3 miles of land
The pump-out facility in marina is sized where pumping out a small holding tank like mine is very difficult. Also, find pump-outs in visited docks (LA & Orange County) are not maintained and out of operation frequently. Note instructions on pump-outs very poor --- Need training for boat owners and more inspections of public facilities.
The reality is that the local "free" pump out facility is poorly maintained and almost impossible to use. It is also located at the windiest corner of the marina.
The smell and the visual aspect of the water: it stinks and we can see some organic material drifting alongside the marina walls.
The yukkiness factor.
There's nothing good about discharging sewage overboard.
To have clean beaches to swim
Training/penalties
Trash, sewage should be handled in a proper disposal, not sent to pollute our waters.
Water quality
Water quality, safe swimming.
water quality; health of marine life
water quality; sealife health; safe water
water sanitation
We have a large liveaboard community in San Rafael. I would like to see enforcement of current laws plus laws that force liveaboards to use a pump out service. Too often I have seen boats pumping sewage out of their boats at the San Rafael harbor marina.
We only discharge > 3 miles out. Bad to do it close to shore (bacteria, virus).
We swim in that water.
We swim in the water we boat. Therefore, I would not want swim in poop
Who wants to swim in human waste?
Why would anyone wish to empty sewage in your slip? Using the pump-out at your sleep is so incredibly easy.

Within 3 miles of shore, totally applicable.
Work towards clean waterways
Yep
You are kiddingright?
Yuck factor

Boater Group 2: Port-a-potty, marine composting toilet, or a trusty bucket

A cleaner ocean
b etter fishing
Be a good steward of the environment ,we are a land based species so dispose of your waste at land based treatment stations ,therefore keeping the marine life free of contamination from human waste and no dumping of anything in the water.
clean water
Clean water, not seeing raw sewage floating in our bay and rivers.
Clean waterways
Cleaner and safer water
Cleaner water
Cleaner water ways
Cleaner waters
Cleanliness. People swim in that water, in this day and age we have to be careful
Dispecable
environmental impact
Environmentally friendly.
Floaters are not the best thing in the world.
Good for the well being of the overall environment.
having clean environment
Helps to keep the water clean, the lake or river bottom healthy, and a nice place to go fishing, swimming and boating.
higiene sanitation the best health prevention
Human waste could cause-harm to marine life and if water is drawn for irrigation and drinking that could be harmful too.
I dont use the Porto-Otis
I only empty the bucket well out at sea. Never any paper. Toilet paper stays on board. I feel ok with my arrangement and I will not sink my boat by flooding because of a plugged anti siphon valve on a toilet. I used the bucket on a larger commercial fishing boat as well for years with a clear conscious. My concern

is in the bay where people live aboard. I'd be willing to bet most just pump overboard at night. I've witnessed it many years ago in Redondo Beach. That needs to stop.
I think it is not fair to other boaters to discharge overboard in a marina or other enclosed waters.
I use a macerator and all that goes over is ash
Improved water quality and promoting safe and healthy ecosystem.
It keeps the environment clean
It's disgusting to pollute the water.
keep the bay clean
Keeping others from the impact of my waste
Lower pollution
More dump sites
More signs stating not to and health reasons for other boaters.
n/a
Nearshore it's important to not foul the water with untreated sewage. Nobody wants to swim or surf in excrement
No one wants to boat or swim in sewage.
swimming and other water-contact sports in clean water
Tourism\$ increased for California
Treated sewage is from an MSD inert and therefore, safe. In context to everything that washes out to the Bay from the thousands of miles of street runoff and homeless camps, discharge from MSDs is absurdly minuscule and UNWORTHY of demanding anyone take further expensive measures or spend tax dollars in a self-justifying grant funded crusade.
water may be used for municipal drinking w
Wtf, why would ypu?
x
You gotta be kidding, right? There is nothing beneficial abotoverboard discharge

Boater Group 3 and Boater Group 4: Head without a holding tank and no head onboard

Survey takers in Boater Group 3 and Boater Group 4 were not asked this question as it is not relevant to this audience.

Appendix 4 - Full List of Feedback Responses

Question 2: Anything else about boat sewage you want us to know?

