

APPLICATION

**for a State-Designated
No Discharge Zone**

**in the City of Annapolis and
Anne Arundel County,
Maryland**

under Clean Water Act §312(f)(3)

28 June 2018

Prepared by:



www.backcreekconservancy.org

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Preface

The Back Creek Conservancy (BCC) prepared both this and a previous draft of this application in response to resolutions calling for no discharge zones by the Annapolis Environmental Commission (November 2014), the Anne Arundel Maritime Industry Advisory Board (December 2016), and the Severn River Commission (January 2017). All three are volunteer citizens advisory bodies with no budgets or direct implementation capacity.

To initiate the application, the Back Creek Conservancy engaged Tyler Domanski, a 2016 summer intern, to prepare a feasibility study for a no discharge zone application. Based on his report, the Conservancy organized a consultative roundtable at Port Annapolis Marina on 15 December 2016, chaired by Stuart and Hamilton Chaney, which confirmed the feasibility of a no discharge zone application. A follow-up roundtable in July set the format based on EPA guidance and the basic approach as a positive strategy to promote clean boating, with less emphasis on enforcing a new environmental regulation. A final consultative roundtable in November began the drafting of the application.

The Conservancy's 2017 fundraising launched major corporate sponsorship by the Brick Companies Foundation, Herrington Harbour Marinas, and the Eastport Yacht Center. A second round of fundraising, led by William J. Kardash and Charles R. Kreter, fulfilled the initial financial goal.

Research and drafting of the application took place from November 2017 to February 2018, led by David Read Barker along with Lara Mulvaney, GIS Specialist, and Grace B. Stewart, Program Assistant. Jamisha Swinson helped revise the tables; Nina Fisher did the final editing.

In response to concerns among maritime businesses about the economic impact of no discharge zones, the Back Creek Conservancy brought the harbormasters of Newport, RI (Timothy Mills) and Chatham, MA (Stuart Smith) to Annapolis on 7 February 2018. At a public meeting for maritime businesses, hosted by Annapolis Mayor Gavin Buckley and facilitated by Chesapeake Legal Alliance Executive Director Jacqueline Guild, the harbormasters described their positive experiences.

The first draft of this application was circulated for comment on 23 February 2018 with written comments received from:

Donna Morrow, Chesapeake and Coastal Service, Maryland Dept. of Natural Resources
Diane Butler, Chair of the Annapolis Environmental Commission
Tarrant Lomax, Chair of the Annapolis Maritime Advisory Board
Jesse Iliff, South Riverkeeper
Rob Savidge, Alderman, City of Annapolis

In meetings, members of the Maritime Industry Advisory Board, the Severn River Commission, the Severn River Association, and Beth Bellis, Annapolis Harbormaster provided oral comments.

The lead author briefed the Annapolis City Council Environmental Matters Committee on the application on 18 April 2018.

1.0 Greater Protection and Enhancement Certification

Anne Arundel County, Maryland sits on the Coastal Plain that forms the upper western shore of the Chesapeake Bay. The highest elevation in the county is less than 300 feet; the terrain is deeply incised by rivers, bays, and creeks that cumulatively create more than 533 miles of shoreline. This topography has supported a long history of boating, highlighted by the establishment in 1845 of the U.S. Naval Academy in the county seat and state capital, Annapolis, along with active centers of boatbuilding, fishing, crabbing, and oystering from the earliest settlements into the 1980s. In recent decades, commercial vessels have largely given way to so much recreational boating that Annapolis is well known as “The Nation’s Sailing Capital.” The Annapolis sailboat and powerboat shows, held annually in October since 1970, are the largest in-the-water boat shows in the United States. The 2017 *Portbook*¹ lists 96 recreational boating businesses in Anne Arundel County; several more support and depend on recreational crabbing and fishing.

Anne Arundel County is bounded on the north by the Patapsco River, on which the Port of Baltimore is located. The county is incised by five significant rivers—the Magothy, Severn, South, Rhode, and West— and by two bays—Whitehall and Herring. A combination of intense suburban development, relatively shallow water depths, and limited tidal range makes these water bodies among the most seriously impaired in the Chesapeake Bay.

This application draws authoritative environmental information about the Chesapeake Bay from three sources: the Maryland Department of the Environment, the Chesapeake Bay Foundation, and the University of Maryland Center for Environmental Science.

The 2016 *Integrated Impairment Report*⁴ of the Maryland Department of the Environment offers important information on the impairment status within each basin.

Rhode River basin, Cadle Creek, and Bear Neck Creek were impaired by fecal coliform. In the West River basin, fecal coliform, sulfates, and PCB in fish tissue impaired the waterways. Fecal coliform still impaired Parish Creek, specifically.

The South River basin was impaired by fecal coliform, PCB in fish tissue, chlorides, and the lack of a riparian buffer. Specifically, Duvall Creek, Selby Bay, and Ramsey Lake were all impaired by fecal coliform while the Annapolis Landing beach was impaired by *enterococcus*.

The Severn River was impaired by PCB in fish tissue and fecal coliform.

The Magothy River showed impairment by fecal coliform, PCB in fish tissue, and chlorides. Specifically, Tar Cove, Deep Creek, and Forked Creek were all impaired by fecal coliform.

While marine sanitation devices (MSDs) lower fecal coliform levels, they do not eliminate this bacteria and fecal coliform remains an issue for many places within each basin. A no discharge zone offers a little help in reducing levels of fecal coliform within these waters. However, no discharge zone designations in Anne Arundel County waters will not be a panacea to reduce fecal coliform levels everywhere since the north shore of the Magothy River, the south shore of the upper Severn River, and the western shore of the West and Rhode rivers are not yet served by county sewerage. Septic systems in various states of functionality possess the possibility of discharging both nutrients and fecal coliform.

Concentrations of PCB in fish tissue remains another common problem for these water bodies, but this contaminant is not related to sewage disposal from boats.

On 30 May 2018, the Chesapeake Bay Foundation released its 2017 Maryland Midpoint Assessment, accessible at www.cbf.org/how-we-save-the-bay/chesapeake.../2017-maryland-midpoint.html. This midpoint assessment sought to determine whether Maryland is on track to meet its 2025 pollution reduction targets. The major finding was that, “Maryland has achieved its overall 2017 goals for phosphorus and sediment, but still falls short in nitrogen reductions. “Nitrogen and phosphorus pollution from urban and suburban areas and nitrogen pollution from septic systems continue to increase.”

The University of Maryland Center for Environmental Science has developed a sophisticated report card for the health of the Chesapeake Bay, dividing the water body into 12 regions. The “Lower Western Shore” region covers Anne Arundel County and a portion of Calvert County, an area that is nearly identical to the area covered in the application and Herring Bay. The 2017 map of nitrogen levels, reproduced below, shows the Lower Western Shore to be “very poor” and meeting less than 20% of the nitrogen pollution diet’s target (Figure 1).

“No Discharge Zones in Maryland’s Waters,” a 2014 white paper by Donald O’Neill and Donna Morrow at Maryland Department of Natural Resources², is an authoritative survey of this subject.

“Nutrient overenrichment is the biggest threat to the health of the Chesapeake Bay and Type I MSDs [marine sanitation devices] do little to reduce the amounts of nutrients contained in boat sewage. For this reason, discharges from Type I MSDs can be a problem in sensitive areas of water that are already impacted by other sources of nutrients including poorly flushing areas and areas where vessels tend to congregate.” (p.9)

“The biggest threat to the health of the Chesapeake Bay is nutrient overenrichment. Boat sewage, whether treated or not, contains nutrients. Untreated, or improperly treated, boat

sewage also contains disease-causing microorganisms (pathogens), such as bacteria, protozoans, and viruses which can cause illness to swimmers and can contaminate shellfish beds also causing illness. Treated boat sewage may also contain toxic chemicals that can harm marine life.” (p. 10)

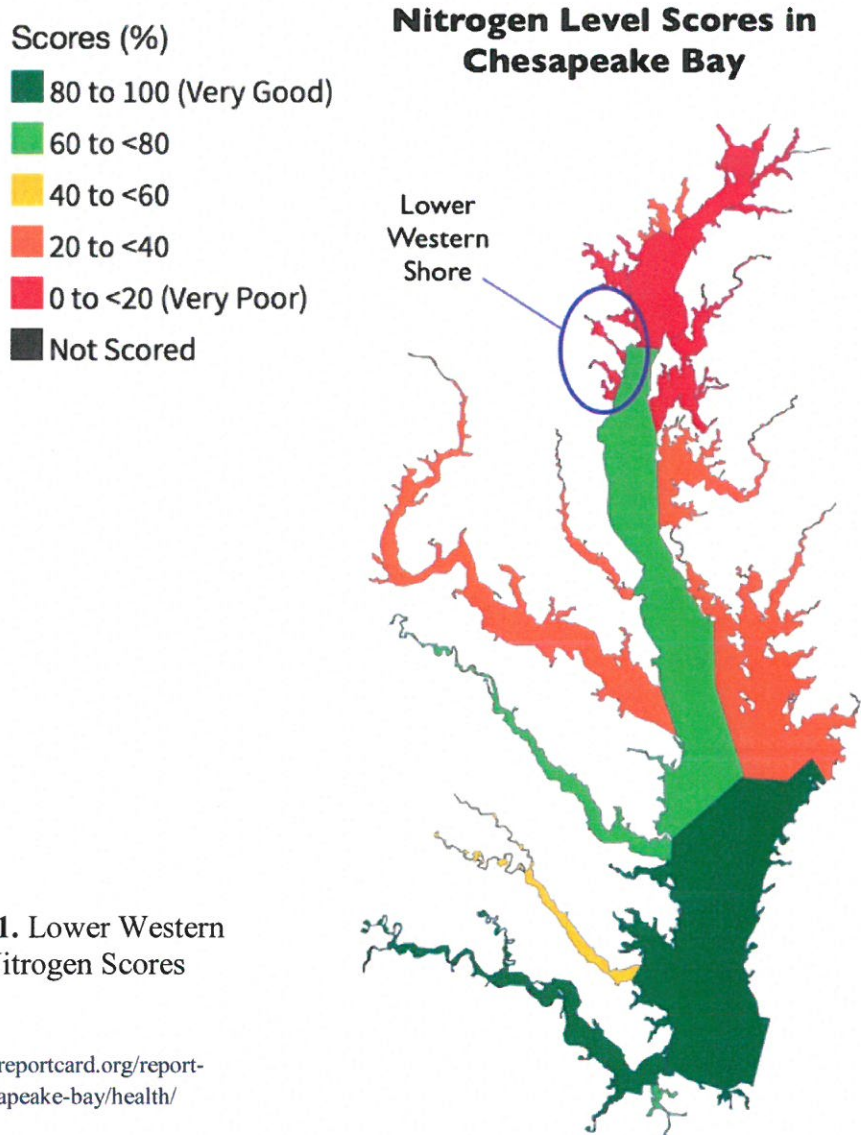


Figure 1. Lower Western Shore Nitrogen Scores

Source:

<https://ecoreportcard.org/report-cards/chesapeake-bay/health/>

“Nutrients contained in boat sewage can have a more significant impact on local water quality particularly in areas of water that do not flush well and where boats tend to congregate. Although one discharge from one boat may not add a significant amount of nutrients to the water, the effects of nutrient overenrichment are cumulative so areas of vessel congregation can be a concern. This is a particular problem in environmentally sensitive areas of water that contain living resources and that may not flush well.” (p. 11)

Table 1.1 shows information from the Chesapeake Bay TMDL³ for an approximation of the total amount of pounds of nitrogen allowed for areas within the proposed no discharge zone. Over 1 million pounds of nitrogen can be discharged into these waters. So, how much nitrogen would be reduced if the proposed no discharge zone was in place? The following calculations and assumptions explore this idea.

Table 1.1: Pounds of Nitrogen Allowed Per Year TMDLs³

	Nitrogen (lbs/year)
Magothy	252,398
Severn	428,899
South	249,449
Rhode	52,235
West	37,777
TOTAL	1,020,758

The impaired water quality of Herring Bay prompted an application in 2002 to become the first no discharge zone in Maryland’s portion of the Chesapeake Bay. The proponent of that application was a private business: Herrington Harbour marinas—South, in Rose Haven, and North, in Deale. In the 16 years since the no discharge zone has been in place, Herrington Harbour has consistently reported it to be a great success from the viewpoint of boaters’ satisfaction with cleaner water and of habitat restoration exemplified by the return of Maryland’s iconic species, terrapins and horseshoe crabs, resulting from the no discharge zone and the restoration of shoreline habitats.

The success of the Herring Bay no discharge zone prompted the Chester River Association, a nonprofit organization in Chestertown, Maryland, to prepare an application in 2015 for a no discharge zone designation for the entire Chester River. In part because the river marks the border between Kent and Queen Anne’s counties, both county governments had only limited direct involvement in preparing and promoting the no discharge zone application. The Queen Anne’s County commissioners, however, did submit a strong letter of support for the application.

This current request is the first no discharge zone application in Maryland to be promoted by government entities: the City of Annapolis and Anne Arundel County. Annapolis is the County seat as well as the state capital. The strategy of the application has been to identify all of the water bodies in the County that fulfill the requirements of adequate pump-out and dump station facilities and to limit the no discharge zones to the “interior” waters of the County and not to extend the proposed no discharge zone boundaries into the main stem of the Chesapeake Bay. These limits arise from two considerations. First, the aim of this no discharge zone application is to focus on the rivers, creeks, and coves where recreational boating is most concentrated and where, it is expected, successful no discharge zones will have the most observable effects. And second, the proposed limits correspond to the areas served by existing environmental nonprofit

organizations that are currently active in water and habitat quality monitoring, education, and enforcement.

This strategy results in a no discharge zone application that expands the existing Herring Bay no discharge zone to 13 additional water bodies in Anne Arundel County. Excluded from this proposed no discharge zone are the two inter-jurisdictional rivers that border the county: the Patapsco, on the northern boundary, and the Patuxent, to the west.

These 13 water bodies constitute essentially all of the County's waters but one. The exception is Curtis Creek, off the Patapsco River. Curtis Creek is excluded from this application for two reasons. First, although the southern headwaters and upstream portion of the creek is in Anne Arundel County, the juncture of the creek and the river sits in Baltimore City, a geographic feature that would create inter-jurisdictional complications in managing a no discharge zone there. Second, it is by far the most heavily industrialized creek in Anne Arundel County and has relatively limited recreational boating.

Four no discharge zones are proposed on the Patapsco River, the northern border of Anne Arundel County. Three of these are creeks:

1. Stoney Creek, 677 acres
2. Rock Creek, 524 acres
3. Bodkin Creek, 609 acres

The fourth proposed no discharge zone on the Patapsco includes one marina right on the river:

4. Atlantic Marina Resort, 2 acres

Four complete rivers are proposed:

5. Magothy and Little Magothy rivers, 5,879 acres
6. Severn River, 7,497 acres
7. South River, 5,904 acres
8. West and Rhode rivers, 4,370 acres

Finally, four creeks and one bay opening directly onto the Chesapeake Bay are proposed:

9. Podickory Creek, 9 acres
10. Sandy Point/Mezick Ponds, 47 acres
11. Whitehall Bay, 1,599 acres
12. Oyster Cove, 34 acres
13. Fishing Creek, 228 acres

These 13 proposed water bodies total 27,379 acres, which amounts to approximately an eight-fold expansion of the 3,500 acres of the Herring Bay no discharge zone.

Environmental Impact

An assessment of the potential environmental impact of the proposed no discharge zones in Anne Arundel County should prove useful. Would vessel sewage discharge prohibitions make only a trivial contribution in reducing the nutrient load to the Chesapeake Bay, possibly at great cost to boaters, or might they significantly decrease loads? Exploring this question requires pulling together many numbers and making several assumptions.

From the vessel population estimates given in section 3.0, there are 3,228 boats over 40', 9,072 ranging from 26' to 40', and 10,307 vessels from 16' to 26' used in Anne Arundel County. Let us assume that all of the boats over 26' and half of the vessels between 16' and 26' have some sort of onboard toilet.

$$3,228 + 9,072 + (.5 \times 10,307) = 17,454 \text{ boats with toilets}$$

According to a study in 2000 by the Schaefer Center for Public Policy, 88 percent of boats with toilets have holding tanks.

$$17,454 \times .88 = 15,339 \text{ boats with holding tanks}$$

According to a survey conducted in 2000 by the Schaefer Center for Public Policy, 81 percent of boats in Maryland with holding tanks regularly use pump-outs.

$$15,339 \times .81 = 12,441$$

This percentage leaves 2,918 boats in Anne Arundel County with holding tanks that are not regularly pumped out.

$$15,339 - 12,441 = 2,918$$

No reliable information exists about how these estimated 2,918 holding tanks are used or maintained. Presumably, some of them are seldom or never used at all, and some are discharged overboard.

Turning to vessels with Type I marine sanitation devices, there are two sources of estimates. The Marine Trades Association of Maryland estimates the number of these vessels at 500, which can be taken as a broad approximation.

A better estimate comes from Maryland DNR, which conducted a survey on MSDs with 2018 vessel registrations. Of the first 1,661 survey responses, submitted through 23 March 2018, 15 vessels reported having Type I or II systems; 334 have a Type III holding tank. Assuming that the survey responses are representative of the universe of 21,712 vessels registered in Anne Arundel County, a projected 196 vessels have Type I or II systems.

Using this lower estimate, $2,918 + 196 = 3,114$ boats either have holding tanks that are not pumped out at proper facilities or a Type I or II system that does not treat nitrogen or phosphorus.

Next, we must consider the use that the average vessel receives annually. Here, we assume that for most boaters the season begins in April and runs through October, a period of roughly 28 weeks. We assume that each boat makes a trip every other week, that the average trip involves 2.5 people, and that one-quarter of these people use the onboard MSD for “sewage” purposes.

This calculation results in an “annual use factor” for each vessel of $28 \times 0.5 \times 2.5 \times 0.25 = 8.75$

Multiplying the number of vessels by the annual use factor results in a new pair of numbers that might be termed “annual boat use.”

Holding tanks	$2,918 \times 8.75 = 25,533$
Type I MSD	$196 \times 8.75 = 1,715$

Let us assume that in a well-functioning no discharge zone, three-fourths of vessel operators with holding tanks who previously discharged directly overboard, and three-fourths of the operators with Type I systems, changed their behavior and used only proper pump-out facilities.

Under this no discharge zone arrangement, the “annual boat use” factor would become

Holding tanks	$25,533 \times 0.75 = 19,149$
Type I MSD	$1,715 \times 0.75 = 1,286$

According to EPA, one person’s daily sewage results in 0.095 pounds of N.

Holding tanks	$19,149 \times 0.025 = 479$ pounds
Type I MSD	$1,286 \times 0.025 = 32$ pounds
Total	511 pounds

According to these calculations, therefore, the proposed no discharge zones in Anne Arundel County might be expected to result in an annual reduction approaching a quarter ton of nitrogen—under one-tenth of one percent of the annual TMDL for these waterbodies (1,023,947 pounds in 2016).

