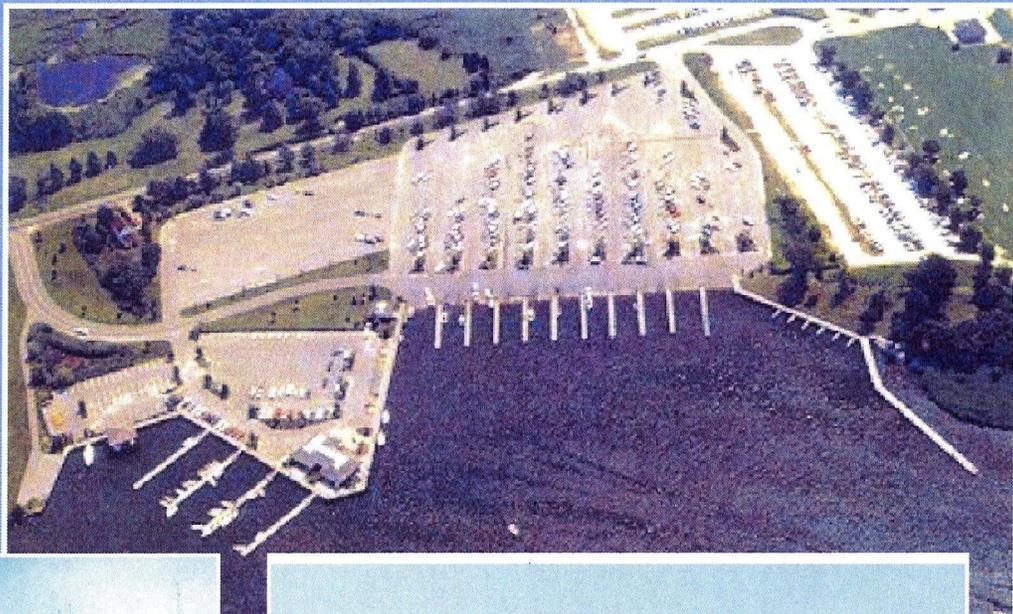


Maryland's Recreational Boating and Infrastructure Plan:

A Comprehensive Assessment of Recreational Boating Facilities and Recommendations for Ecologically Sound and Cost-Effective Project Selection



Prepared for:
The Maryland Department of
Natural Resources
June, 2004
(Updated by DNR June, 2005)

Prepared by:
The University of Baltimore and
Parsons Brinckerhoff
Quade & Douglas, Inc.

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EXECUTIVE SUMMARY

Executive Summary

Recreational boating is an extremely popular activity in Maryland. In a statewide survey designed to identify participation rates in over 83 recreational activities during 2002, power boating was ranked as the 12th highest statewide and participation was substantially higher in Southern Maryland (8th) and the Eastern Shore (7th). Passive boating (e.g., canoeing, kayaking) and sailing also attracted significant participation among Marylanders. Boaters traveling from neighboring states are thought to increase the numbers of those recreating on Maryland waterways substantially. In-state spending by owners of boats registered in Maryland is estimated to be over \$1.9 billion annually, making boating a major economic factor. Spending by out-of-state boaters (currently no estimate available) is expected to increase that figure considerably.

Due to the importance of boating in Maryland and the demand for water access and facilities by the boating public, a survey and study were undertaken to assess needs and evaluate the shoreline's ability to accommodate these needs. Detailed results and recommendations are included in the body of this report. Some of the major trends and findings include:

- Maryland has over 200,000 (registered and documented) boats.
- The majority (71%) of boats registered in Maryland are small, trailered boats. The strongest facility needs identified by trailered boat owners were launch ramps, parking, and restroom facilities. Over 50% of trailered boat owners reported a need for these additional facilities.
- Over a fourth (29%) of the boats registered in Maryland are larger, non-trailered boats. More than 50% of non-trailered boat owners surveyed reported a need for additional slips and restroom facilities. More than 40% reported a need for additional fuel access and transient moorings.
- Boat owners are trading up for larger boats. This is creating a need for retrofits and upgrades at existing public boating facilities. Bigger trailered boats pulled by bigger vehicles (SUVs/trucks) require larger parking areas and ramp adjustments. Bigger non-trailered boats require longer, wider, and deeper slips as well as expanded services (e.g., utilities) to accommodate longer stays and further travel distances.
- Erosion and the siltation of shoreline areas is a growing concern. Facility managers indicated a substantial need for access channel dredging, with the highest needs correlating with the most developed/populated areas: Central Region (67%); Southern Region (46%); Eastern Region (35%); Western Region (8%). Additional dredging needs for docks and piers, slips, and launch ramps were also reported. Thirty-five percent (35%) of boaters surveyed indicated a concern with shallow channels/water depth.
- The Southern and Central regions have the highest number of boat owners. Anne Arundel County (located in the Southern Region) has the largest number of registered boat owners (over 24,000). Baltimore County (located in the Central Region) has the second highest with over 16,000 registered boat owners, followed by Montgomery (over 8,000) and Harford, Prince George's, St. Mary's (over 7,000).

- Maryland is a small state but has an extensive shoreline – over 3,100 miles. Much of the shoreline is not conducive to development of public boating facilities due to the terrain or presence of sensitive resources.
- The majority of boating facilities were developed 20, 30 or 40 years ago, before the establishment of the state's Critical Areas Law and before the decline in aquatic resources and degradation of water quality required more stringent regulation of shoreline alterations. Today, it is more challenging to find suitable sites for new facilities, and the existing facilities are of an age where extensive upgrades are commonly needed.
- While there appears to be a need for additional slips throughout the state, slips are fairly well distributed among the regions. There are a surprisingly high number of boat owners who keep their boats in the water at a private residence, indicating a larger than expected (and apparently growing) number of private piers. The largest need for slips may be in popular destination areas to accommodate in-state and out-of-state transient boaters.
- The distribution of boat ramps is not well correlated with the distribution of trailered boat owners. However, trailered boat owners reported a willingness to travel significant distances to launch their boats, so this is not an overwhelming concern. There does appear to be a strong need for additional ramps in both the Southern and Central regions (where the most boat owners live) where the ratio is 650 trailered boats per ramp and 1,099 trailered boats per ramp respectively (as compared to 352/ramp in the Western and 167/ramp in the Eastern Regions).
- There is a high concentration of facilities for non-trailered boats in northeastern Anne Arundel County and southeastern Baltimore County. The distance across the Bay is narrow at this point (about six miles) resulting in congestion in this section of the Bay on both the western shore where the majority of large boats are homeported and the eastern shore, which is a popular boating destination. Additional public access slips and expanded (size) slips as well as additional moorings would serve the needs of the larger vessels frequenting these areas.
- There are limited opportunities for development of new large boating facilities, although such facilities located outside the highly congested areas could help alleviate some of the concerns by boaters regarding crowding and related safety issues. Since slips are a significant need in three of the four regions, expansion and upgrades at existing public marine facilities should be encouraged. Locations for public moorings should be targeted since they are a low-cost way to provide increased capacity while limiting environmental impacts.
- There is more flexibility in siting public launch ramps. Areas that are well served by local infrastructure and outside the most congested areas should be targeted for new ramp facilities, ideally having multiple ramps at one location. Since boaters are willing to travel over 16 miles or more to launch their boats, strategic placement of new launch ramps can help alleviate congestion in the heavily used areas. In order to travel a significant distance, boaters need to be confident that they will be accommodated when they arrive. A substantial new public boating facility, with ample parking, restrooms and other services, placed in the Southern and Central regions would serve the needs of trailered boat owners.