Boater Group 1: Head with a holding tank

@Mac sent me here from @squad_boat
50 Sea Lions at 500 pounds each create the pollution in Marina Del Rey. Not the boaters discharging. Neither is good.
A lot of pump out stations are out of service
A lot of us are more vigilant about maintenance and the environment than you think because we love the water we are on
A major effort of Dock Walkers should be inspection of clean-out facilities with follow-up on maintenance. Plus training of boat owners on how to use public clean-out facilities. Also, have a better situation for boats with small holding tanks; the hoses on most clean-out stations hold a volume much greater than the total fluid in my holding tank (priming the hoses to do a pump-out is a major effort with the potential for a spill during the process)
A mobile pumpout service with the cost factored into the slip/mooring cost would encourage violators to use the service that they are paying for.
Along with pumpout stations which are prevalent in SoCal, trash receptacles would be helpful, too.
Am a member of the Coast Guard Auxiliary and we also keep boaters informed of the benefits of keeping our waterways clean.
Another pump out station on Folsom Lake would be great
Bad for marine health
Boat inspection programs work Please continue these to enforce marina water cleanliness.
Boats are often broken. The pullout station is great.. if I can get there.
California has very few pumpout locations for the number of boats. It should be a requirement for any marina with more than a certain number of berths (20?) have a pumpout station.
Can we do a project to reestablish mussels beds to clean the water.
Convenient pump-out locations are often nonfunctional and often closed and sometimes permanently shutdown.
CYM pump out is always broken. They took the states money and don't provide servicing of it...
Discharge in general; it seems very unfair that a city can discharge 100's of thousands of gallons into the bay from waste treatment plants without penalty but if a recreational boater so much as pee's into the bay, that is an egregious offense.
Discharging at sea often leaves visible signs. It happens a lot from boats journeying between Marina Del Rey and Catalina Island, often inside Santa Monica Bay and inside the 3 mile limit.
Discharging in open water 3 miles offshore is fine. But again, not in a marina.
Discouraging to find public pump-outs not working.
Don't make boat ownership in California so onerous (overregulated & expensive) that it reduces the recreational pleasure to only the wealthy.
Don't dump it overboard period.
education, education, education

Electro San?
Equipment up grades and repairs needed. Old unites
Every marina should have slip-side pump out.
focus on land based sewage treatment best practice
frustrated when pump out station dockage is blocked when used as a parking spot
Get more pump out stations
Have more Pumpout stations around marina
Having multiple options - all acceptable - is important. If cost is already embedded in existing boater fees and if boaters can see the benefit of those fees, then services may be used more.
How does it affect the ocean
How much damage is there to the water
I believe it's important to have working pump out stations in the marina
I don't see it as a problem. Holding tanks don't fill up that often and if pumpouts are close and free then AOK.
I don't recall ever pumping out my holding tank anywhere besides my home marina, Glen Cove Marina, Vallejo, CA.
I have a Y valve, so I pump overboard when >3 miles offshore
I often discharge overboard when outside the two mile limit
I often go to lake Berryessa and they have very limited pump out options. I know of two places that can do it but they want you to schedule an appointment and they want to charge you some crazy amount. I think last time I checked they wanted \$150 or more to pump out. My tank is only 30 gallons! I'm not paying that much and they want an appointment??? ? After my trip to the lake I towed my boat to the nearest marina with a free pump out and did it that way.
I remember the days before pump out was mandatory, and marinas were just horrible with sewage.
I sail more than 6 miles offshore every week. Overboard discharge is the easiest, cheapest, and least environmentally impactful
I tend not to use boat head because no matter how diligent, they always seem to have problems.
I think it should all be treated prior to discharge.
I think you know it all.
I use a 3 gallon bucket with a screw on lid, it sits in my boat head bowl, I got a toilet seat and made brackets to hold it on the bucket. I ask people to use the porta potties where we row out to my boat before we go out. I take that home, dump in in my septic system, and wash the bucket to return it to my boat. I don't have to live with aroma.
I want boat composting toilets stations to build soil
I wish people wouldn't pump sewage into bay.
I wish there was some enforcement of overboard pumping in marinas. In my yacht club I know people are using their heads yet their boats never leave the dock. Where is the sewage going?
If boat plumbing weren't so delicate people would be inclined to not resort to buckets or dumping overboard
In Marina Del Rey the pumpout station is not always available because ignorant boater dock there and block others from docking temporarily to pumpout and go.
In Port San Luis, the pump is high on the pier and difficult to access. Should have a sub-dock below to make access better.