Although all of the assumptions behind this estimate of environmental benefit can be challenged, the net result pointing to roughly a quarter-ton reduction of nutrients is probably not too far off the mark.

Is it worth the effort? Anne Arundel County’s MS4 permit will not award any TMDL reduction credit to this no discharge zone or anything else that takes place directly in the water. On the other hand, recent County work for best management practices is averaging \$3,500 per pound of nitrogen. While recognizing that investments in terrestrial BMPs are completely different from

those for clean boating, a “permanent” 511 pound nitrogen reduction in the proposed no discharge zones would be worth \$ 1,788,500 if undertaken on land.

Nutrient Reduction Credits

While this application was undergoing the first round of public comment during March and April 2018, the Chesapeake Bay Program (CBP) released the report of the Boat Pump-Out Expert Panel. In 2015, the CBP Wastewater Treatment Workgroup was asked to consider Boat Pump-Out Facilities within no discharge zones as a BMP eligible for nutrient reduction credit within the Phase 6.0 Watershed Model. The proposal recommended the reductions be based upon direct monitoring of nitrogen and phosphorus removal at pump-out facilities from Type I and II MSDs, which would be reported to CBP by the jurisdictions on an annual basis. The workgroup identified several regulatory issues that require further evaluation.

The Boat Pump-Out BMP Expert Panel was requested to identify any regulatory constraints associated with providing nutrient reduction credit for Boat Pump-Out from Type I and II MSDs within the Chesapeake Bay watershed and provide a recommendation on whether to credit the practice in the Phase 6.0 Watershed Model given the identified constraints.

The expert panel’s report recommends that boat discharges be included as a new source in the Bay water quality model. To acknowledge and incentivize good programs that are in place to reduce nutrient loads from boat discharges, the panel recommends that development of a boat pump-out program be approved as a programmatic BMP.

These recommendations have immediate implications for the education and outreach efforts of the City of Annapolis and Anne Arundel County. Section 4.1, Public Education Plan, further covers this topic.

2.0 Facilities Information

2.1 Maps of Sanitary Waste Reception Facilities

The following pages include an overview map (Map 10) and nine other maps which show the geographic locations of existing pump-out facilities. The facilities open to the public are indicated by a green circle; those that are “private” (only open to slip holders or community residents) are indicated by an orange square. Maps 1 through 9 have accompanying tables that list the marinas depicted. Each table is on the page after its respective map. All of the documented marinas are on at least one of these smaller maps, as well as on the overview map. The maps show only locations of a pump-out facility; they do not indicate if more than one exists at any given location.

Tables A.1.1 and A.1.2 in the appendix provide map codes and contact and location information for marinas with public pump-outs and marinas with private pump-outs respectively. Both tables are organized first by river, from north to south, then by creek alphabetically. The map codes correspond with the information source. If the code is just a number, for example 66, this indicates that Anne Arundel County provided the marina information. The other initials stand for City of Annapolis (COA), Department of Natural Resources (DNR), and Back Creek Conservancy (BCC).

Map 1 shows the four proposed no discharge zones on the Patapsco River (Stoney Creek, Rock Creek, Atlantic Marina Resort, and Bodkin Creek) and the northern portion of the Magothy River.

Map 2 shows the upper Magothy and Severn rivers.

Map 3 shows the southern portion of the Magothy River, including the Little Magothy River, and, directly off the Chesapeake Bay, Podickory Creek, Sandy Point/Mezick Ponds, and Whitehall Bay.

Map 4 shows the City of Annapolis portion of the Severn River and Chesapeake Harbor.

Map 5 shows the upper South River.

Map 6 shows Oyster Creek and Fishing Creek (both directly off the Chesapeake Bay) and the lower South River.

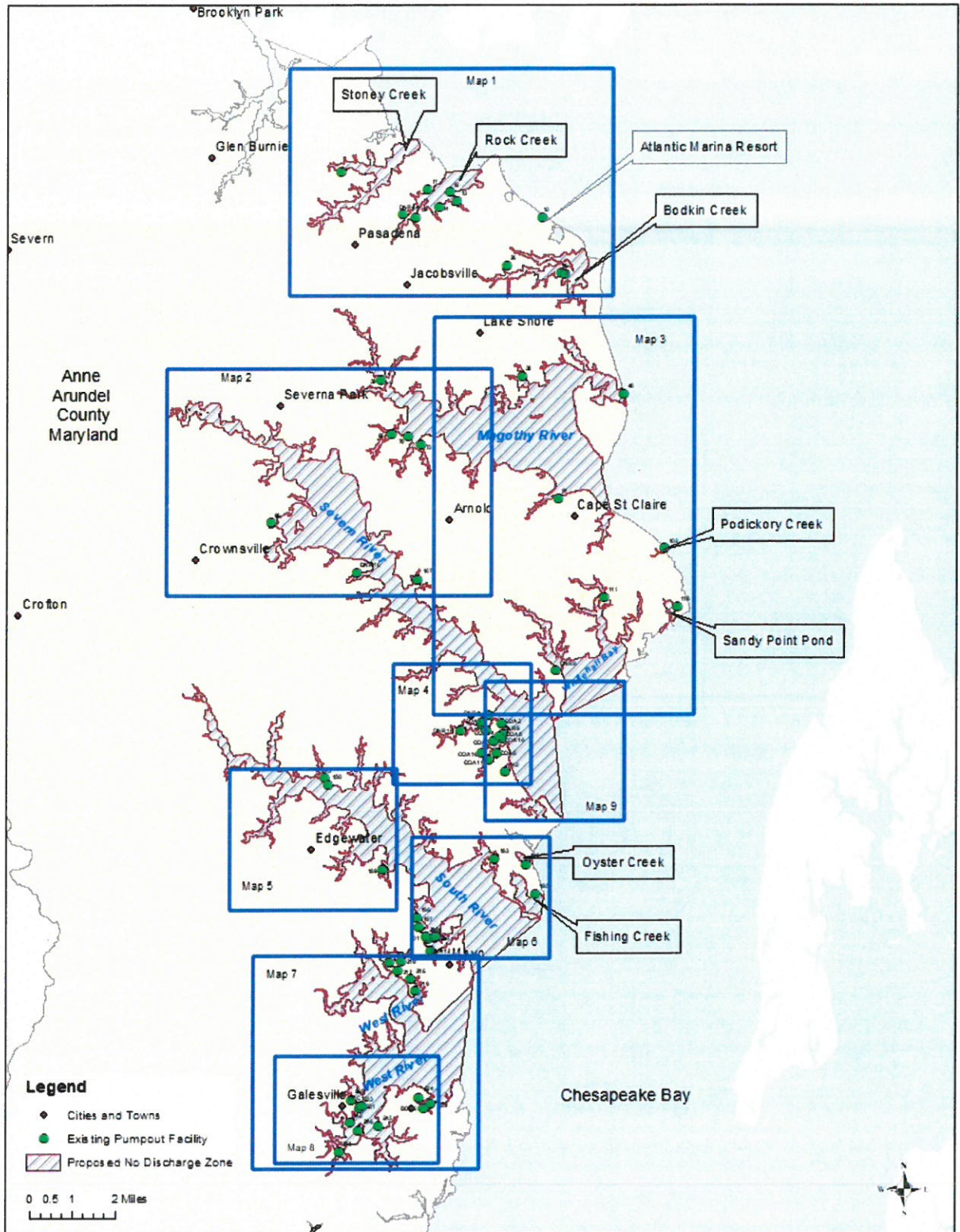
Map 7 shows again the southeastern portion of the South River, the Rhode River, and the outer portion of the West River.

Map 8 shows the West River.

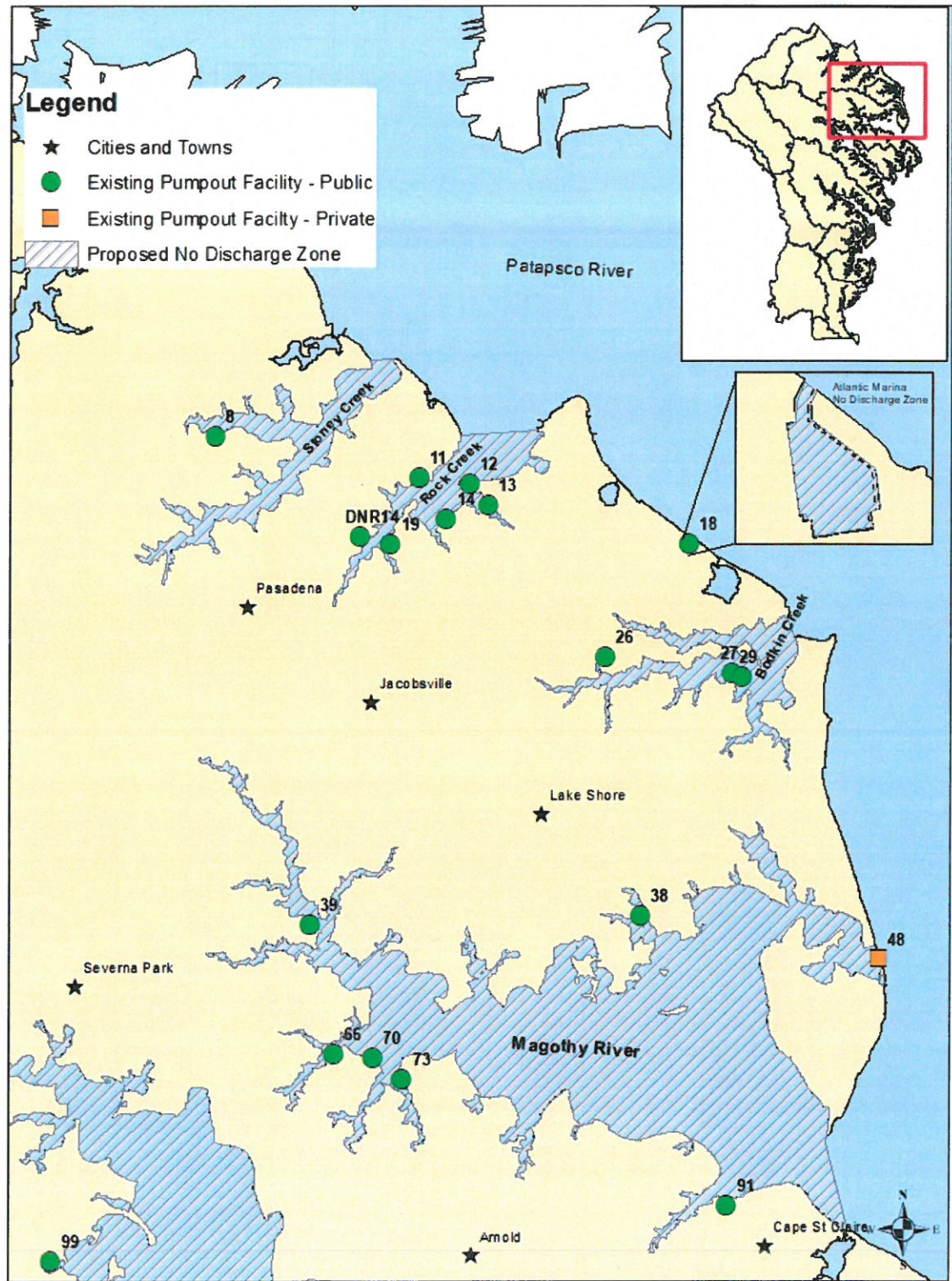
Map 9 shows the outer Severn River.

Map 10 is an index map of the entire proposed discharge zone, showing the locations of maps 1 to 9.

Map 10: Overview Proposed No Discharge Zones and Existing Pump-out Facilities



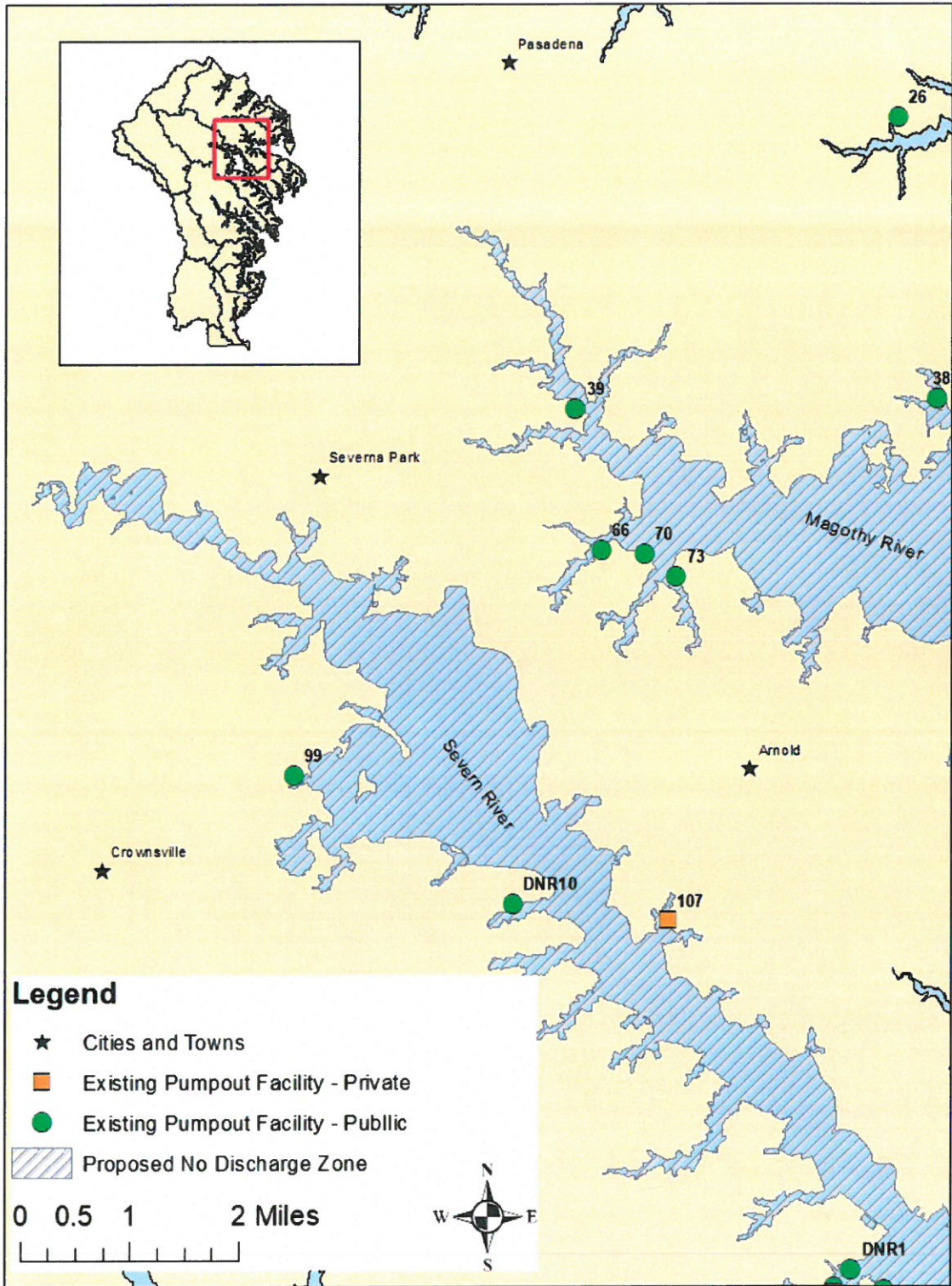
Map 1: Stoney Creek, Rock Creek, and Bodkin Creek Areas



Marinas with Pump-outs: MAP 1

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
Patapasco	Boekin	Pleasure Cove Marina	26	39°07'41.4"	76°28'24.3"	410 437 6600	1701 Poplar Ridge Rd	Pasadena	105	Public	www.pleasurecovemarina.com
Patapasco	Boekin	Ventnor Marine Service	27	39°07'39.3"	76°27'01.1"	410 255 4100	8070 Ventnor Rd	Pasadena	135	Public	
Patapasco	Boekin	Hammock Island Marina	29	39°07'34.6"	76°26'53.8"	410 437 1870	8083 Ventnor Rd	Pasadena	64	Public	www.hammockisland.com
Patapasco	River Direct	Atlantic Marina Resort	18	39°08'42.1"	76°27'29.4"	410 437 6926	2010 Knollview Dr	Pasadena	60	Public	www.atlanticmarinaresort.com
Patapasco	Rock	Blake's Bar Harbor Marina	11	39°09'19.3"	76°30'28.8"	410 255 5500	208 Bar Harbor Rd	Pasadena	30	Public	www.blakesbarharbormarina.com
Patapasco	Rock	Maryland Yacht Club	12	39°09'16.0"	76°29'55.3"	410 255 4444	1500 Fairview Beach Rd	Pasadena	144	Public	www.mdyc.org
Patapasco	Rock	Fairview Marina	13	39°09'06.0"	76°29'44.6"	410 437 3400	1575 Fairview Beach Rd	Pasadena	120	Public	www.fairviewmarina.com
Patapasco	Rock	White Rocks Marina	14	39°08'56.9"	76°30'11.4"	410 255 3800	1402 Colony Rd	Pasadena	370	Public	www.whiterocksmarina.com
Patapasco	Rock	Oak Harbor Marina	19	39°08'44.3"	76°30'48.9"	410 255 4070	1343 Old Water Oak Pt. Rd	Pasadena	100	Public	
Patapasco	Rock	Pasadena Yacht Yard (PYY marine)	DNR14	39°08'47.7"	76°31'07.2"	410 255 1771	1130 Pasadena Yacht Yard Rd	Pasadena	50	Public	www.pyymarine.biz
Patapasco	Stoney	Nabbs Creek Marina	8	39°09'43.8"	76°32'45.5"	443 354 1918	864 Nabbs Creek Rd	Glen Burnie	120	Private	www.nabbscreekmarina.com
Magothy	Cypress	Cypress Marine, Inc.	66	39°04'18.6"	76°31'27.0"	410 647 7940	730 Cypress Rd	Severna Park	40	Public	www.cypressmarine.net
Magothy	Cypress	Magothy Marina, Inc.	70	39°04'18.4"	76°31'07.1"	410 647 2356	360 Magothy Rd	Severna Park	182	Public	www.magothymarina.com/index.html
Magothy	Gray's	Atlantic Marina on the Magothy	38	39°05'31.1"	76°28'02.8"	410 360 2500	487 New York Ave	Pasadena	48	Public	www.atlanticmarinaresort.com
Magothy	Magothy Narf	Gibson Island Marina	48	39°05'05.6"	76°25'53.3"	410 255 7632	420 The Causeway	Gibson Island	77	Private	www.gibsonisland.com/club/yacht
Magothy	Mill	Ferry Point Marina and Yachtyard	73	39°04'04.5"	76°30'41.5"	410 544 6368	700 Mill Creek Rd	Arnold	100	Public	www.ferrypointmarina.com
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	39°05'26.1"	76°31'43.1"	410 647 0733	368 North Dr	Severna Park	20	Public	www.hamiltonharbourmarina.net