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- Restroom facilities were a reported need by more than 50% of both trailered and non-trailered boaters. Over 40% of non-trailered boaters reported a need for additional sewage pump-out stations. With water quality a top concern among boaters and Maryland residents in general, providing opportunity for boaters to access restroom and sewage disposal facilities is essential. All avenues should be explored to fund and place restroom facilities, dump stations, and pump-outs at locations convenient to boaters.
- To meet the high demand for boating facilities and services, Maryland should increase existing levels of funding. The state should also evaluate the existing formula for distributing gas tax revenues to determine whether an increase in the percentage of fuel tax going to boating projects is warranted. An increase from the existing 0.3% to 1.0% would translate to about an additional \$3 million in funding for boating.
- While Maryland has dedicated fund sources for public boating facility projects, the annual demand for projects exceeds the annual supply of funds. A more extensive use of GIS data is recommended to help prioritize projects based on established need and site suitability. With the growing participation in passive boating (canoes/kayaks), the Waterway Improvement Fund should be expanded to allow for broader funding of projects for this segment of the boating population. At present, only motor fuel and boating excise taxes go into the Fund, which are primarily used for projects that benefit powered vessels. To address the infrastructure needs for passive boaters, consideration should be given to converting the sales tax on paddleboats to an excise tax, the revenues of which can be directed to the Waterway Improvement Fund and used to develop the boating access infrastructure needed for this segment of the boating public.
- With a large transient boating population and commensurate need for transient facilities, Maryland should take greater advantage of funding available through the federal Boating Infrastructure Grant program. A dedicated staff person should be assigned the responsibility of identifying potential projects and working with project sponsors to develop competitive proposals.

In summary, boating is an important part of the lifestyle and economy in Maryland. There are substantial new and on-going needs with regard to boating facilities. As the state's population continues to increase, the demand for boating facilities and access will also grow. Existing facilities are aging and in need of continual maintenance and substantial upgrades. New facilities for trailered and non-trailered boats located outside the heavily concentrated area in the central part of the state would improve boating conditions and safety. Funding for developing and maintaining the infrastructure for public boating access should be increased to address the infrastructure needs referenced above. As described in the body of this report, the Waterway Improvement Program has substantial data on demand and site suitability and should further incorporate GIS analysis into project review to prioritize and target project funding.

INTRODUCTION

Introduction

In 2000, the Maryland Department of Natural Resources (DNR) initiated a study to assess statewide recreational boating facility needs to respond to the new U.S. Fish and Wildlife Service Boating Infrastructure Grant (BIG) program, to act strategically in awarding grants from the Waterway Improvement Fund (WIF), and to help target funding to projects that best meet boater needs and to ensure compatibility with the department's stewardship of natural resources.

DNR designated the University of Baltimore (UB) as the primary contractor for the study. In 2002, UB designed and administered a boater and boating facility survey (public and privately owned) to identify the demand for various boating facility improvements. UB then compiled the data and summarized the results in a report entitled *Maryland Waterway Use: A Survey of Boaters and Marina Owner/Operators*. UB contracted with Parsons Brinckerhoff Quade and Douglas, Inc. (PB) to review and provide input into the survey instrument; review the survey results; identify key "indicators" unique to project categories that should be considered during review of project proposals; identify GIS data layers for use in project review; formulate recommendations based on the survey results and existing data and information; develop an improved process for DNR staff to utilize data and maps to assess proposed projects from both a demand and an environmental impact perspective; and produce this report.

The purpose of the study was to develop a coherent and practical strategy to meet the infrastructure and capital needs of the recreational boating industry in the State of Maryland, while addressing the goals of various programs to restore Maryland bays and waterways. The goal of the study was to develop a Boating and Waterway Plan that will identify and prioritize facility needs of the boating public, achieve consistency with the State's goals to improve boating access on Maryland waterways, and result in a more effective use of limited funding under the WIF and BIG programs.