It is best to clean out holding tank regularly
It rarely sinks...too often it floats.
It should be more clear in marinas and waterways that stationary pump out stations are available including directions. If people can find them easily and conveniently - more people will use them.
It stinks but dealing with it responsibly is an important part of boat ownership.
It's a critical issue relative to the cleanliness of the water; we need to do everything we can to ensure illegal dumping does not occur.
It's important that stationary pumping systems are kept operational.
Keep spreading the word
Keep them working 100% of the time.
Knowingly dumping sewage in a marina should be cause for eviction.
let people know about 3 mi limit
Liveaboard boaters should be required and show proof of having a pump out service at a reasonable interval for their live aboard Vessel
Macerated discharge far offshore from single small boats is fine. But not large discharges (like cruise ships)
MacGregor Burns loves a mush
Maintain the pumpout stations. I've had to search for other stations in the marina's when I came to one that was not in service...
Maintenance of and accessibility to pump out is important
Make it convenient to pump out.
Make it easy access and cheap. Too many boaters don't want to be bothered with the annoyance/hassle.
Making pumpout easy & cheap works better than just making overboard discharge illegal. Littering is illegal everywhere, but public trash cans are what keep parks cleaner.
many boats are pumping overboard and the marina does nothing to stop it.
Marina does strongly discourage discharge in the slip which is great
Marinas need to be friendlier which fosters communication which supports community support and change. Need more liveaboard opportunities and less favoritism and exclusion to others that are not in the capacity to pay their way.
Marinas should be required to help educate boaters about safe disposal practices— graywater & washdown practices too
Maybe expand the 3 mile limit.
Mobile pump out is super convenient, but very expensive. The goal should be to make pumping out accessible and inexpensive so people do it.
More people need to follow the rules
More signage/info to pumpout locations would be good.
Most Pumpout stations need more maintenance.
my local marina cym in Wilmington pump-out station never seems to be operating correctly I complain numerous times over the last five years to no resolve it seems to me they took the grant funding money installed the system and failed to maintain it. Have complained numerous times and nobody's been able to make any justification for attempt to resolve the situation

My Marina (Glen Cove, Vallejo) has been very good about having a Pumpout facility available during the 5 years I've been berthing my boat there.

my marina is a clean marina no charge to pump out

n/a

Na

NA

need more dockside pump outs

Need more pump out stations

Need to educate boaters on biodegradable soaps and detergents.

Need to educate the homeless that live illegally on the water or riverbanks dumping raw sewage into the rivers are destroying our environment.

No

no

no

No

No

No

No

No

no

No

No

no

No

No

No

No

no

No

No

No

no

no

No

No

No

No

no

no

no

No

no

No

No

no

no

No

No

No

No

no

no

no

No

No

No

No

No

No

no

No

No

no

No

No

No

No

No more regulations or costs please.

No.

No. However, could someone PLEASE explore how we can safely dispose of outdated marine flares

none

Nope
Nope
Nope
nope
Nope
nope
Nope
Nope, happy to cooperate
Nothing
Nothing
oil, engine discharge more prevalent in marina del rey
Onboard treatment and overboard discharge would solve many problems.
Once you get used to doing it it really isn't that hard.
Only 1 pump out station servicing 4 Port of LA marinas always broken
Only discharged 10 miles off shore
overboard discharge greater than 3 miles should not be affected by any statute or regulation.
People that pump out in marina slips should be shot
Please have the Two Harbors pump out opened. It has been shut down for almost a year
Please make it free and more available
polluters need to be cracked down on
Pumping out in open ocean is ok for private boats
Pumpout stations are too often broken or in disrepair
Pumpout stations need to have attendants like fuel stations. Or at least someone to make sure they work right
Reopen Catalina Two Harbors Pump out please
Request Yacht Clubs that have pump out facilities to offer them to others nearby.
See #6.
Shit stinks.
Shitters full.
Should not be allowed even offshore in legal areas.
shut down the marinas in Oakland that allow all of the homeless to live on dilapidated boats that discharge overboard before charging marinas more money to control the working population
Since c19 it became hard to use free services and I resort to using a paid service. Should be at least an available cheap service everywhere.
some boaters don't care and dump overboard in marina
Stationary pump out facilities around the bay often suffer from poor maintenance and malfunction. I think it results in more people discharging overboard. Too often you pull up to a pump-out station that is out of service. Fun with a full holding tank.

Stinks

Stop it Also how about the homeless? Where do you think all their waste and needles go

Stricter requirements to pump out and proof of how boats dispose of waste. Tabs in the tanks and steep fines to prevent macerating in the harbor. Attention must be paid by Harbor Patrol and Marina management. Tips on culprits encouraged.

The boat owners could do better about discharging sewage in their marinas.

The pump out at the lake we go to is very inconvenient. It's difficult to get your boat docked because of the very tight space. It would be better if it were located at or near the end of the dock not the part closest to the shore and right next to a busy fuel dock.

The pump out systems that are part of marinas and have piping all over the docks tend to be weak and not pump well

There is no authority to contact for illegal dumping and that is very frustrating.

There is nothing better than a marina with slip pump-outs.

they need to actually work and have multiple fittings so they work with the various deck fitting...

This was a dumb survey. I don't see how you can get any actionable info from it.

To encourage all boaters to use Pumpouts they should be free and not locked up so we can do self service any time of the day.