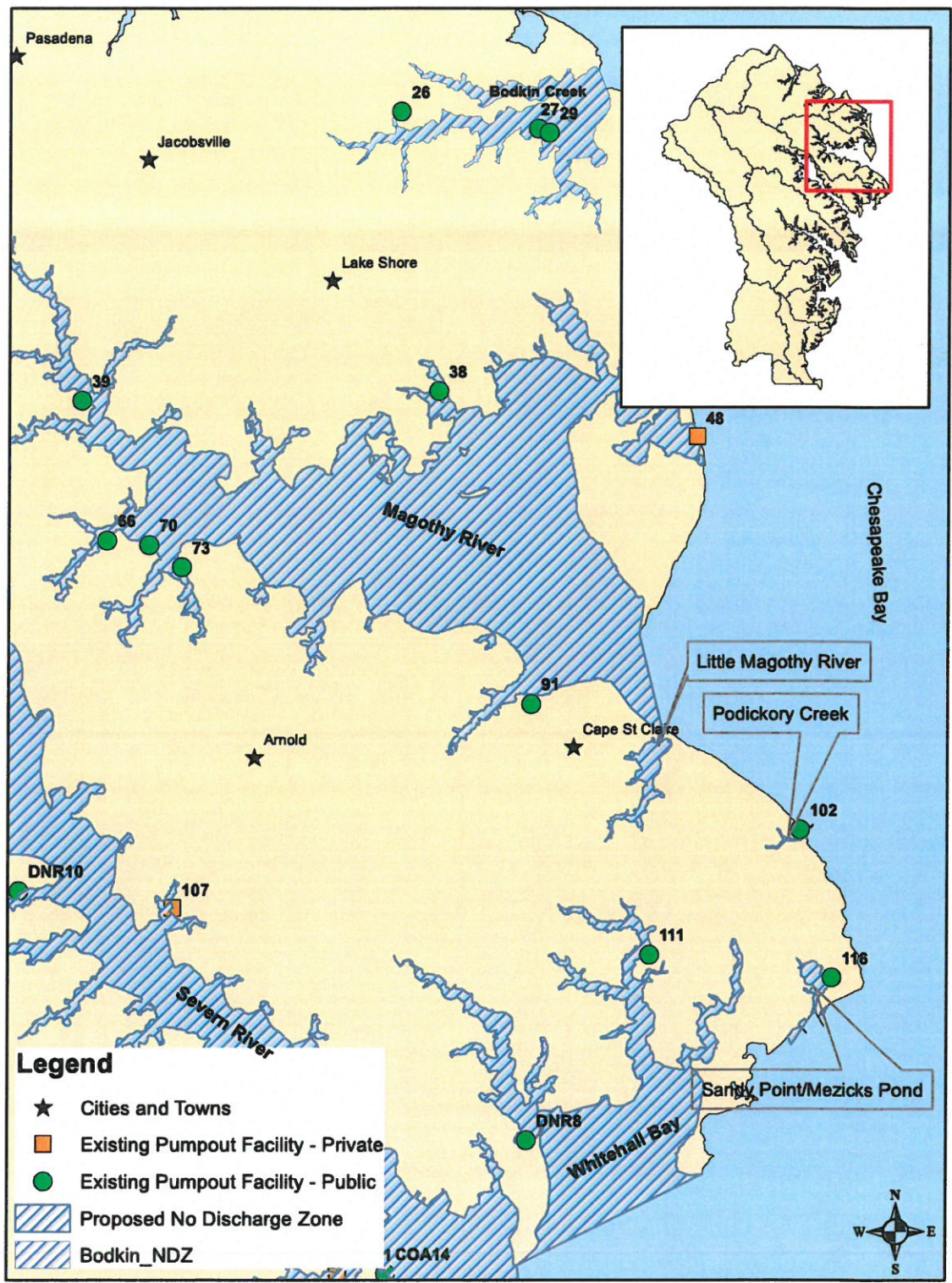
Map 2: Upper Magothy and Severn Rivers



Marinas with Pump-outs: MAP 2

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
Magothy	Cypress	Cypress Marine, Inc.	66	39°04'18.6"	76°31'27.0"	410 647 7940	730 Cypress Rd	Severna Park	40	Public	www.cypressmarine.net
Magothy	Cypress	Magothy Marina, Inc.	70	39°04'18.4"	76°31'07.1"	410 647 2356	360 Magothy Rd	Severna Park	182	Public	www.magothymarina.com/index.html
Magothy	Gray's	Atlantic Marina on the Magothy	38	39°05'31.1"	76°28'02.8"	410 360 2500	487 New York Ave	Pasadena	48	Public	www.atlanticmarinaresort.com
Magothy	Mill	Ferry Point Marina and Yachtyard	73	39°04'04.5"	76°30'41.5"	410 544 6368	700 Mill Creek Rd	Arnold	100	Public	www.ferrypointmarina.com
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	39°05'26.1"	76°31'43.1"	410 647 0733	368 North Dr	Severna Park	20	Public	www.hamiltonharbourmarina.net
Severn	Brewer	Little John Marina	DNR10	39°01'39.8"	76°32'37.9"	410 841 6497	134 Sherwood Forest Rd	Annapolis	0	Private	
Severn	Browns Cove	Smith's Marina	99	39°02'34.5"	76°34'33.2"	410 923 3444	529 Ridgely Rd	Crownsville	60	Public	www.smithsmarina.com
Severn	Chase	Pines OTS Cym	107	39°01'37.1"	76°30'18.6"		PO Box #19	Arnold	3	Private	www.pinesonthesevern.org

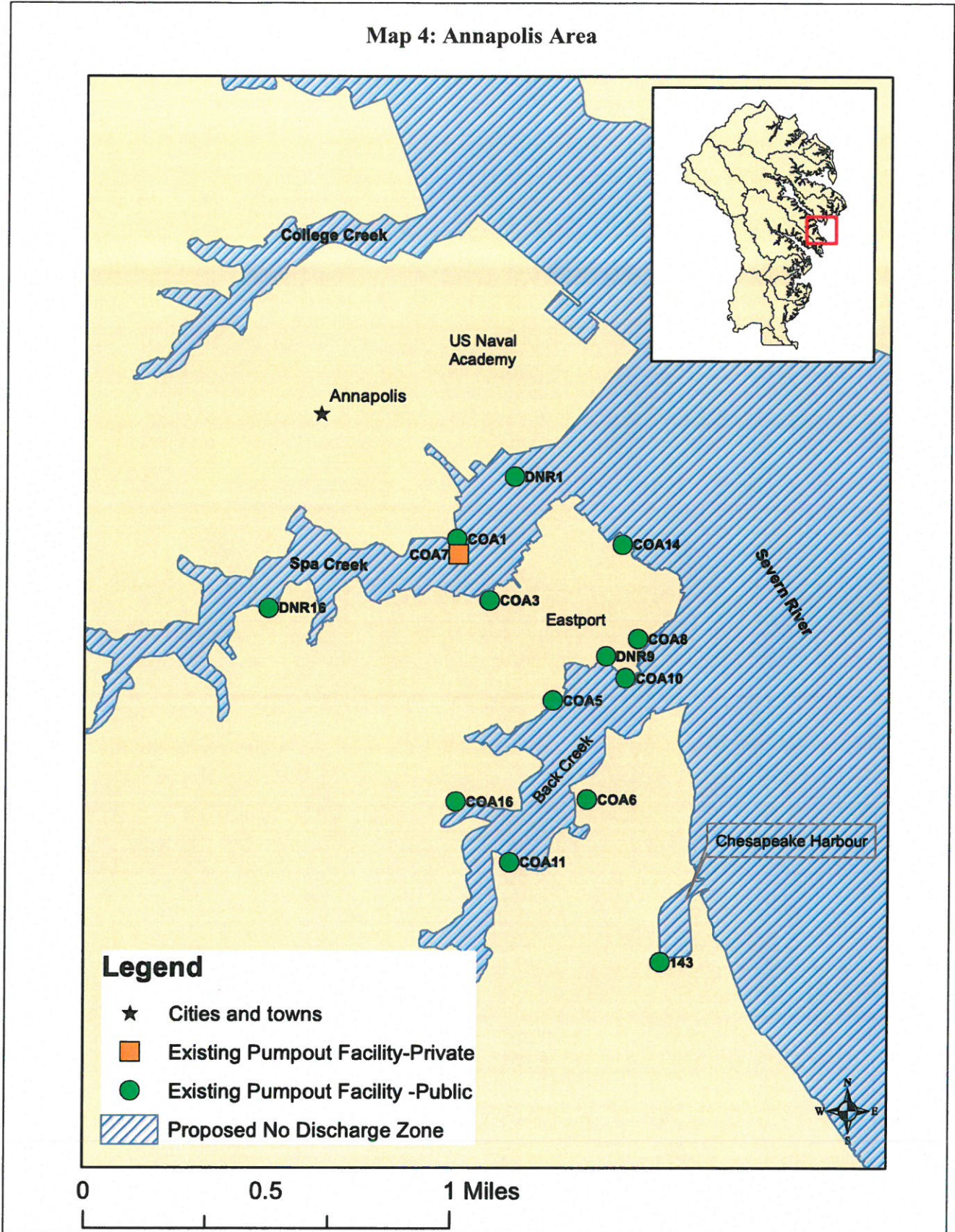
Map 3: Magothy River, Little Magothy River and Whitehall Bay



Marinas with Pump-outs: MAP 3

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
Magothy	Cypress	Cypress Marine, Inc.	66	39°04'18.6"	76°31'27.0"	410 647 7940	730 Cypress Rd	Severna Park	40	Public	www.cypressmarine.net
Magothy	Cypress	Magothy Marina, Inc.	70	39°04'18.4"	76°31'07.1"	410 647 2356	360 Magothy Rd	Severna Park	182	Public	www.magothymarina.com/index.html
Magothy	Deep	Fairwinds Marina	91	39°02'59.1"	76°27'07.9"	410 974 0758	1000 Fairwinds Dr	Annapolis	100	Public	www.fairwindsmarina.com
Magothy	Gray's	Atlantic Marina on the Magothy	38	39°05'31.1"	76°28'02.8"	410 360 2500	487 New York Ave	Pasadena	48	Public	www.atlanticmarinaresort.com
Magothy	Magothy Narri Mill	Gibson Island Marina	48	39°05'05.6"	76°25'53.3"	410 255 7632	420 The Causeway	Gibson Island	77	Private	www.gibsonisland.com/club/yacht
Magothy	Podickory	Ferry Point Marina and Yachtyard	73	39°04'04.5"	76°30'41.5"	410 544 6968	700 Mill Creek Rd	Arnold	100	Public	www.ferrypointmarina.com
Magothy	River Direct	Podickory Point Yacht and Beach Club	102	39°01'58.1"	76°24'22.4"	410 757 8000	2116 Bay Front Terrace	Annapolis	120	Public	www.podickorypoint.com
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	39°05'26.1"	76°31'43.1"	410 647 0733	368 North Dr	Severna Park	20	Public	www.hamiltonharbourmarina.net
Severn	Mill	John L. Dunning Memorial Pier	DNR8	38°59'22.8"	76°27'08.9"	410 293 3731	140 Hooper High Road	Annapolis	32	Public	www.navywmrannapolis.com
Severn	River Direct	Sandy Point Marina	116	39°00'52.9"	76°24'07.3"	410 974 2149	800 Revell Hwy	Annapolis	25	Public	www.stateparks.com
Severn	Whitehall	Scandia Marine Center	111	39°00'58.4"	76°25'52.0"	410 643 0037	1656 Homewood Landing Rd	Annapolis	110	Public	www.scandiamarineservices.com

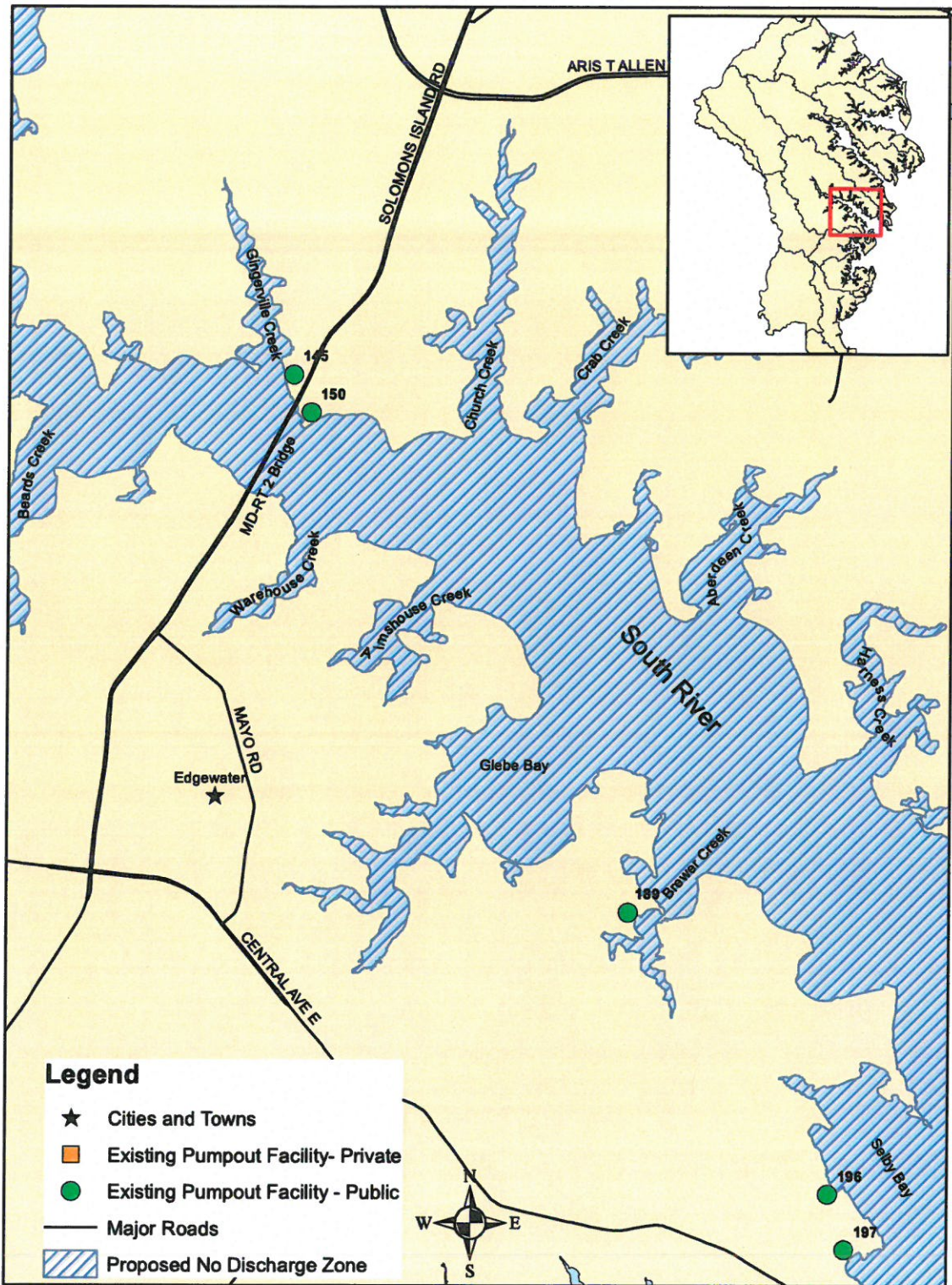
Map 4: Annapolis Area



Marinas with Pump-outs: MAP 4

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
Severn	Back	Mears Marina Annapolis	COA5	38°58'04.8"	76°28'53.1"	410 268 8282	519 Chester Ave	Annapolis	186	Public	www.mearsannapolis.com
Severn	Back	Port Annapolis Marina	COA6	38°57'49.0"	76°28'43.6"	410 269 1990	7074 Bembé Beach Rd	Annapolis	225	Public	www.portannapolis.com
Severn	Back	Horn Point Harbor Marina	COA8	38°58'11.8"	76°28'34.4"	410 263 0550	105 Eastern Ave	Annapolis	56	Public	www.hornpointharbor.com
Severn	Back	Eastport Yacht Center	COA10	38°58'06.1"	76°28'36.7"	410 280 9988	726 2nd St	Annapolis	101	Public	www.eyc.ertem.com
Severn	Back	Bert Jabin Yacht Yard	COA11	38°57'37.2"	76°28'53.2"	410 268 9667	7310 Edgewood Rd	Annapolis	220	Public	www.bjyy.com
Severn	Back	Watergate Pointe Marina	COA16	38°57'48.6"	76°29'07.6"	443 926 1303	655 Americana Dr	Annapolis	160	Public	www.livewatergatemarina.com
Severn	Back	JPort Marina	DNR9	38°58'09.6"	76°28'39.9"	410 280 8692	213 Eastern Avenue	Annapolis	22	Public	www.jworldannapolis.com
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	38°58'39.4"	76°29'09.5"	410 320 6852	1 Dock St	Annapolis	0	Public	www.annapolis.gov
Severn	River Direct	Chesapeake Harbour Marina	143	38°57'34.3"	76°28'30.8"	410 268 1969	2030 Chesapeake Harbour Dr	Annapolis	198	Public	www.chesapeakeharbourmarina.com
Severn	River Direct	Annapolis Maryland Capital Yacht Club	COA14	38°58'24.9"	76°28'37.4"	410 269 5219	16 Chesapeake Landing	Annapolis	82	Public	www.amcyc.com
Severn	Spa	Annapolis Yacht Club	COA7	38°58'37.7"	76°29'05.7"	410 263 9279	2 Compromise St	Annapolis	75	Private	www.annapolisyc.com
Severn	Spa	The President Point Marina	DNR16	38°58'17.2"	76°29'37.7"	410 991 9381	President Point Dr	Annapolis	0	Public	
Severn	Spa	The Yacht Basin Co	COA1	38°58'29.7"	76°29'04.1"	410 263 3544	2 Compromise St	Annapolis	107	Public	www.yachtbasin.com
Severn	Spa	Annapolis City Marina	COA3	38°58'17.4"	76°29'01.0"	410 268 0660	410 Severn Ave	Annapolis	89	Public	www.annapolis-citymarina.com