The following objectives were established to achieve the study's goals:

1. Provide an overview and comparison of where the State stands with regard to existing boating infrastructure and boater demand for new facilities based on a survey of boaters and boating facilities across the State.
2. Determine how the UB survey data can best be utilized in a GIS and/or database format and be incorporated into both the statewide Waterway Plan and analysis of funding requests for waterway projects.
3. Assess the existing process used by DNR to assess Waterway Improvement Fund (WIF) and Boating Infrastructure Grant (BIG) grant applications and make recommendations to improve this process in a manner consistent with program goals and State policies. This process should produce project selections that meet boating facility needs, support the Priority Places Strategy (formally Smart Growth) initiatives, and facilitate waterway and resource restoration goals.
4. Develop and apply strategies for improving the integration and effectiveness of existing GIS data layers, database sources, indicators and criteria to determine the types of projects and/or geographic areas that are most and least suitable for facility

improvements. Provide guidance that will allow DNR staff to prepare future updates of this analysis as part of the application review process. Also, note any outdated or missing data layers that could impair DNR's ability to conduct more meaningful analyses of waterway project proposals.

5. Develop recommendations that will improve project evaluation and prioritization for funding under the WIF and BIG programs. The recommendations would provide DNR with a strategy that will meet high-priority facility needs of the boating public, achieve consistency with the State's goals to improve its waterways, and result in a more effective use of limited funding under the WIF and BIG programs.

EXISTING CONDITIONS

Existing Conditions

A. Overview

The Chesapeake Bay, once dominated by commercial shipping and fisheries, has become increasingly important to recreational boaters. Recreational boating is a relatively recent phenomenon, beginning after World War II and spreading rapidly to become an important industry. Maryland's geography is very conducive to boating with over 3,100 miles of coastal shoreline along the Chesapeake and Coastal bays.

This section characterizes conditions for recreational boating in Maryland by describing boater populations and existing facilities. Boaters and facilities in this report are most often referenced in regard to four regions, designated by DNR, and described below:

- **Southern Region** (Anne Arundel, Calvert, Charles, Prince George's, and St. Mary's counties) – The waters of the Chesapeake Bay and the Patuxent and Potomac rivers are popular with boaters as well as the Severn and West rivers. Popular boating destinations include Annapolis, Chesapeake Beach, Herring Bay, and Solomons.
- **Western Region** (Allegany, Frederick, Garrett, and Washington counties) – Western Maryland contains picturesque mountains for hiking and white water rapids excellent for rafting. Deep Creek Lake, the State's biggest manmade body of water and a popular boating destination, offers amenities for boaters and water skiers.
- **Central Region** (Baltimore City, and Baltimore, Carroll, Cecil, Harford, Howard, and Montgomery counties) – The Central region offers water recreation on the Susquehanna River and the C&D Canal, Patapsco River, and local reservoirs. The Baltimore Harbor, one of the nation's oldest seaports is now a major recreational boating center. Other popular boating destinations include Chesapeake City and Havre de Grace.
- **Eastern Region** (Caroline, Dorchester, Kent, Queen Anne's, Talbot, Somerset, Wicomico, and Worcester counties) – The Eastern Shore is in the Atlantic Coastal Plain Region between the Chesapeake Bay and the Atlantic Ocean. This region contains several major waterway attractions: Ocean City (with 10 miles of beaches and boardwalk), Assateague Island National Seashore (with a 37-mile long barrier island south of Ocean City), Blackwater National Wildlife Refuge, and Tilghman Island (home to many of Chesapeake Bay's remaining skipjacks).¹ Popular boating destinations include Rock Hall, Cambridge, Kent Island, St. Michael's, Crisfield, and Ocean City.

Boaters

Boating, both commercial and recreational, is a major activity in Maryland and a major factor in the economic health of the State. Boaters are required to register every other year through the DNR in 2003, 181,117 boats were registered in the categories and regions, as shown in **Table 1**.

¹ <http://www.smcps.k12.md.us/wmes/>, 8/6/03.

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Table 1: Maryland Boat Registrations (2003)

Region	Trailerred Boats	Non-Trailerred Boats	Total
Southern	49,375	19,011	68,386
Western	13,025	2,608	15,633
Central	47,265	17,329	64,594
Eastern	22,667	9,837	32,504
Total	132,332	48,785	181,117

Note: For the purpose of this study, trailerred boaters are registrants who indicate they trailer their boats on the DNR boat licensing form. The trailerred and non-trailerred categories do not imply a certain size of boat. The total number of boats in Maryland in 2003 was reported by DNR to be 201,564. This total includes boats registered in Maryland but owned by people in other states and documented boats. The total in the above chart shows only registered boats owned by people living in Maryland counties.