Too many live aboard dump in harbor and non boaters who are unaware, swim in this water.

Try to offer his mini pump out stations as possible.

Very beneficial have funds provided for the free service at several marinas

We about 6 times a year dump waste over three miles off shore when we go out sailing.

We need more options for free pump outs in LA Harbor.

We started out using the facility and bought the fittings to make it work well. But the management of the Cabrillo Way are hostile to non-customers using their facility. To the maps and other methods for providing information are pretty useless.

What happens to the corn?

Where can we report pump out stations that are inoperable. The marina management does not respond.

Without a doubt, in slip pump out is huge.

Would be great if the app were updated to indicate which pump outs are inoperative. Hate pulling up, tying up, shutting down just to discover the pump is inoperative.

Would love it if gray water weren't dumped overboard.

Yes you are asking us about our boats but what about all the trash and sewage and debris that comes down the LA River everyday and especially during heavy rains what about that?

Yes, have a yearly check at each marina that any boat with a head has the proper working holding tank. Too many boats come into San Diego, anchor inside the bay and dump waste directly overboard. This is why we need the random blue tablets put in the heads by the harbor patrol...especially on holiday weekends.

Boater Group 2: Port-a-potty, marine composting toilet, or a trusty bucket

A dump floor sink closet at the bathrooms would keep the toilet area cleaner.

Composting toilets should be promoted more

encourage use of eco friendly chemicals in portapotty.

If pumpout or dump station facilities are available and convenient, people will use them. At my marina, the porta pottie dump station is really far from where all the smaller boats dock. I have to take the cassette and drive 3/4 of the way around the harbor.

It should be mandatory that while on the water no waste is discharged in the water.

keep information spreaded out to car show boat shows everywhere ...

Messy business any way you cut it.

N

n/a

no

no

No

No

no

No

No

No i dont use it

No.

Please provide more waste options for boaters on rising and falling water level reservoirs.

Pumpout stations are supposed to handle portapotties but they actually damage them.

see it dumped by others overboard all the time

Should be a fine if you get cot dumping or defakating in the wster

The general public needs to be made aware of the dangers of dumping sewage in lakes,streams and the ocean .

There are adequate pump-out stations AND mobile pump-out services in the Bay Area, at a fair price for recreational boaters. I rarely hear about any boater going to the trouble of illegally dumping their tanks in the Bay. Maybe do something about the homeless living in RV's that haven't moved in many months dumping their tanks in the Oakland estuary.

x

Boater Group 3: Head without a holding tank

I don't dump untreated sewage. My boat has a Lectra San system.

I use an Electroscan. The sewage is treated.

N0

No

Nope

Please don't get mad, it's just when we're underway I've seen sharks and other water creatures munching on our poo. It's almost like a poo-crumb trail!

Simply no possible way that myself and my fellow boaters account for a significant amount of sewage discharge into the bay compared to other sources such as uncontrolled runoff from the streets of the bay end overflow from the sewage treatment plants streams and rivers during title storm runoff

Not to say we shouldn't be responsible and vigilant but as a community we more than anyone want a good clean bay and contribute more to clean efforts and contribute less pollution

too many boaters claim head malfunction
too many boaters dump in marina especially at night
No
No
no
No
No
No
No
No
Nope
Nope
Please continue to discourage black water dumping, it's pollution.
Please don't get mad, it's just when we're underway I've seen sharks and other water creatures munching on our poo. It's almost like a poo-crumb trail
Simply no possible way that myself and my fellow boaters account for a significant amount of sewage discharge into the bay compared to other sources such as uncontrolled runoff from the streets of the bay end overflow from the sewage treatment plants streams and rivers during title storm runoff Not to say we shouldn't be responsible and vigilant but as a community we more than anyone want a good clean bay and contribute more to clean efforts and contribute less pollution
too many boaters claim head malfunction
too many boaters dump in marina especially at night
Use shore facilities before launch

Boater Group 4: No head onboard

Always boated on a lake where marine's were available.
As tablet use for all boats with onboard heads
Bypassing heads and dumping waste water, not grey water or bilge, human waste directly into the water is not uncommon. Buckets of are waste dumped into the water and marina on a regular basis.
For those who need it , anywhere in the country the pump out station should be of a size that large and small boats can tie up comfortably. Also have clean access, on many lakes they can be tucked behind the fuel docks and make it difficult.
I also have an 35 ft Morgan Sail boat that is fully self contained Gray water Black water etc . I have mine pumped out every month I do not dump 3 miles out !
Just jump in the water to do your business.
No
no
No
No
No
No
No
Nope
Please continue to discourage black water dumping, it's pollution.
Use shore facilities before launch