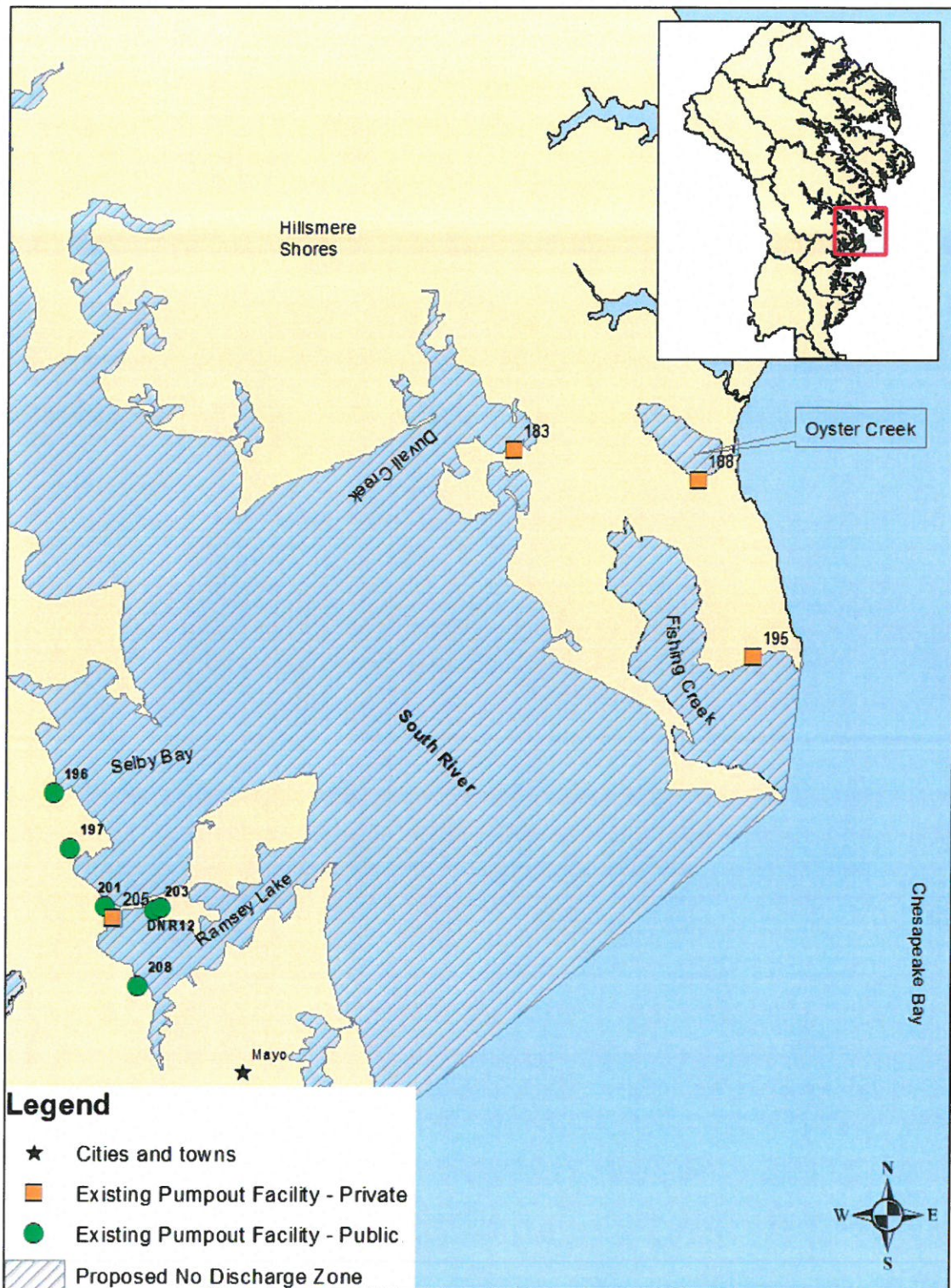
Map 5: South River Area



Marinas with Pump-outs: MAP 5

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
South	Brewer	Pocahontas Marina	189	38°55'27.4"	76°31'43.5"	410 798 7082	3365 Pocahontas Dr	Edgewater	47	Public	www.pocahontasmarina.com
South	Gingerville	Oak Grove Marina	145	38°57'22.4"	76°33'10.2"	410 266 6696	2820 Solomons Island Rd	Edgewater	136	Public	www.boatokgrove.com
South	River Direct	Liberty Yacht Club	150	38°57'11.8"	76°33'09.4"	410 266 5633	64 Old South River Rd	Edgewater	320	Public	www.libertymarina.com
South	Selby Bay	Selby Bay Yacht Basin	196	38°54'29.0"	76°30'48.9"	410 798 0232	930 Selby Blvd	Edgewater	100	Public	www.selbybaymarina.com
South	Selby Bay	Holiday Pt. Marina #1	197	38°54'16.8"	76°30'41.0"	410 956 2208	3774 Beach Dr Blvd	Edgewater	171	Public	www.holidaypointmarina.com

Map 6: South River Area

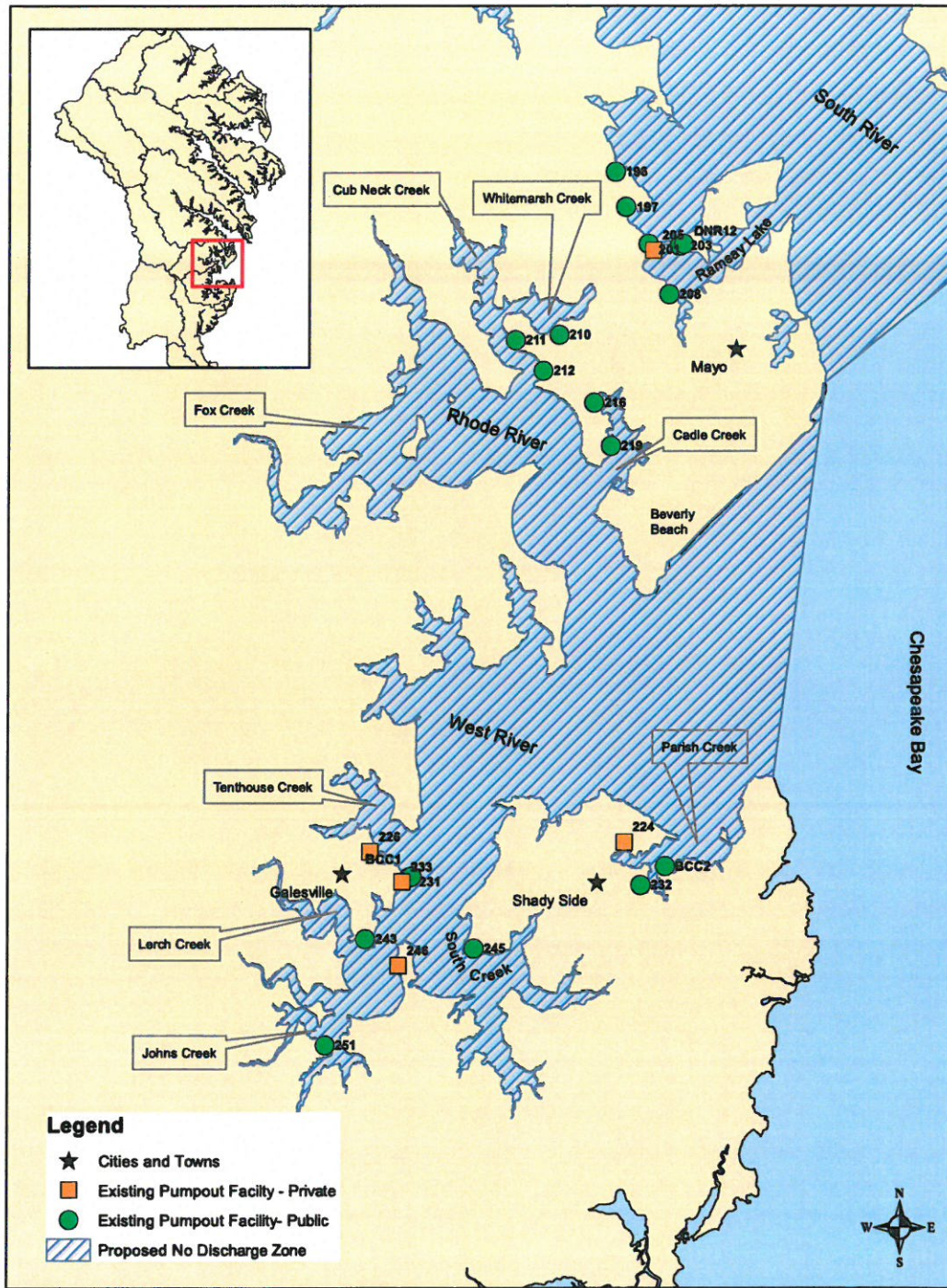


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Marinas with Pump-outs: MAP 6

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
South	Duwall	Fishing Creek Farms CyM	183	38°53'38.9"	76°28'47.0"		1222 Cherry Tree Lane	Annapolis	26	Private	www.fishingcreekfarm.org
South	Fishing	Arundel OTB CyM	195	38°55'08.6"	76°27'48.9"	443 253 0596	PO Box 4665	Annapolis	12	Private	www.arundelonthebay.org
South	Oyster	Oyster Harbor Ramp	188	38°55'33.6"	76°27'56.0"	410 280 8999	PO Box 3174	Annapolis	0	Private	www.oysterharbor.org
South	Ramsay Lake	Turkey Point Marina	203	38°54'04.7"	76°30'23.4"	410 798 1369	1107 Turkey Point Rd	Edgewater	100	Public	www.turkeypointmarina.com
South	Ramsay Lake	Mayo Ridge Marina	208	38°53'49.7"	76°30'29.4"	410 798 1952	1293 Mayo Ridge Rd	Edgewater	68	Public	
South	Ramsay Lake	Norris Marina	DNR12	38°54'04.7"	76°30'22.4"	410 320 1628	1111 Turkey Point Road	Edgewater	55	Public	www.norrismarinaslips.com
South	Ramsay Lake	South River Marina	205	38°54'02.7"	76°30'35.6"	410 798 6060	1061 Turkey Point Rd	Edgewater	48	Private	www.southrivermarina.com/home2.htm
South	Selby Bay	Selby Bay Yacht Basin	196	38°54'29.0"	76°30'48.9"	410 798 0232	930 Selby Blvd	Edgewater	100	Public	www.selbybaymarina.com
South	Selby Bay	Holiday Pt. Marina #1	197	38°54'16.8"	76°30'41.0"	410 956 2208	3774 Beach Dr Blvd	Edgewater	171	Public	www.holidaypointmarina.com
South	Selby Bay	Anchor Yacht Basin	201	38°54'05.2"	76°30'36.1"	410 269 6674	1048 Turkey Pt Rd	Edgewater	110	Public	www.anchor-yachtbasin.com
Rhode	Cadle	Cadle Creek Marina	219	38°52'59.1"	76°30'52.7"	410 798 1915	4159 Cadle Creek Rd	Edgewater	40	Public	
Rhode	Cadle	Casa Rio Marina	216	38°53'13.8"	76°31'00.7"	410 798 4731	4079 Cadle Creek Rd	Edgewater	39	Private	www.casariomarina.com

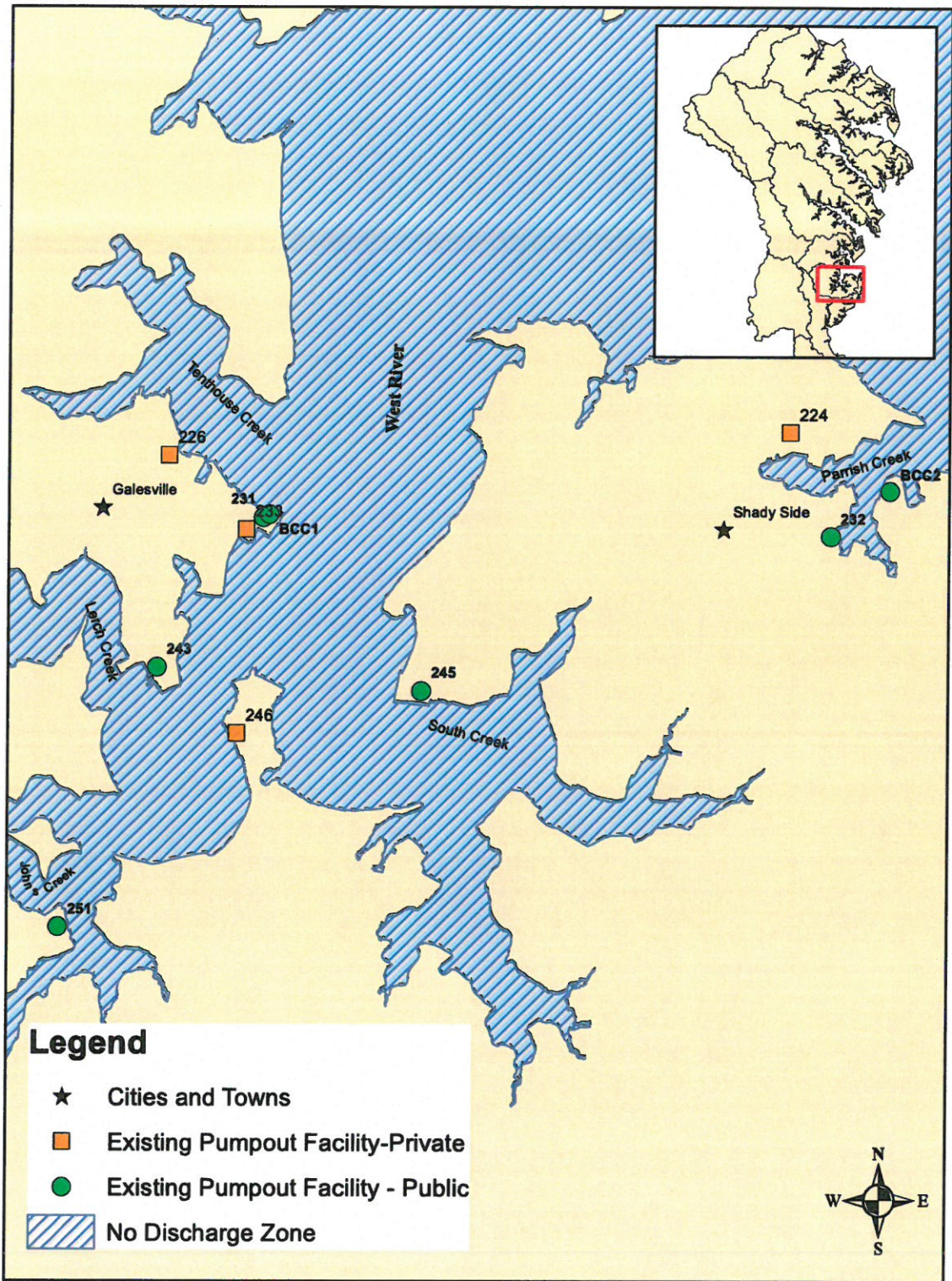
Map 7: West/Rhode/South



Marinas with Pump-outs: MAP 7

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Maina Website
South	Ramsay Lake	Turkey Point Marina	203	38°54'04.7"	76°30'23.4"	410 798 1369	1107 Turkey Point Rd	Edgewater	100	Public	www.turkeypointmarina.com
South	Ramsay Lake	Mayo Ridge Marina	208	38°53'49.7"	76°30'29.4"	410 798 1952	1293 Mayo Ridge Rd	Edgewater	68	Public	
South	Ramsay Lake	Norris Marina	DNR12	38°54'04.7"	76°30'22.4"	410 320 1628	1111 Turkey Point Rd	Edgewater	55	Public	www.norrismarinaslips.com
South	Ramsay Lake	South River Marina	205	38°54'02.7"	76°30'35.6"	410 798 6060	1061 Turkey Point Rd	Edgewater	48	Private	www.southrivermarina.com/home2.html
South	Selby Bay	Selby Bay Yacht Marina	196	38°54'29.0"	76°30'48.9"	410 798 0232	930 Selby Blvd	Edgewater	100	Public	www.selbybaymarina.com
South	Selby Bay	Holiday Pt. Marina #1	197	38°54'16.8"	76°30'41.0"	410 956 2208	3774 Beach Dr Blvd	Edgewater	171	Public	www.holidaypointmarina.com
South	Selby Bay	Anchor Yacht Basin	201	38°54'05.2"	76°30'36.1"	410 269 6674	1048 Turkey Pt Rd	Edgewater	110	Public	www.anchorvachtbasin.com
West	Parish	Backyard Boats	232	38°50'36.0"	76°30'41.1"	410 867 4800	4819 Woods Wharf Rd	Shady Side	59	Public	www.backyardboats.com
West	Parish	Parrish Creek Marina	224	38°50'30.7"	76°30'43.9"	410 867 9550	1442 Ford Rd	Shady Side	141	Private	www.westrhoderiverkeeper.org
West	River Direct	WestRhode Riverkeeper Pumpout Boat	BCC2	38°50'39.3"	76°30'30.8"	443 221 5104	4800 Atwell Rd	Shady Side	0	Public	
Rhode	Cadle	Cadle Creek Marina	219	38°52'59.1"	76°30'52.7"	410 798 1915	4159 Cadle Creek Rd	Edgewater	40	Public	
Rhode	Cadle	Casa Rio Marina	216	38°53'13.8"	76°31'00.7"	410 798 4731	4079 Cadle Creek Rd	Edgewater	39	Public	www.casariomarina.com
Rhode	Whitemarsh	Rhode River Marina	211	38°53'32.1"	76°31'30.2"	410 798 1658	3932 Germantown Rd	Edgewater	108	Public	www.rhoderivermarina.com
Rhode	Whitemarsh	Holiday Hill Marina	210	38°53'37.0"	76°31'17.6"	410 798 9499	3910 Calawassee Rd	Edgewater	58	Public	www.holidayhillmarina.com
Rhode	Whitemarsh	Bluwatner Marina	212	38°53'21.4"	76°31'20.2"	410 798 6968	1024 Carrs Wharf Rd	Edgewater	52	Public	

Map 8: West River Area

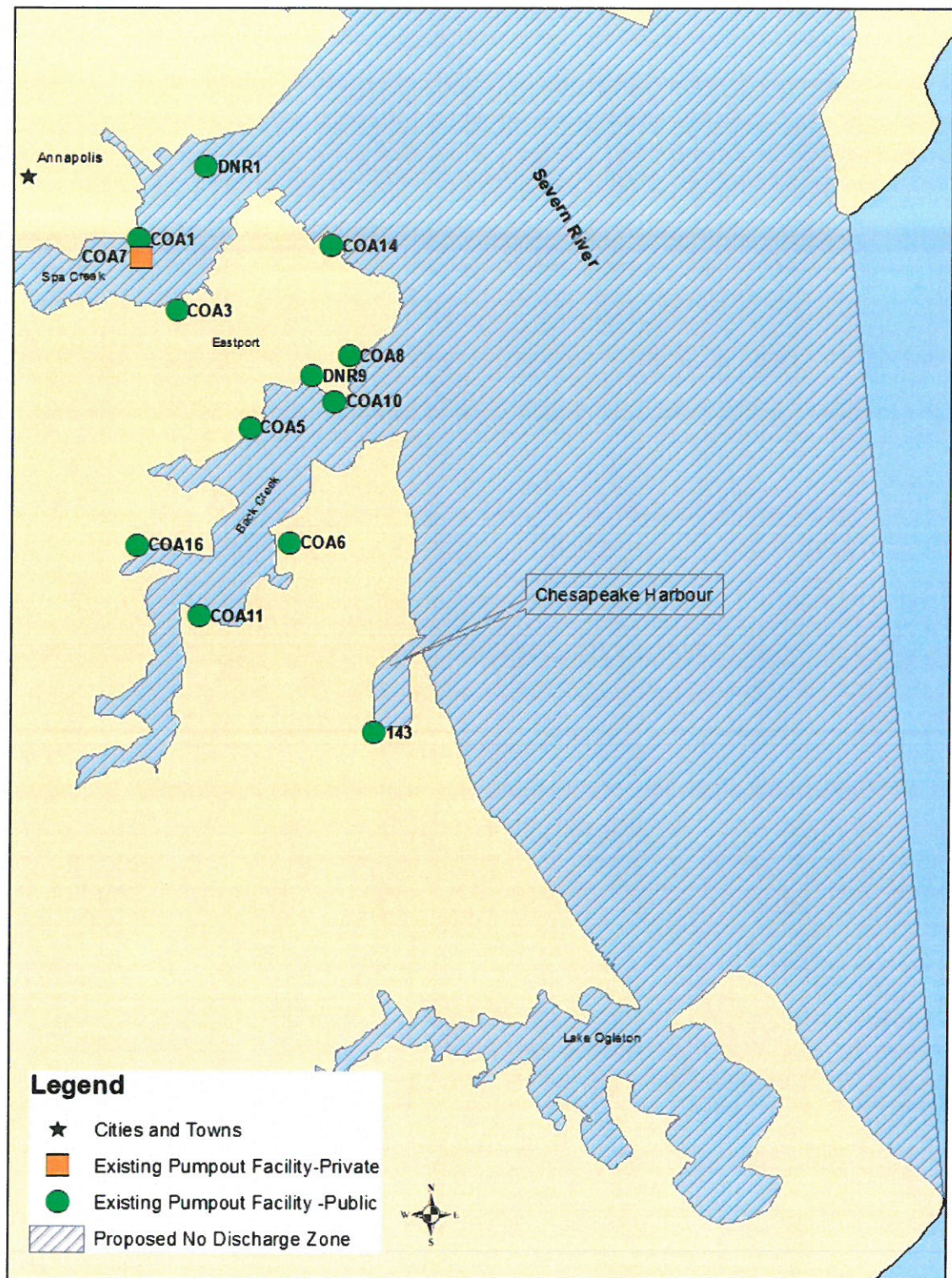


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Marinas with Pump-outs: MAP 8

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Marina Website
West	Johns	Shady Oaks Marina	251	38°49'44.9"	76°32'52.9"	410 867 7700	846 Shady Oaks Rd	West River	45	Public	
West	Parish	Backyard Boats	232	38°50'36.0"	76°30'41.1"	410 867 4800	4819 Woods Wharf Rd	Shady Side	59	Public	www.backyardboats.com
West	Parish	Parrish Creek Marina	224	38°50'30.7"	76°30'43.9"	410 867 9550	1442 Ford Rd	Shady Side	141	Private	www.clarkslanding.com
West	River Direct	West River Fuel Dock	BCC1	38°50'35.4"	76°32'10.4"	410 867 1444	4801 Riverside Dr	Galesville	0	Public	
West	River Direct	WestRhode Riverkeeper Pumpout Boat	BCC2	38°50'39.3"	76°30'30.8"	443 221 5104	4800 Atwell Rd	Shady Side	0	Public	www.westrhoderiverkeeper.org
West	River Direct	Chalk Point Marine	246	38°50'10.3"	76°32'23.0"	410 991 9660	4916 West Chalk Pt Rd	West River	30	Private	www.chalkpointmarinewestriver.com
West	River Direct	Pirate's Cove Marina	233	38°50'35.7"	76°32'20.1"	410 867 3600	4817 Riverside Dr	Galesville	86	Private	www.piratescovemd.com/marina.html
West	South	Chesapeake Yacht Club	245	38°50'15.5"	76°31'52.6"	410 867 1500	4943 Hine Ave	Shady Side	150	Public	www.chesapeakeyachtclub.org
West	Tenthouse	West River Yacht Harbor	231	38°50'37.5"	76°32'15.9"	301 672 3473	4801 Riverside Dr	Galesville	178	Public	www.westriveryachtharbour.org
West	Tenthouse	Hartge Yacht Harbour	243	38°50'16.0"	76°32'35.3"	443 607 6306	4883 Church Ln	Galesville	250	Public	www.hartgeyachtharbor.com
West	Tenthouse	Hartge Yacht Yard	226	38°50'53.2"	76°32'36.3"	410 867 2188	4701 Woodfield Rd	Galesville	20	Private	www.hartgeyard.com

Map 9: Severn Area



Marinas with Pump-outs: MAP 9

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Public/Private	Maina Website
Severn	Back	Mears Marina Annapolis	COA5	38°58'04.8"	76°28'53.1"	410 268 8282	519 Chester Ave	Annapolis	186	Public	www.mearsmarinna.com
Severn	Back	Port Annapolis Marina	COA6	38°57'49.0"	76°28'43.6"	410 431 0381	7074 Bembe Beach Rd	Annapolis	225	Public	www.portannapolis.com
Severn	Back	Horn Point Harbor Marina	COA8	38°58'11.8"	76°28'34.4"	410 263 0550	105 Eastern Ave	Annapolis	56	Public	www.hornpointharbour.com
Severn	Back	Eastport Yacht Center	COA10	38°58'06.1"	76°28'36.7"	410 280 9988	726 2nd St	Annapolis	106	Public	www.ecy.ertem.com
Severn	Back	Bert Jabin Yacht Yard	COA11	38°57'37.2"	76°28'53.2"	410 268 9667	7310 Edgewood Rd	Annapolis	220	Public	www.bjvy.com
Severn	Back	Watergate Pointe Marina	COA16	38°57'48.6"	76°29'07.6"	443 926 1303	655 Americana Dr	Annapolis	160	Public	www.livewatergatemarina.com
Severn	Back	J P Port Marina	DNR9	38°58'09.6"	76°28'39.9"	410 280 2040	213 Eastern Ave	Annapolis	22	Public	www.iworldannapolis.com
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143	38°57'34.3"	76°28'30.8"	410 500 9059	2030 Chesapeake Harbour Dr	Annapolis	198	Public	www.chesapeakeharbourmarina.com
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	38°58'39.4"	76°29'09.5"	410 320 6852	1 Dock St	Annapolis	0	Public	www.annapolis.gov
Severn	Spa	Annapolis Yacht Club	COA7	38°58'37.7"	76°29'05.7"	410 263 9279	2 Compromise St	Annapolis	75	Private	www.annapolisyc.com
Severn	River Direct	Annapolis Maryland Capitol Yacht Club	COA14	38°58'24.9"	76°28'37.4"	410 269 5219	16 Chesapeake Landing	Annapolis	82	Public	www.amyvc.com
Severn	Spa	The Yacht Basin Co.	COA1	38°58'29.7"	76°29'04.1"	410 263 3544	2 Compromise St	Annapolis	107	Public	www.yachtbasin.com
Severn	Spa	Annapolis City Marina	COA3	38°58'17.4"	76°29'01.0"	410 268 0660	410 Severn Ave	Annapolis	89	Public	www.annapolisacitymarina.com

2.2 Description of Facility Locations and Types

1. Stoney Creek

Stoney Creek, off the Patapsco River, is shown on Map 1. The proposed outer limit of the no discharge zone extends from lat. 39.172°N long. 76.517°W to lat. 39.172°N long. 76.513°W covering an area of 677 acres.

Public marinas: Nabbs Creek Marina (8)

This marina is on Anne Arundel County sewerage.

2. Rock Creek

Rock Creek, off the Patapsco River, is shown on Map 1. The proposed outer limit of the no discharge zone extends from lat. 39.161°N long. 76.5°W to lat. 39.162°N long. 76.486°W, covering an area of 524 acres.

Public marinas: Blake's Bar Harbor Marina (11), Maryland Yacht Club (12), Fairview Marina (13), White Rocks Marina (14), Oak Harbor Marina (19), and Pasadena Yacht Yard (DNR14)

Nos. 11, 12, 13, 14 and DNR 14 are on Anne Arundel County sewerage; no. 19 uses a septic system.

3. Atlantic Marina Resort

Atlantic Marina Resort, off the Patapsco River, is shown on Map 1. The opening of the marina on the Patapsco River is located at lat. 39.147°N long. 76.459°W an area of 2 acres.

Public marinas: Atlantic Marina Resort (18)

This marina is on septic.

4. Bodkin Creek

Bodkin Creek, off the Patapsco River, is shown on Map 1. The proposed outer limit of the no discharge zone extends from lat. 39.135°N long. 76.44°W to lat. 39.132°N long. 76.439°W, covering an area of 609 acres.

Public marinas: Pleasure Cove Marina (26), Ventnor Marina Service (27), and Hammock Island Marina (29)

All three of these marinas are on septic.

5. Magothy and Little Magothy Rivers

The Magothy River is shown in Maps 1, 2 and 3, together proposed as a single no discharge zone with an outer limit that extends from lat. 39.06°N long. 76.433°W to lat. 39.046°N long. 76.429°W, covering an area of 5,879 acres, of which 5,790 acres are in the Magothy River and 89 acres in the Little Magothy.

Private marinas: Gibson Island Marina (48)

Public marinas: Atlantic Marina on the Magothy (38), Hamilton Harbor Marina & Boatworks (39), Cypress Marine (66), Magothy Marina (70), Ferry Point Marina and Yacht Yard (73), and Fairwinds Marina (91)

Private marina No. 48 and public marina No. 38 are on septic. Public marinas Nos. 39, 66, 70, 73, and 91 are on sewerage.

6. Podickory Creek

Podickory Creek, directly off the Chesapeake Bay, is shown on Map 3. The proposed outer limit of this no discharge zone extends from lat. 39.033°N long. 76.405°W to lat. 39.032°N long. 76.405°W, covering an area of 9 acres.

Public marinas: Podickory Point Yacht & Beach Club (102)

This marina is on Anne Arundel County sewerage.

7. Sandy Point/Mezick Ponds

Sandy Point/Mezick Ponds, directly off the Chesapeake Bay, is shown on Map 3. The proposed outer limit of the no discharge zone extends from lat. 39.008°N long. 76.404°W to lat. 39.008°N long. 76.403°W, covering an area of 47 acres.

Public marina: Sandy Point Marina (116)

This marina is on sewerage.

8. Whitehall Bay

Whitehall Bay, directly off the Chesapeake Bay, is shown on Map 3. The proposed outer limit of the no discharge zone extends from lat. 38.975°N long. 76.454°W to lat. 38.987°N long. 76.423°W, covering an area of 1,599 acres.

Public marinas: Scandia Marine Center (111) and John L. Dunning Memorial Pier (DNR8)

Both marinas are on sewerage.

9. Severn River

The Severn River is shown on Maps 2, 3, and 4. The proposed outer limit of the no discharge zone extends from lat. 38.975°N long. 76.454°W to lat. 38.941°N long. 76.45°W, covering an area of 7,497 acres.

Chesapeake Harbour

Public marina: Chesapeake Harbour Marina (143)

Back Creek

Public marinas: Port Annapolis Marina (COA6), Bert Jabin Yacht Yard (COA11), Watergate Pointe Marina (COA16), Mears Marina (COA5), JPort Marina (DNR9), Eastport Yacht Center (COA10), Horn Point Harbor Marina (COA8), Annapolis Maryland Capital Yacht Club (COA14)

Annapolis Harbor

Public marinas: Annapolis City Marina (COA3), The President Point Marina (DNR16), The Yacht Basin Co. (COA1), and City of Annapolis Pump-out Boat (DNR1).

Private marina: Annapolis Yacht Club (COA7)

Brewer Creek

Private marina: Little John Marina (DNR10)

Brown's Cove

Private marina: Pines on the Severn (107)

Public marina: Smith's Marina (99)

Public marina No. 99 and private marina No. DNR10 are on septic. All others are on sewerage.

10. Oyster Creek

Oyster Creek, directly off the Chesapeake Bay, is shown on Map 6. The proposed outer limit of the no discharge zone extends from lat. 38.927°N long. 76.464°W to lat. 38.927°N long. 76.463°W, covering an area of 34 acres.

Private marina: Oyster Harbor Ramp (188)

This marina is on sewerage.

11. Fishing Creek

Fishing Creek, directly off the Chesapeake Bay, is shown on Map 6. The proposed outer limit of the no discharge zone extends from lat. 38.915°N long. 76.459°W to lat. 38.907°N long. 76.46°W, covering an area of 228 acres.

Private marina: Arundel on the Bay (community marina) (195)

This marina is on sewerage.

12. South River

The South River is shown on maps 5, 6, and 7. The proposed outer limit of the no discharge zone extends from lat. 38.907°N long. 76.46°W to lat. 38.889°N long. 76.49°W, covering an area of 5,904 acres.

Private marinas: Fishing Creek Farms (183) and South River Marina (205)

Public marinas: Mayo Ridge Marina (208), Turkey Point Marina (203), Norris Marina (DNR12), Anchor Yacht Basin (201), Holiday Point Marina (197), Selby Bay Yacht Basin (196), Pocahontas Marina (189), Liberty Marina (150), and Oak Grove Marina (145)

All of these marinas are on sewerage.

13. West and Rhode Rivers

The West and the Rhode rivers are shown in maps 7 and 8. These rivers are separate and distinct but meet at their mouths with the Chesapeake Bay and are commonly treated as a single river system. The proposed outer limit of the no discharge zone extends from lat.

38.889°N long. 76.49°W to lat. 38.853°N long. 76.496°W, covering a combined area of 4,370 acres.

West River

Public marinas: Casa Rio Marina (216), Rhode River Marina (211), Cadle Creek Marina (219), Bluewater Marina (212), and Holiday Hill Marina (210).

Rhode River

Private marinas: Parrish Creek Marina (224), Hartge Yacht Yard (226), Chalk Pointe Marine (246), Pirate's Cove Marina (233)

Public marinas: West and Rhode Riverkeeper Pump-out Boat (BCC2), Backyard Boats (232), West River Yacht Harbor (231), Hartge Yacht Harbour (243), Shady Oaks Marina (251), Chesapeake Yacht Club (245), West River Fuel Dock (BCC1)

All are on sewerage.

Of the 74 marinas identified in Anne Arundel County offering pump-out and/or dump station facilities, 56 are identified as “public” and 18 as “private.” The distinction is not entirely clear-cut. In most cases, the private facilities are available only on a restricted basis, such as to residents of a homeowners’ association or slipholders, but in other instances the “private” marinas service transient boats on an *ad hoc* basis. The 18 “private” facilities are recognized as serving private needs, but they are not counted toward meeting adequate pump-out and dump station requirements.

Table 2.2.1 shows what type of pump-out and dump station facilities each public marina offers. The types of pump-out facilities are: stationary, portable, and mobile. None of the marinas had remote-operated, multi-station, pump-out systems. The marina dump stations are contrasted with normal bathrooms, which serve the same purpose, but not as well.

Table 2.2.1: Marinas with Public Pump-out Facilities

River	Creek	Marina	Map Code	Portable	Mobile	Stationary	Dump	Restroom
Patapsco	Bodkin	Pleasure Cove Marina	26			1		1
Patapsco	Bodkin	Ventnor Marine Service	27			1		1
Patapsco	Bodkin	Hammock Island Marina	29			1	1	1
Patapsco	River Direct	Atlantic Marina Resort	18			1		1
Patapsco	Rock	Blake's Bar Harbor Marina	11			1		1
Patapsco	Rock	Maryland Yacht Club	12	1		1		1
Patapsco	Rock	Fairview Marina	13		1	1		1
Patapsco	Rock	White Rocks Marina	14			1		1
Patapsco	Rock	Oak Harbour Marina	19			1		1
Patapsco	Rock	Pasadena Yacht Yard (PYY marine)	DNR14			1		1
Patapsco	Stoney	Nabbs Creek Marina	8			1		1
Magothy	Cypress	Cypress Marina, Inc.	66		1			1
Magothy	Cypress	Magothy Marina, Inc.	70			1	1	1
Magothy	Deep	Fairwinds Marina	91			1		1
Magothy	Gray's	Atlantic Marina on the Magothy	38			1		1
Magothy	Mill	Ferry Point Marina and Yachtyard	73			1		1
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39			1	1	1
Chesapeake Bay	Mezick Ponds	Sandy Point Marina	116			1		1
Chesapeake Bay	Mill	John L. Dunning Memorial Pier	DNR8			1		
Chesapeake Bay	Podickory	Podickory Point Yacht and Beach Club	102			1	1	1
Chesapeake Bay	Whitehall	Scandia Marine Center	111		1			1
Severn	Back	Mears Marina Annapolis	COA5			1		1
Severn	Back	Port Annapolis Marina	COA6		1	1		1
Severn	Back	Horn Point Harbor Marina	COA8			1		1
Severn	Back	Eastport Yacht Center	COA10			1		1
Severn	Back	Bert Jabin Yacht Yard	COA11		1	1		1
Severn	Back	Watergate Pointe Marina	COA16			1		1
Severn	Back	J Port Marina	DNR9			1		1
Severn	Browns Cove	Smith's Marina	99			1		1
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143			1	1	1
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1		2			
Severn	River Direct	Annapolis Maryland Capitol Yacht Club	COA14			1		1
Severn	Spa	The President Point Marina	DNR16			1	1	
Severn	Spa	The Yacht Basin Co.	COA1		1	2		1
Severn	Spa	Annapolis City Marina	COA3			2	1	1
South	Brewer	Pocahontas Marina	189		1			1
South	Gingerville	Oak Grove Marina	145			1		1
South	Ramsay Lake	Turkey Point Marina	203	1				1
South	Ramsay Lake	Mayo Ridge Marina	208			1	1	1
South	Ramsay Lake	Norris Marina	DNR12			1		1
South	River Direct	Liberty Marina	150		1	1		1
South	Selby Bay	Selby Bay Yacht Marina	196			1	1	1
South	Selby Bay	Holiday Pt. Marina #1	197			1	1	1
South	Selby Bay	Anchor Yacht Basin	201			1		1
West	Johns	Shady Oaks Marina	251			1		1
West	Parish	Backyard Boats	232			1		1
West	River Direct	West River Fuel Dock	BCC1			2		
West	River Direct	WestRhode Riverkeeper Pumpout Boat	BCC2		1			
West	South	Chesapeake Yacht Club	245			1		
West	Tenthouse	West River Yacht Harbour	231	1		1	1	1
West	Tenthouse	Hartge Yacht Harbour	243			1	1	1
Rhode	Cadle	Cadle Creek Marina	219			1		1
Rhode	Cadle	Casa Rio Marina	216			1		1
Rhode	Whitemarsh	Rhode River Marina	211			1		1
Rhode	Whitemarsh	Holiday Hill Marina	210		1	1		1
Rhode	Whitemarsh	Bluewater Marina	212			1		

2.3 Facility Operations

Table 2.3.1 summarizes the hours of operation for each marina pump-out, their schedule during the off season if they have one, and the amount they charge per pump-out.

Table 2.3.1: Public Pump-out Operation Hours and Fees

River	Creek	Marina	Map Code	Hours Of Operation	Off Season	Fees
Patapsco	Bodkin	Pleasure Cove Marina	26	M-Th 9-6, Fri-Sun 9-8	N	\$5.00
Patapsco	Bodkin	Ventnor Marine Service	27	M-Sun 8-4:30	N	\$5.00
Patapsco	Bodkin	Hammock Island Marina	29	By Appointment	N	\$5.00
Patapsco	River Direct	Atlantic Marina Resort	18	M-Sun (except Tu) 9-5	N	\$5.00
Patapsco	Rock	Blake's Bar Harbor Marina	11	M-Sun 8-6	N	\$5.00
Patapsco	Rock	Maryland Yacht Club	12	M-Fri 8-4	Every Wed	\$5.00
Patapsco	Rock	Fairview Marina	13	M-Fri 8-5, Sat 9-4, Sun 9-12	N	\$5.00
Patapsco	Rock	White Rocks Marina	14	M-Fri 10-3	N	\$5.00
Patapsco	Rock	Oak Harbour Marina	19	M-Fri 8-4	N	\$5.00
Patapsco	Rock	Pasadena Yacht Yard (PYY marine)	DNR14	M-Fri 8-5	N	\$10.00
Patapsco	Stoney	Nabbs Creek Marina	8	Tu-Thur 3-10, Fri 12-12, Sat 11-12, Sun 9-9	N	\$5.00
Magothy	Cypress	Cypress Marina, Inc.	66	M-Th 8:30-4:30, Fri-Sun by Appointment	N	\$50.00
Magothy	Cypress	Magothy Marina, Inc.	70	M-Th 8-6, Fri-Sun 8-8	N	\$10.00
Magothy	Deep	Fairwinds Marina	91	M-Sat 8-8, Sun 8-4:45	N	\$5.00
Magothy	Gray's	Atlantic Marina on the Magothy	38	M-Sun (except Tu) 9-5	N	\$5.00
Magothy	Mill	Ferry Point Marina and Yachtyard	73	M-Sun 8-5	N	Free
Magothy	River Direct	Hamilton Harbour Marina and Boa	39	M-Sun (except Wed) 9-5	N	\$5.00
Chesapeake Bay	Mezick Ponds	Sandy Point Marina	116	M-Sun 8-5	N	Free
Chesapeake Bay	Mill	John L. Dunning Memorial Pier	DNR8	M-Sun 9-5	N	Free
Chesapeake Bay	Podickory	Podickory Point Yacht and Beach C	102	M-Fri 9-4, Sat-Sun 9-7	N	\$5.00
Chesapeake Bay	Whitehall	Scandia Marine Center	111	M-Fri 8-9, Sat 8:30-12:30	M-Fri 8-4:30	\$5.00
Severn	Back	Mears Marina Annapolis	COA5	M-Sun 8:30-5	N	\$10.00
Severn	Back	Port Annapolis Marina	COA6	M-Th 8-5, Fri-Sun 9-4:30	N	\$5.00
Severn	Back	Horn Point Harbor Marina	COA8	M-Sun 9-5	N	\$5.00
Severn	Back	Eastport Yacht Center	COA10	M-Fri 8-5	By Appointment	\$5.00
Severn	Back	Bert Jabin Yacht Yard	COA11	M-Sun 8-5	N	\$5.00
Severn	Back	Watergate Pointe Marina	COA16	M-Sun 8-5	N	\$5.00
Severn	Back	J Port Marina	DNR9	M-Fri 9-5	N	Free
Severn	Browns Cove	Smith's Marina	99	M-Sun 8-7	M-Fri 8:30-4:30	\$5.00
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143	M-Fri 8:30-5	N	\$5.00
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	M-Sun 9-5	Sat 9-5, Tu by Appt.	\$5.00
Severn	River Direct	Annapolis Maryland Capitol Yacht	COA14	M-Sun 8:30-5	N	Free
Severn	Spa	The President Point Marina	DNR16	M-Sun 8-5	N	Free
Severn	Spa	The Yacht Basin Co.	COA1	M-Sun 7-7	N	\$10.00
Severn	Spa	Annapolis City Marina	COA3	M-Sun 8-8	N	\$5.00
South	Brewer	Pocahontas Marina	189	M-Fri 8:30-5, Sat 8:30-1	N	Free
South	Gingerville	Oak Grove Marina	145	M-Th 10-6, Fri 10-7:30, Sat-Sun 8-7:30	N	\$5.00
South	Ramsay Lake	Turkey Point Marina	203	Tu-Sun 9-5	N	\$3.00
South	Ramsay Lake	Mayo Ridge Marina	208	Th-Tu 9-5	N	\$5.00
South	Ramsay Lake	Norris Marina	DNR12	Tu-Sun 8-5	N	Free
South	River Direct	Liberty Marina	150	M-Sun 9-5	N	\$5.00
South	Selby Bay	Selby Bay Yacht Marina	196	M-Fri 8-7, Sat 7-5, Sun 7-7	M-Fri 8-5	\$5.00
South	Selby Bay	Holiday Pt. Marina #1	197	M-Fri 7:30-4	N	Free
South	Selby Bay	Anchor Yacht Basin	201	M-Sun 8-5	N	\$15.00
West	Johns	Shady Oaks Marina	251	M-Sun 8-5	N	\$5.00
West	Parish	Backyard Boats	232	M-Sun 8-4	N	\$5.00
West	River Direct	West River Fuel Dock	BCC1	M-Th 9-5, Fri 9-6, S-S 8-6	N	\$5.00
West	River Direct	WestRhode Riverkeeper Pumpout	BCC2	Fri-M 9-5	N	\$5.00
West	South	Chesapeake Yacht Club	245	W-M 8-4	N	\$5.00
West	Tenthouse	West River Yacht Harbour	231	M-Sun 8-8	N	\$5.00
West	Tenthouse	Hartge Yacht Harbour	243	M-Fri 8-5	N	\$5.00
Rhode	Cadle	Cadle Creek Marina	219	M-Fri 8-5	N	\$5.00
Rhode	Cadle	Casa Rio Marina	216	M-Fri 8-4, Sat 8-3, Sun 10-2	N	\$5.00
Rhode	Whitemarsh	Rhode River Marina	211	M-Sat 8-5	M-Sat 8-5	\$15.00
Rhode	Whitemarsh	Holiday Hill Marina	210	M-Sun 8-5	N	Free
Rhode	Whitemarsh	Bluewater Marina	212	M-Sun 9-5	N	\$5.00

2.3.1 Facility Accessibility

As shown in appendix tables A.1.1 and A.1.2, 56 marinas offer pump-out facilities to the public and 18 marinas offer these privately. The private marina pump-outs account for a total of 665 slips while the marinas with public pump-outs account for 5,530 slips. This comparison is quite misleading, however, because Anne Arundel County receives a large number of transient vessels annually, virtually all of which are serviced by the public marinas.

2.3.2 Facility Maintenance Plans

As far as could be determined, all of the public marinas included in this application have a maintenance plan of some sort. This assertion is certainly true of all of the Clean Marinas, those which receive DNR grant funding for a pump-out facility, and all of the marinas that operate under an MDE general discharge permit.

Noted in surveys to prepare this application, dredging was among the most common (and expensive) maintenance activity since adequate water depth at the dock is critical to the success of the business.

2.4 Facility Draught Requirements

Table 2.4.1 shows the mean low-water depth availability and height limitations for boats coming into the marina. Only one of the 56 public marinas had a meaningful height limit: Oak Grove Marina, upstream from the 53' clearance on the Route 2 bridge over the South River. Vessels traveling to Little John Marina and Smith's Marina, both upstream from the U.S. Naval Academy (Route 450) bridge over the Severn River, are limited to the bridge's 75' clearance. Neither of these bridge height limitations have any practical limitation on the availability of pump-outs because eight marinas with pump-out facilities sit downstream of the South River bridge and 13 marinas are downstream of the Severn River bridge.

Two of the proposed no discharge zone waterbodies—Stoney Creek and Spa Creek—have drawbridges near their mouths with the Patapsco River and the Severn River, respectively. Both drawbridges operate year-round on well-publicized schedules and, when open, pose no height limitations.

Table 2.4.1: Draught and Height Requirements for Marinas with Public Pump-outs

River	Creek	Marina	Map Code	MLW	Height Lim	% Vessels Excluded
Patapsco	Bodkin	Pleasure Cove Marina	26	6 ft	None	0
Patapsco	Bodkin	Ventnor Marine Service	27	6ft	None	0
Patapsco	Bodkin	Hammock Island Marina	29	6 ft	None	0
Patapsco	River Direct	Atlantic Marina Resort	18	5 ft	None	0
Patapsco	Rock	Blake's Bar Harbor Marina	11	4 ft	None	0
Patapsco	Rock	Maryland Yacht Club	12	16 ft	None	0
Patapsco	Rock	Fairview Marina	13	6 ft	None	0
Patapsco	Rock	White Rocks Marina	14	11 ft	None	0
Patapsco	Rock	Oak Harbour Marina	19	12-15 ft	None	0
Patapsco	Rock	Pasadena Yacht Yard (PYY marine)	DNR14	4 ft	None	0
Patapsco	Stoney	Nabbs Creek Marina	8	6 ft	19 ft	Draw Bridge
Magothy	Cypress	Cypress Marina, Inc.	66	8.5 ft	None	0
Magothy	Cypress	Magothy Marina, Inc.	70	16 ft	None	0
Magothy	Deep	Fairwinds Marina	91	5 ft	None	0
Magothy	Gray's	Atlantic Marina on the Magothy	38	6.5 ft	None	0
Magothy	Mill	Ferry Point Marina and Yachtyard	73	8 ft	None	0
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	12 ft	None	0
Chesapeake Bay	Mezick Ponds	Sandy Point Marina	116	Varies	None	0
Chesapeake Bay	Mill	John L. Dunning Memorial Pier	DNR8	15 ft	None	0
Chesapeake Bay	Podickory	Podickory Point Yacht and Beach Club	102	6 ft	None	0
Chesapeake Bay	Whitehall	Scandia Marine Center	111	11 ft	None	0
Severn	Back	Mears Marina Annapolis	COA5	6 ft	None	0
Severn	Back	Port Annapolis Marina	COA6	9 ft	None	0
Severn	Back	Horn Point Harbor Marina	COA8	8 ft	None	0
Severn	Back	Eastport Yacht Center	COA10	5-6 ft	None	0
Severn	Back	Bert Jabin Yacht Yard	COA11	7 ft	None	0
Severn	Back	Watergate Pointe Marina	COA16	6 ft	None	0
Severn	Back	J Port Marina	DNR9	10 ft	None	0
Severn	Browns Cove	Smith's Marina	99	7 ft	75 ft	1%
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143	7-8 ft	None	0
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	N/A	None	0
Severn	River Direct	Annapolis Maryland Capitol Yacht Club	COA14	7 ft	None	0
Severn	Spa	The President Point Marina	DNR16	7 ft	17 ft	Draw Bridge
Severn	Spa	The Yacht Basin Co.	COA1	11 ft	None	0
Severn	Spa	Annapolis City Marina	COA3	18 ft	None	0
South	Brewer	Pocahontas Marina	189	6.5 ft	None	0
South	Gingerville	Oak Grove Marina	145	12 ft	53 ft	2%
South	Ramsay Lake	Turkey Point Marina	203	9 ft	None	0
South	Ramsay Lake	Mayo Ridge Marina	208	2 ft	None	0
South	Ramsay Lake	Norris Marina	DNR12	7 ft	None	0
South	River Direct	Liberty Marina	150	50 ft	None	0
South	Selby Bay	Selby Bay Yacht Marina	196	7 ft	None	0
South	Selby Bay	Holiday Pt. Marina #1	197	6 ft	None	0
South	Selby Bay	Anchor Yacht Basin	201	5 ft	None	0
West	Johns	Shady Oaks Marina	251	3.5 ft	None	0
West	Parish	Backyard Boats	232	7 ft	None	0
West	River Direct	West River Fuel Dock	BCC1	8 ft	None	0
West	River Direct	WestRhode Riverkeeper Pumpout Boat	BCC2	N/A	None	0
West	South	Chesapeake Yacht Club	245	7 ft	None	0
West	Tenthouse	West River Yacht Harbour	231	10 ft	None	0
West	Tenthouse	Hartge Yacht Harbour	243	5 ft	None	0
Rhode	Cadle	Cadle Creek Marina	219	7 ft	None	0
Rhode	Cadle	Casa Rio Marina	216	6 ft	None	0
Rhode	Whitemarsh	Rhode River Marina	211	5 ft	None	0
Rhode	Whitemarsh	Holiday Hill Marina	210	5 ft	None	0
Rhode	Whitemarsh	Bluewater Marina	212	10 ft	None	0

2.5 Facility Waste Treatment Methods

The map on the following page shows marinas with public pump-out facilities in relation to sewage service areas. Of the 56 marinas, 11 use septic systems and 45 are connected to the county's sewer system.

The marinas that use septic systems are managed by Onsite Sewage Disposal System (OSDS). Each marina with an OSDS has site-specific parameters, meaning that its OSDS is designed specifically for that area. All marinas with OSDSs will require occasional pump-outs; the schedule is dependent upon the site-specific size of the holding tanks. Table 2.5.1 shows whether the marinas with public pump-outs use the public sewer or holding tanks. If the marina is served by the public sewer, its waste is simply discharged directly into the public sewer system.

Anne Arundel County Septic vs Sewer Service and Pump-out Locations

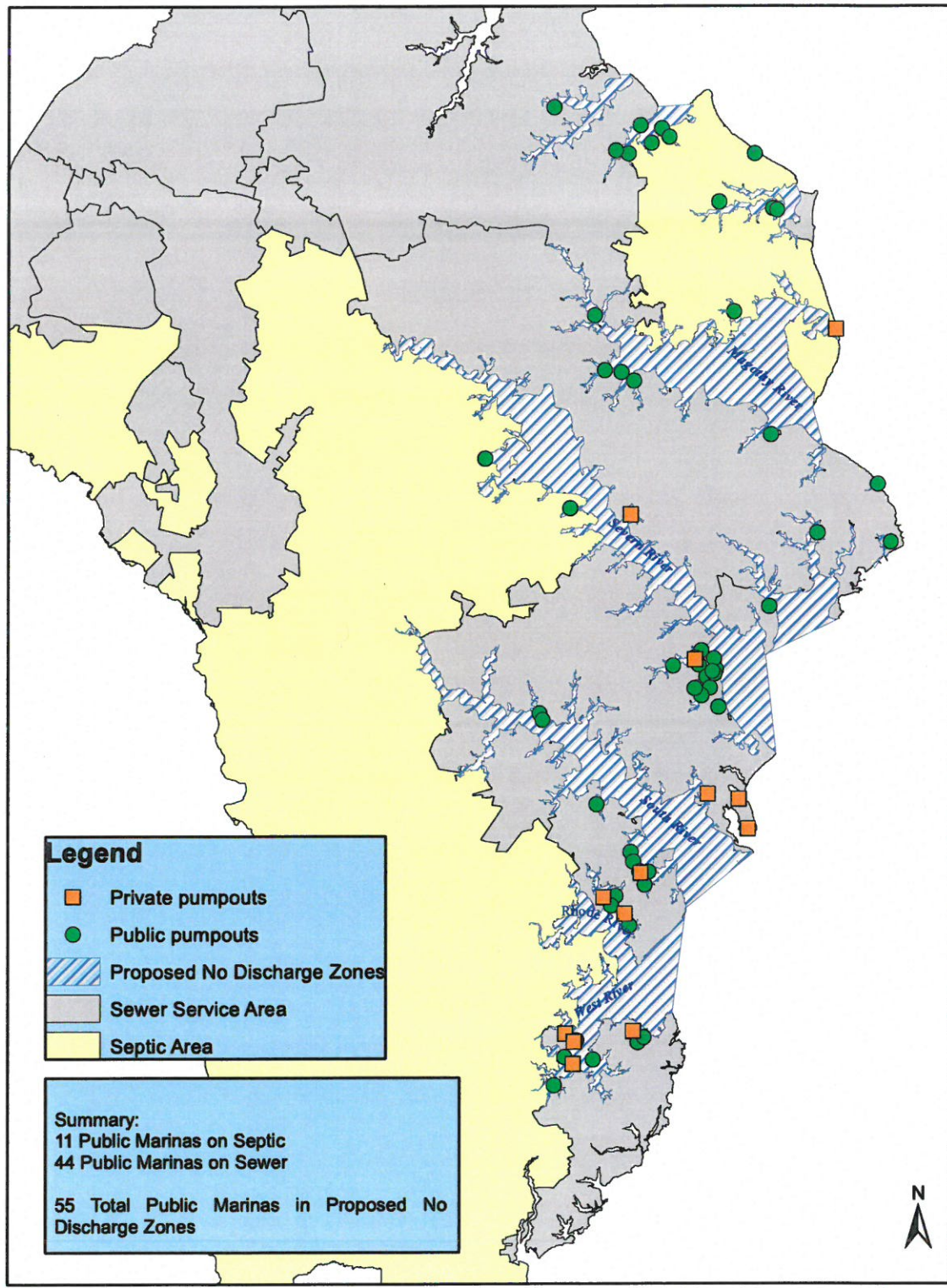


Table 2.5.1: Marina Disposal Methods

River	Creek	Marina	Map Code	Disposal
Patapsco	Bodkin	Pleasure Cove Marina	26	Holding Tank
Patapsco	Bodkin	Ventnor Marine Service	27	Holding Tank
Patapsco	Bodkin	Hammock Island Marina	29	Holding Tank
Patapsco	River Direct	Atlantic Marina Resort	18	Holding Tank
Patapsco	Rock	Blake's Bar Harbor Marina	11	Direct Sewege
Patapsco	Rock	Maryland Yacht Club	12	Holding Tank
Patapsco	Rock	Fairview Marina	13	Holding Tank
Patapsco	Rock	White Rocks Marina	14	Holding Tank
Patapsco	Rock	Oak Harbour Marina	19	Holding Tank
Patapsco	Rock	Pasadena Yacht Yard (PYY marine)	DNR14	Direct Sewege
Patapsco	Stoney	Nabbs Creek Marina	8	Direct Sewege
Magothy	Cypress	Cypress Marina, Inc.	66	Direct Sewege
Magothy	Cypress	Magothy Marina, Inc.	70	Direct Sewege
Magothy	Deep	Fairwinds Marina	91	Direct Sewege
Magothy	Gray's	Atlantic Marina on the Magothy	38	Holding Tank
Magothy	Mill	Ferry Point Marina and Yachtyard	73	Direct Sewege
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	Direct Sewege
Chesapeake Bay	Mezick Ponds	Sandy Point Marina	116	Direct Sewege
Chesapeake Bay	Mill	John L. Dunning Memorial Pier	DNR8	Direct Sewege
Chesapeake Bay	Podickory	Podickory Point Yacht and Beach Club	102	Direct Sewege
Chesapeake Bay	Whitehall	Scandia Marine Center	111	Direct Sewege
Severn	Back	Mears Marina Annapolis	COA5	Direct Sewege
Severn	Back	Port Annapolis Marina	COA6	Direct Sewege
Severn	Back	Horn Point Harbor Marina	COA8	Direct Sewege
Severn	Back	Eastport Yacht Center	COA10	Direct Sewege
Severn	Back	Bert Jabin Yacht Yard	COA11	Direct Sewege
Severn	Back	Watergate Pointe Marina	COA16	Direct Sewege
Severn	Back	J Port Marina	DNR9	Direct Sewege
Severn	Browns Cove	Smith's Marina	99	Holding Tank
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143	Direct Sewege
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	Direct Sewege
Severn	River Direct	Annapolis Maryland Capitol Yacht Club	COA14	Direct Sewege
Severn	Spa	The President Point Marina	DNR16	Direct Sewege
Severn	Spa	The Yacht Basin Co.	COA1	Direct Sewege
Severn	Spa	Annapolis City Marina	COA3	Direct Sewege
South	Brewer	Pocahontas Marina	189	Direct Sewege
South	Gingerville	Oak Grove Marina	145	Direct Sewege
South	Ramsay Lake	Turkey Point Marina	203	Direct Sewege
South	Ramsay Lake	Mayo Ridge Marina	208	Direct Sewege
South	Ramsay Lake	Norris Marina	DNR12	Direct Sewege
South	River Direct	Liberty Marina	150	Direct Sewege
South	Selby Bay	Selby Bay Yacht Marina	196	Direct Sewege
South	Selby Bay	Holiday Pt. Marina #1	197	Direct Sewege
South	Selby Bay	Anchor Yacht Basin	201	Direct Sewege
West	Johns	Shady Oaks Marina	251	Direct Sewege
West	Parish	Backyard Boats	232	Direct Sewege
West	River Direct	West River Fuel Dock	BCC1	Direct Sewege
West	River Direct	WestRhode Riverkeeper Pumpout Boat	BCC2	Direct Sewege
West	South	Chesapeake Yacht Club	245	Direct Sewege
West	Tenthouse	West River Yacht Harbour	231	Direct Sewege
West	Tenthouse	Hartge Yacht Harbour	243	Direct Sewege
Rhode	Cadle	Cadle Creek Marina	219	Direct Sewege
Rhode	Cadle	Casa Rio Marina	216	Direct Sewege
Rhode	Whitemarsh	Rhode River Marina	211	Direct Sewege
Rhode	Whitemarsh	Holiday Hill Marina	210	Direct Sewege
Rhode	Whitemarsh	Bluewater Marina	212	Direct Sewege

3.0 Vessel Population and Usage Information

An estimate of the number of boats in Anne Arundel County waters must encompass three types of information. First, and most common, are vessels registered in the State of Maryland through the Department of Natural Resources (DNR). Second, some vessels located in the proposed no discharge zones are documented by the U.S. Coast Guard and reported to be in Anne Arundel waters. Finally, at any given time, vessels are in transit through these waters, but are not registered in Maryland or documented as “local” by the Coast Guard.

A separate source of information was used for each of these three categories of vessels.

First, the Department of Natural Resources provided data, shown in Table A.2.1 of the Appendix, giving the count of boats registered in Maryland by zip code and by size. The data were requested for all 42 zip codes in Anne Arundel County. Although some MD vessels registered to owners in Anne Arundel County are operated elsewhere and some registered to owners in other counties are operated in Anne Arundel, this procedure seems a reasonable basis for estimation. The DNR data separate vessels by four length categories consistent with the requirements of this application. The results of this category provide an estimate of 21,712 registered vessels in the county.

Second, the website www.BoatInfoWorld.com⁵ provided the number of documented boats in the Anne Arundel County area by zip code and size. The appendix (Table A.2.2) provides the raw data. As with the data for registered vessels, this information is broken down into four consistent lengths. The total number of documented vessels is estimated at 4,990.

The estimated number of transient vessels is derived from manipulating the number from Douglas Lipton’s 2005 study of transient vessels in Maryland.⁶

First, the relationship between total Anne Arundel County-registered boats and total Maryland-registered boats was calculated from the Coast Guard’s 2011 National Recreational Boating Survey,⁷ which found a total of 184,796 registered vessels in Maryland. Equation E.1 shows this process.

$$\frac{\text{Total AA County Registered}}{\text{Total MD Registered}} = \frac{21,712}{184,796} \approx 0.117497 \sim 11.8\% \text{ MD boats are AA County} \quad \text{E.1}$$

Next, this ratio was applied to the data for transient vessels in Maryland in 2011⁷, by multiplying each number by the fraction determined above. Table A.2.3 in the appendix list the raw data from the Lipton⁶ study. From the table in the study, the total number of transients over 40’ long was used, while the number of transients in any other size category was estimated because the data given were not sufficiently specific. For example, the number of transient sailboats was split

into two categories: those longer than 40' and those shorter or equal to 39'. It was estimated that this number would fall into the category of boats ranging from 26 to 40' long. Table 3.1 shows the placement of each length category.

Table 3.1: Length Categories Transferred from Study to Report

Length Category from Study⁶ (in feet)	Put into which category (in feet)
Power Boats < 29	16 to < 26
Power Boats 30 – 39	26 to < 40
Power Boats 40 – 49	> 40
Power Boats 50 – 59	> 40
Power Boats 60+	> 40
Sailboats ≤ 39	26' to < 40
Sailboats 40+	> 40

After these decisions were made, 11.8 percent of each category was found, shown in Table 3.2 below.

Table 3.2: Final Transient Count

Length in feet	Maryland Transients	AA County Transients
> 40	8,691	1,026
26 to < 40	13,298	1,569
16 to < 26	4,168	492
< 16	0	0
TOTAL	26,157	3,087

Table 3.3 shows all of the data gathered for estimating the total number of vessels in the Anne Arundel County.

Table 3.3: Vessel Population Estimates for Anne Arundel County

Vessel Length	Number of Registered Vessels	Number of Documented Vessels⁵	Estimated Number of Transient Vessels	Total Estimated Number of Vessels
> 40'	736	1,466	1,026	3,228
26' to < 40'	4,070	3,433	1,569	9,072
16' to < 26'	9,724	91	492	10,307
< 16'	7,182	0	0	7,182
TOTAL	21,712	4,990	3,087	29,789

Table 3.4 shows the process in determining the estimated number of pump-out facilities required, following the instructions on page 4-34 of the EPA’s no discharge zone application guide.⁸ The estimated number of required pump-out facilities rounds to 31. The total number of pump-out facilities available to the public is 55—nearly double the number of required pump-out facilities, not counting the 13 pump-out facilities available to those who own slips at private marinas.

Table 3.4: Estimate of Required Pump-out Facilities

Step	Direction	Answer
1	Enter # of vessels 26’ to < 40’ long	9,072
2	Enter percent of 26’ to < 40’ vessels with holding tanks	45% ⁸
2a	Calculate estimated no. of 26’ to < 40’ vessels with holding tanks (multiply 1 by 2)	4,082.4
3	Enter # of vessels > 40’ long	3,228
3a	Calculate estimated total no. vessels with holding tanks (add 2a with 3)	7,310.4
4	Enter estimated peak occupancy rate (if unknown, use 40%)	40%
4a	Calculate estimated no. of vessels requiring pump-out facilities (multiply 3a by 4)	2,924.16
5	Enter average no. of vessels served per hour at pump-out (in unknown, use 4)	4
6	Enter average no. of hours of operation per weekend (in unknown, use 24)	24
6a	Calculate estimated no. of vessels served per pump-out facility (multiply 5 by 6)	96
6b	Calculated estimated no. of required pump-out facilities (divide 4a by 6a)	31

Table 3.5 shows the process to determine the estimated number of dump stations required, following the instructions on page 4 – 35 of the EPA’s no discharge zone application guide.⁸ The estimated number of required dump stations rounds to 4. The number of dump stations available to the public is 12—three times the required number. The marinas with dump stations for portable toilets include: Hammock Island Marina on Bodkin Creek; Magothy Marina, and Hamilton Harbour Marina and Boatworks on the Magothy; Podickory Point Yacht Club on the Chesapeake Bay; Chesapeake Harbour Marina, President Point Marina, and Annapolis City Marina on the Severn; Mayo Ridge Marina, Selby Yacht Basin, and Holiday Point Marina on the South; and West River Yacht Harbor and Hartge Yacht Harbour on the West.

Table 3.5: Estimate of Required Dump Stations

Step	Direction	Answer
1	Enter # of vessels 16' to < 26' feet long	10,307
2	Enter percent of 16' to < 26' vessels with portable toilets	24% ⁸
2a	Calculate estimated total no. of vessels with portable toilets (multiply 1 by 2)	2,473.68
3	Enter estimated peak occupancy rate (if unknown, use 40%)	40%
3a	Calculate estimated no. of vessels requiring dump stations (multiply 2a by 3)	989.47
4	Enter average no. of vessels served per hour at dump station (in unknown, use 12)	12
5	Enter average no. of hours of operation per weekend (if unknown, use 24)	24
5a	Calculate estimated no. of vessels served per dump station (multiply 4 by 5)	288
5b	Calculate estimated no. of dump stations required (divide 3b by 5a)	3.44

4.0 Other Information

This section provides additional information on the public education program (Section 4.1), a summary of the City of Annapolis’s ordinance concerning its harbor (Section 4.2), and how the no discharge zone will be enforced after the application is approved by the EPA (Section 4.3).

4.1 Public Education Plan

The tremendously successful partnership between EPA and Maryland DNR has created the conditions which have made this no discharge zone application possible. First, DNR administers grants to marinas—comprised of 75 percent Clean Vessel Act funds awarded to the state by the U.S. Fish & Wildlife Service and 25 percent state special funds—to install marine sewage pump-out facilities. These grants have resulted in 36 marinas in Anne Arundel County that currently operate grant-funded pump-out facilities. Second, among these marinas with pump-out facilities, 30 have received certification as Clean Marinas. Third, the DNR Clean Boating program has produced a wide array of boater education materials disseminated throughout the state.

Anne Arundel County

Anne Arundel County has embraced the Clean Boating program *in toto* and promotes it through the county’s website at <http://www.aacounty.org/departments/public-works/wprp/clean-boating/index.html>. These pages are found in the Watershed Protection and Restoration Program (WPRP), a unit of the Public Works Department.

Although no WPRP staff have direct responsibility for promoting the Clean (or “Responsible”) Boating program, the primary responsibility falls to the Anne Arundel Economic Development Corporation (AAECD), which has one staff member who serves as liaison to a citizens’ advisory body, the Maritime Industry Advisory Board.

Separately, Anne Arundel County is served by the Severn River Commission, established to advise the county and City of Annapolis on measures to preserve the Severn as a “Scenic” River. Both of these advisory bodies have played active roles in supporting the development of this application, and they will play important roles in developing educational materials to implement the no discharge zones.

City of Annapolis

The City of Annapolis occupies about half of the Annapolis Neck Peninsula between the South and the Severn rivers, with its waterfront along four creeks on the Severn River. Although cooperation between the city and county is often less than expected, recent city-county cooperation on Weems Creek has enabled the Annapolis Harbormaster’s office to clean up the abandoned derelict vessels in the county’s half of the waterway. It is expected that the city and county will set up mutual institutional arrangements to manage the no discharge zone.

The City of Annapolis is served by two relevant citizens' advisory groups: the Annapolis Maritime Advisory Board and the Annapolis Environmental Commission. The Maritime Advisory Board provides advice to the Department of Planning and Zoning through the Economic Development section. The Environmental Commission provides advice to the Office of Environmental Policy in the city manager's office.

The city is also home to the only harbormaster in Maryland, an office that operates one pump-out vessel and enforces the ordinance on city waters. The harbormaster will be the primary source of educational materials and enforcement on the no discharge zones in the four creeks—Back, Spa, College, and Weems—in the city.

Annapolis and Anne Arundel County will approach the management of the No Discharge Zones by promoting clean boating principles that are already well-established rather than enforcing a new prohibition. The website <http://dnr.maryland.gov/boating/Pages/cleanmarina/resources.aspx> provides all of the information and goes well beyond sewage to include management of trash, fuel, oil (including oily bilge), fish waste, and habitat protection. This compilation of educational materials includes complete lesson plans and PowerPoint slides.

Maritime Businesses

The existence of the Maritime Industry Advisory Board (advising the County) and the Maritime Advisory Board (in Annapolis) is evidence of the attention both jurisdictions give to recreational boaters and the hundreds of businesses that support recreational boating. Among these businesses, the 56 commercial marinas with pump-out facilities are obviously on the front lines of any effort to create a successful county-wide no discharge zone. The fact that 27 of these marinas are already certified by MD DNR as Clean Marinas indicates that these frontline businesses willingly and voluntarily subject themselves to the highest standards of siting considerations, design and maintenance, stormwater management, vessel repair, petroleum control, sewage handling, and waste disposal. All of them currently communicate with their slipholders and other customers on a wide range of subjects, including clean boating and pump-outs.

With such a well-established pump-out infrastructure already in place, the marinas in Annapolis and Anne Arundel County are already actively working to improve service delivery and reduce down-time, especially for system repair and maintenance. Best management practices disseminate quite rapidly through the Marine Trades Association of Maryland and other bodies. For instance, an increasing number of marinas are building “free” weekly or other regular pump-outs into their standard slip contracts. As awareness of boaters' valuation of clean water grows among marina operators, a small but growing number are adding no-discharge clauses into

annual and transient contracts with slipholders. Anecdotally, only a very few cancelled slip contracts for discharge violations have lead to very high levels of compliance among slipholders.

Environmental Nonprofits

At the time of this application, at least seven local nonprofit organizations are directly involved in promoting clean boating in a variety of ways, both formal and informal.

The West/Rhode Riverkeeper operates a pump-out boat that services all of the West and Rhode rivers and provides educational materials. See <http://www.westrhoderiverkeeper.org>.

The South Riverkeeper, working under the South River Federation, is active in water quality monitoring and environmental education. See <http://www.southernriverfederation.net> .

The Severn River Association conducts water and habitat quality monitoring and education programs. See <http://www.severnriver.org>

The Back Creek Conservancy prepared the first draft of this application and creates and distributes information on clean boating. See <https://www.backcreekconservancy.org> .

The Spa Creek Conservancy conducts water quality monitoring in Annapolis harbor and Spa Creek. See www.spacreek.net .

The Magothy River Association: see <http://www.magothyriver.org/>

Restore Rock Creek: see <http://www.restorerockcreek.org/site/>

4.2 Local Discharge Ordinances

City of Annapolis code 15.06.090 – Vessel Toilets⁹

A person may not operate the toilet fixtures of a vessel within City waters at any time so as to cause or permit to pass or be discharged into City waters any sewage or other waste matter or contaminate of any kind which does not meet State, County, and Federal requirements for water quality discharged by such devices. A person may not operate incinerating toilets in a vessel within City waters at any time.

(Ord. O-31-02 § 1 (part))

(Ord. No. O-41-08, § I, 5-11-2009)

4.3 Enforcement Plan

Law enforcement in the form of citations, fines, and other criminal penalties is the final option for creating an effective No Discharge program—a distant fourth to (1) education and outreach, (2) expanded service availability, and (3) warnings. The law enforcement organizations are the U.S. Coast Guard, the Maryland Department of Natural Resources (DNR) Police, and the City of Annapolis harbormaster.

The U.S. Coast Guard Station Annapolis is located in Fishing Creek, which is one of the proposed no discharge zones in this application. The station covers the entire territory from Curtis Bay (on the Patapsco River in the north) to south of Chesapeake Beach in Herring Bay (at the southern end of Anne Arundel County). The station operates three small vessels: one 45' long and two 29' long. The station's primary responsibilities are homeland security, search and rescue, and marine safety. Although the Coast Guard has authority to board vessels for any reason, they do not presently inspect MSDs and do not expect to issue citations for marine discharges.

State Enforcement

By state regulation, the Maryland Department of the Environment (MDE) has primary responsibility for enforcement of no discharge zone regulations. Since MDE does not patrol waterways, it is anticipated that most of its enforcement actions will come from reported violations. Violators may be reported by several sources, including the Natural Resources Police (NRP), local health agencies, marina owners, and boaters.

MDE's enforcement authority is outlined in the Code of Maryland Regulations, Title 26.08.03.01, which prohibits "The discharge of sewage from vessels to the waters of the State, designated as restricted zones. These zones shall be designated:

- (j) whenever greater environmental protection and enhancement is required, and
- (k) according to the procedures outlined in the Federal Act."

The MDE has several enforcement provisions including criminal, civil, and administrative actions. When a no discharge zone citation is necessary, MDE will take an administrative action with fines not to exceed \$10,000 per violation, per day. The NRP will assist MDE in investigating violation reports and will issue citations when necessary.

Both agencies have agreed that a warning will be issued for first violations, with citations issued for subsequent offenses.

The point of contact at MDE for no discharge zone enforcement is the Compliance Program. Its telephone (410-537-3510) is answered during office hours (8:00 a.m. to 5:00 p.m.).

The MD DNR police conduct marine operations at six locations in the proposed no discharge zone:

- (1) Stoney Creek Bridge Marina on Stoney Creek—proposed no discharge zone site 1;
- (2) Sandy Point Marina (116) at Mezick Ponds in Sandy Point State Park—proposed no discharge zone site 10;
- (3) Magothy Marina (70) on Cypress Creek in the Magothy River—proposed no discharge zone site 5;
- (4) Liberty Marina (150) on the South River—proposed no discharge zone site 12;
- (5) the Smithsonian Environmental Research Center (SERC) on the Rhode River—proposed no discharge zone site 13; and
- (6) Herrington Harbor South marina in the existing no discharge zone at Herring Bay.

In Anne Arundel County, the NRP operate several types of small vessels that routinely patrol Anne Arundel County waterways. They report that they do not have the capacity to perform routine checks on MSDs, checking, for example, to ensure that holding tank Y valves are secured in a closed position.

Annapolis Harbormaster

The only harbormaster in the State of Maryland is located in the City of Annapolis. The incumbent, Beth Bellis, took office in 2017 after 20 years as a Natural Resources police officer.

The Annapolis harbormaster operates a very active pump-out vessel and requires periodic pump-outs of all vessels moored in Annapolis waters. The substantial year-round liveaboard population presents an important range of challenges for the harbormaster as well as the marinas at which nearly all of them reside.

Currently, awareness of pump-out BMPs is growing, but with no systematic discussion. Newport, RI uses stickers recording no discharge zone fee payment. Virginia Beach uses dye tablets. No plans now exist to launch any program similar to these.

Pump-Out BMP and TMDL Credit

The recommendations of the Boat Pump-Out BMP Expert Panel present important opportunities for both Anne Arundel County, a Phase I jurisdiction, and the City of Annapolis, in Phase II. The report (March 2018) notes:

Although each individual pump-out facility installation would not be credited, the programmatic BMP could be part of a jurisdictions' Phase 3 (2018 – 2025) watershed implementation plans (WIPs) and included as a management target if desired by the jurisdiction (p. 22).

5.0 End Notes

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A.1 Marina Information

Table A.1.1: Marinas with Public Pump-outs Organized River then Creek

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Maina Website
Patapsco	Bodkin	Pleasure Cove Marina	26	39°07'41.4"	76°28'24.3"	410 437 6600	1701 Poplar Ridge Rd	Pasadena	105	www.pleasurecove.com
Patapsco	Bodkin	Ventnor Marine Service	27	39°07'39.3"	76°27'01.1"	410 255 4100	8070 Ventnor Rd	Pasadena	135	
Patapsco	Bodkin	Hammock Island Marina	29	39°07'34.6"	76°26'53.8"	410 437 1870	8083 Ventnor Rd	Pasadena	64	www.hammockisland.com
Patapsco	River Direct	Atlantic Marina Resort	18	39°08'42.1"	76°27'29.4"	410 437 6926	2010 Knollview Dr	Pasadena	60	www.atlanticmarinaresort.com
Patapsco	Rock	Blake's Bar Harbor Marina	11	39°09'19.3"	76°30'28.8"	410 255 5500	2008 Barb Harbor Rd	Pasadena	55	www.blakesbarharbormarina.com
Patapsco	Rock	Maryland Yacht Club	12	39°09'16.0"	76°29'55.3"	410 255 4444	1500 Fairview Beach Rd	Pasadena	144	www.mdyc.org
Patapsco	Rock	Fairview Marina	13	39°09'06.0"	76°29'44.6"	410 437 3400	1575 Fairview Beach Rd	Pasadena	120	www.fairviewmarina.com
Patapsco	Rock	White Rocks Marina	14	39°08'56.9"	76°30'11.4"	410 255 3800	1402 Colony Rd	Pasadena	375	www.whiterocksmarina.com
Patapsco	Rock	Oak Harbour Marina	19	39°08'44.3"	76°30'48.9"	410 255 4070	1343 Old Water Oak Pt. Rd	Pasadena	100	www.oahmarina.org
Patapsco	Rock	Pasadena Yacht Yard (PYV marine)	DNR14	39°08'47.7"	76°31'07.2"	410 255 1771	11330 Pasadena Yacht Yard Rd.	Pasadena	50	www.pyvmarine.biz
Patapsco	Stoney	Nabbs Creek Marina	8	39°09'43.8"	76°32'45.5"	443 354 1918	864 Nabbs Creek Rd	Glen Burnie	120	www.nabbscreekmarina.com
Magothy	Cypress	Cypress Marina, Inc.	66	39°04'18.6"	76°31'27.0"	410 647 7940	730 Cypress Rd	Severna Park	40	www.cypressmarina.net
Magothy	Cypress	Magothy Marina, Inc.	70	39°02'59.1"	76°27'07.9"	410 974 0758	1000 Fairwinds Dr	Severna Park	182	www.magothymarina.com/index.html
Magothy	Deep	Fairwinds Marina	91	39°02'59.1"	76°27'07.9"	410 974 0758	1000 Fairwinds Dr	Annapolis	100	www.fairwindsmarina.com
Magothy	Gray's	Atlantic Marina on the Magothy	38	39°05'31.1"	76°28'02.8"	410 360 2500	487 700 Mill Creek Rd	Annapolis	48	www.atlanticmarina.com
Magothy	Mill	Ferry Point Marina and Yacht Yard	73	39°04'18.4"	76°30'41.5"	410 544 6368	700 Mill Creek Rd	Annapolis	120	www.ferrypointmarina.com
Magothy	River Direct	Hamilton Harbour Marina and Boatworks	39	39°05'26.1"	76°31'43.1"	410 647 0733	368 North Dr	Severna Park	20	www.hamiltonharbormarina.net
Chesapeake Bay	Merrick Ponds	Sandy Point Marina	116	39°00'52.9"	76°28'07.3"	410 974 2149	1100 East College Pkwy	Annapolis	25	www.sandypointmarina.com
Chesapeake Bay	Mill	John L. Dunning Memorial Pier	DNR8	39°59'22.8"	76°27'08.9"	410 293 3721	140 Hooper High Rd	Annapolis	32	www.statelarks.com
Chesapeake Bay	Podickory	Podickory Point Yacht and Beach Club	102	39°01'58.1"	76°24'22.4"	410 757 8000	2116 Bay Front Terrace	Annapolis	120	www.podickorypoint.com
Chesapeake Bay	Whitehall	Scandia Marine Center	111	39°00'58.4"	76°25'52.0"	410 643 0037	1656 Homewood Landing Rd	Annapolis	110	www.scandiamarine.com
Severn	Back	Mears Marina Annapolis	COA5	38°58'04.8"	76°28'53.1"	410 268 8282	519 Chester Ave	Annapolis	186	www.mearsannapolis.com
Severn	Back	Port Annapolis Marina	COA6	38°57'49.0"	76°28'43.6"	410 431 0381	7074 Bembie Beach Rd	Annapolis	225	www.portannapolis.com
Severn	Back	Horn Point Harbor Marina	COA8	38°58'11.8"	76°28'36.7"	410 280 9988	726 2nd St	Annapolis	56	www.hornpointharbour.com
Severn	Back	Eastport Yacht Center	COA10	38°58'06.1"	76°28'36.7"	410 280 9988	726 2nd St	Annapolis	106	www.ecyartem.com
Severn	Back	Bert Jabon Yacht Yard	COA11	38°57'37.2"	76°28'53.2"	410 268 9667	7310 Edgewood Rd	Annapolis	220	www.bjwy.com
Severn	Back	Watergate Pointe Marina	COA16	38°57'48.6"	76°29'07.6"	443 926 1303	655 Americana Dr	Annapolis	160	www.ljwatergatemarina.com
Severn	Back	J Port Marina	DNR9	38°58'09.6"	76°28'39.9"	410 280 2040	213 Eastern Ave	Annapolis	22	www.worldannapolis.com
Severn	Browns Cove	Smith's Marina	99	38°57'34.3"	76°28'30.8"	410 500 3059	2030 Chesapeake Harbour Dr	Crownsville	66	www.smithsannapolis.com
Severn	Chesapeake Harbour	Chesapeake Harbour Marina	143	38°57'34.3"	76°28'30.8"	410 500 3059	2030 Chesapeake Harbour Dr	Annapolis	198	www.chesapeakeharbourmarina.com
Severn	Ego Alley	City of Annapolis Pumpout Boat	DNR1	38°58'39.4"	76°29'09.5"	410 320 6852	1 Dock St	Annapolis	0	www.annapolis.gov
Severn	River Direct	Annapolis Maryland Capitol Yacht Club	COA14	38°58'24.9"	76°28'37.4"	410 269 5219	16 Chesapeake Landing	Annapolis	82	www.annapolis.gov
Severn	Spa	The President Point Marina	DNR16	38°58'17.2"	76°29'37.7"	410 991 9381	President Point Drive	Annapolis	0	www.amcvc.com
Severn	Spa	The Yacht Basin Co.	COA1	38°58'29.7"	76°29'04.1"	410 268 3544	2 Compromise St	Annapolis	107	www.yachtbasin.com
Severn	Spa	Annapolis City Marina	COA3	38°58'17.4"	76°29'01.0"	410 268 0660	410 Severn Ave	Annapolis	89	www.annapoliscitymarina.com
South	Brewer	Pocahontas Marina	189	38°55'27.4"	76°31'43.5"	410 533 8752	3365 Pocahontas Dr	Edgewater	136	www.pocahontasmarina.com
South	Gingerville	Oak Grove Marina	145	38°57'22.4"	76°33'10.2"	410 266 6696	2820 Solomons Island Rd	Edgewater	100	www.boatagrove.com
South	Ramsay Lake	Turkey Point Marina	203	38°54'04.7"	76°30'23.4"	410 798 1369	1107 Turkey Point Rd	Edgewater	68	www.turkeypointmarina.com
South	Ramsay Lake	Mayo Ridge Marina	208	38°53'49.7"	76°30'29.4"	410 798 1952	1293 Mayo Ridge Rd	Edgewater	55	www.norrismarinaslips.com
South	River Direct	Norris Marina	DNR12	38°54'04.7"	76°30'22.4"	410 320 1628	1111 Turkey Point Rd	Edgewater	320	www.libertymarina.com
South	Selby Bay	Liberty Marina	150	38°57'11.8"	76°33'09.4"	410 266 5633	64 Old South River Rd	Edgewater	100	www.selbybaymarina.com
South	Selby Bay	Selby Bay Yacht Marina	196	38°54'29.0"	76°30'48.9"	410 798 0232	930 Selby Blvd	Edgewater	171	www.holidaypointmarina.com
South	Selby Bay	Holiday Pt. Marina #1	197	38°54'16.8"	76°30'41.0"	410 956 2208	3774 Beach Dr Blvd	Edgewater	110	www.anchorageyachtbasin.com
West	Johns	Shady Oaks Marina	251	38°49'44.9"	76°32'52.9"	410 867 7700	1048 Shady Oaks Rd	Shady Side	45	www.backyardboats.com
West	Parish	Backyard Boats	232	38°50'36.0"	76°30'41.0"	410 867 4800	4819 Woods Wharf Rd	Shady Side	0	www.westhoderlytkeeper.org
West	River Direct	West River Fuel Dock	BCC1	38°50'35.4"	76°32'10.4"	410 867 1444	4801 Riverside Dr	Shady Side	150	www.chesapeakeyachtclub.org
West	River Direct	West Rhode Riverkeeper Pumpout Boat	BCC2	38°50'39.3"	76°30'30.8"	443 221 5104	4800 Atwell Rd	Galesville	178	www.hartreachtbarbour.com
West	South	Chesapeake Yacht Club	245	38°50'15.5"	76°31'52.6"	410 867 1500	4943 Hine Ave	Galesville	250	www.chesapeakeyachtclub.org
West	Tenthouse	West River Yacht Harbour	231	38°50'37.5"	76°32'15.9"	301 672 3473	4801 Riverside Dr	Galesville	40	www.hartreachtbarbour.com
Rhode	Cadle	Harge Yacht Harbour	243	38°50'16.0"	76°32'35.3"	443 607 6306	4883 Church Lane	Edgewater	39	www.casillomarina.com
Rhode	Cadle	Cadle Creek Marina	219	38°52'59.1"	76°30'52.9"	410 798 1915	4159 Cadle Creek Rd	Edgewater	108	www.rhodetvermarina.com
Rhode	Cadle	Casa Rio Marina	216	38°53'13.8"	76°31'00.7"	410 798 4731	4079 Cadle Creek Rd	Edgewater	68	www.holidayhillmarina.com
Rhode	Whitemarsh	Rhode River Marina	211	38°53'32.1"	76°31'30.2"	410 798 1658	3932 Germantown Rd	Edgewater	52	
Rhode	Whitemarsh	Holiday Hill Marina	210	38°53'37.0"	76°31'17.6"	410 798 9499	3910 Galawasse Rd	Edgewater		
Rhode	Whitemarsh	Blewater Marina	212	38°53'21.4"	76°31'20.2"	410 798 8968	1024 Carrs Wharf Rd	Edgewater		

Table A.1.2: Marinas with Private Pump-outs Organized by River then Creek

River	Creek	Marina	Map Code	Lat (N)	Long (W)	Phone #	Address	City	Slips	Marina Website
Potapsc	Bodkin	Bodkin Yacht Club	M257	39°46'38.1"	77°02'58.6"		8091 Bellhaven	Pasadena	60	www.bodkinyachtclub.com
Magothy	Magothy Narrows	Gibson Island Marina	48	39°05'05.6"	76°25'53.3"	410.253.7632	420 The Causeway	Gibson Island	77	www.gibsonisland.com/club/yacht
White Hall Bay	Mill	Twin Harbors Community Association Marina	M651					Arnold		
Severn	Chase	Orchard Beach Marina	M564	39°00'57.0"	76°27'77.0"	410.269.5182	1643 Orchard Beach Rd	Annapolis	18	www.orchardbeachmarina.com
Severn	Brewer	Pines OTS Cym	107	38°01'37.1"	76°30'18.6"		PO Box #19	Arnold	3	www.pinesonthesevern.org
Severn	Spa	Little John Marina	DNR10	38°01'39.8"	76°32'37.9"	410.841.6497	134 Sherwood Forest Rd	Annapolis	0	
Severn	Spa	Annapolis Yacht Club	COA7	38°58'37.7"	76°29'05.7"	410.263.9279	2 Compromise St	Annapolis	75	www.annapolisyac.com
Severn	Lake Ogleton	Eastport Yacht Club	M323			410.267.9549	317 First St	Annapolis		www.eastportyc.org
Severn	Clements	Bay Ridge Civic Association Association Marina	M191			410.991.3184	80 East Lake Dr	Annapolis	116	www.bayridge.org
Chesapeake Bay	Fishing	Saefern Yacht Club	M472			1699 Saefern Way		Annapolis	150	www.saefern.org
Chesapeake Bay	Oyster	Arundel OTB Cym	195	38°55'08.6"	76°27'48.9"	443.253.0596	PO Box 4665	Annapolis	12	www.arundelotb.org
South	Duwall	Oyster Harbor Ramp	188	38°55'33.6"	76°27'56.0"	410.280.8999	PO Box 3174	Annapolis	0	www.ovsterharbor.org
South	Ramsay Lake	Fishing Creek Farms Cym	183	38°55'38.9"	76°28'47.0"		1222 Cherry Tree Ln	Annapolis	26	www.fishingcreekfarm.org
West	Parrish	South River Marina	205	38°54'02.7"	76°30'35.6"	410.798.6060	1061 Turkey Point Rd	Edgewater	48	www.southrivermarina.com/home2.html
West	River Direct	Parrish Creek Marina	224	38°50'30.7"	76°30'43.9"	410.867.9550	1442 Ford Rd	Shady Side	141	www.clarkslandng.com
West	River Direct	Chalk Point Marine	246	38°50'10.3"	76°32'23.0"	410.991.9660	4916 W Chalk Point Rd	West River	30	www.chalkpointmarinewestriver.com
West	River Direct	Pirate's Cove Marina	233	38°50'35.2"	76°32'20.1"	410.867.3600	4781 Riverside Dr	Galesville	86	www.piratescovemd.com/marina.html
West	Tenthouse	Hartge Yacht Yard	226	38°50'53.2"	76°32'36.3"	410.867.2188	4701 Woodfield Rd	Galesville	20	www.hartgeyard.com

A.2 Vessel Population Data

Table A.2.1: DNR Registered Boat Count by Zip Code and Size

Zip	Under_16_Feet	16_to_Under_26_Feet	26_to_Under_40_Feet	Over_40_Feet	Total_Registered_Boats_Per_Zip
20711	58	104	23	9	194
20714	7	5	5	0	17
20724	24	40	5	2	71
20733	62	109	26	7	204
20751	124	144	62	8	338
20754	6	7	7	0	20
20755	4	13	0	0	17
20758	16	26	10	2	54
20764	137	202	78	10	427
20776	53	76	22	8	159
20778	89	103	50	8	250
20779	51	66	40	9	166
20794	11	19	0	0	30
21012	451	545	276	47	1,319
21032	232	342	140	22	736
21035	123	172	78	9	382
21037	686	880	426	69	2,061
21054	74	116	31	7	228
21056	10	20	9	2	41
21060	319	443	116	17	895
21061	246	330	53	4	633
21076	61	59	13	3	136
21077	2	1	1	0	4
21090	86	106	25	3	220
21106	14	12	7	5	38
21108	141	214	75	9	439
21113	69	92	28	4	193
21114	96	102	55	1	254
21122	1,344	1,718	584	80	3,726
21123	6	5	3	1	15
21140	83	133	74	8	298
21144	163	199	33	8	403
21146	514	884	404	47	1,849
21225	69	86	4	2	161
21226	57	107	36	5	205
21240	0	2	1	1	4
21401	579	804	410	98	1,891
21402	11	13	9	1	34
21403	689	783	571	156	2,199
21404	13	8	2	4	27
21405	25	62	27	7	121
21409	377	572	251	53	1,253
TOTALS	7,182	9,724	4,070	736	21,712

Table A.2.2: Documented Boats by Zip Code⁶

Zip	Under_16_Feet	16_to_Under_26_Feet	26_to_Under_40_Feet	Over_40_Feet	Total_Documented_Per_Zip
20711	0	0	19	9	28
20714	0	1	20	17	38
20724	0	1	6	1	8
20733	0	1	25	10	36
20751	0	0	46	22	68
20754	0	1	39	7	47
20755	0	0	0	0	0
20758	0	1	10	8	19
20764	0	1	55	17	73
20776	0	1	18	9	28
20778	0	2	39	11	52
20779	0	1	41	16	58
20794	0	0	7	2	9
21012	0	3	191	63	257
21032	0	4	114	44	162
21035	0	1	63	19	83
21037	0	6	329	99	434
21054	0	0	28	20	48
21056	0	0	4	5	9
21060	0	4	56	53	113
21061	0	2	42	9	53
21076	0	1	14	9	24
21077	0	0	0	0	0
21090	0	0	15	2	17
21106	0	0	8	5	13
21108	0	2	67	16	85
21113	0	0	31	6	37
21114	0	3	70	14	87
21122	0	5	400	107	512
21123	0	0	4	2	6
21140	0	0	45	16	61
21144	0	1	38	11	50
21146	0	8	292	87	387
21225	0	0	6	3	9
21226	0	3	31	166	200
21240	0	0	0	0	0
21401	0	14	520	209	743
21402	0	0	8	5	13
21403	0	15	533	274	822
21404	0	1	5	4	10
21405	0	3	21	8	32
21409	0	5	173	81	259
TOTAL	0	91	3,433	1,466	4,990

Table A.2.3: Maryland Transient Vessels⁷

Length (in feet)	Transients in MD
Power Boats \leq 29	4,168
Power Boats 30 – 39	8,584
Power Boats 40 – 49	4,773
Power Boats 50 – 59	1,294
Power Boats 60+	475
Sailboats \leq 39	4,714
Sailboats 40+	2,149
TOTAL	26,157