Nationally, Maryland ranks 26th in the number of recreational boat registrations. Almost half (43%) of the registered and documented boats in Maryland are homeported in Anne Arundel and Baltimore counties, and the majority of boaters travel only a short distance (27% travel less than 5 miles; 30% travel 5-10 miles) on average trips. This makes for periodic congested conditions in the central section of Maryland's portion of the Chesapeake Bay.

In addition to the above, out-of-state boaters use Maryland's waterways and boating facilities. Out-of-state boaters generally fall into three classifications: 1) *snowbirds*, or eastern seaboard boaters traveling north and south and through the Intracoastal Waterway, 2) *cruisers*, for whom the Chesapeake Bay and surrounding waters are a destination, and 3) *day-sailors*, boats homeported in neighboring states that regularly use Maryland facilities. In 2001, DNR attempted to estimate the number and frequency of out-of-state boaters using Maryland facilities.² Respondents indicated that most out-of-state boaters visited facilities during the summer months, were predominantly from Delaware, Pennsylvania and Virginia, and were most likely to be using boats between 31 and 40 feet in length.

Data reports by the U.S. Fish and Wildlife Service provides another indicator of waterway usage by out-of-state residents.³ Their *Maryland State Report* indicates that 35% of all anglers were from out-of-state.

Boaters in Maryland are important contributors to the State's economy. In 2003, the Maryland Sea Grant Extension Program updated a previously performed study on the economic impact of boating in the state to include activity through 2002.⁴ It found that approximately every eight (8) boats registered in Maryland leads to a full-time job somewhere in the state's economy and each boat contributes almost \$7,000 a year to the state's economy. In 2001, the Gross State Product for Maryland was \$195 billion (Bureau of Economic Analysis) with boating contributing \$1.4 billion.⁵ Similar sized "industries" include Agriculture (\$1.8 billion), Printing and Publishing

² Maryland DNR, *Out-of-State Boater Survey*, Schaefer Center for Public Policy, March, 2001

³ U.S. Fish and Wildlife Service, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*, <http://fa.r9.fws.gov/surveys/surveys.html>.

⁴ Lipton, Douglas W; *Economic Impact of Maryland Boating Update: 2003*, Maryland Sea Grant

⁵ Gross State Product is the value added in production by the labor and property located in a state. This measurement is different than nominal spending which is summarized in Table 2.

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(\$1.5 billion), and Electronic Equipment (\$1.1 billion). These figures do not include the estimated \$154 million spent by transient boaters, those registered in other states that visit Maryland waters, make to the economy (Source: Douglas W. Lipton, "Transient Boating in Maryland: The Economic Impact of Out-of-State Boater Spending" (May 2005).

Table 2 shows total nominal spending, including new and brokered used boat purchases by Maryland's recreational boaters, increased to over \$2 billion in 2002. These figures include boaters who live out-of-state, but have their boats registered in Maryland. A small portion (6%) of the spending by out-of-state boaters occurs in the boater's home state and is not included in the impact analysis of boater spending on Maryland's economy.

Table 2: Total Recreational Boat Spending

	2000	2001	2002
Total Spending	\$1,999,045,692	\$1,968,030,325	\$2,045,600,049
Spending in Maryland	\$1,887,748,346	\$1,858,316,334	\$1,932,932,519

Source: Douglas W. Lipton, "Economic Impact of Maryland Boating Update: 2002" (September 2003).

Boater registration data does not fully reflect the number of non-motorized watercraft in Maryland. Kayaks, canoes and other inflatable craft are not required to register. Boaters have been required to register motorized personal watercraft since 1998. These small watercraft have added to the demand for waterside facilities and introduced new congestion factors to popular boating locations while contributing to recreational opportunities and the related economy in the state.

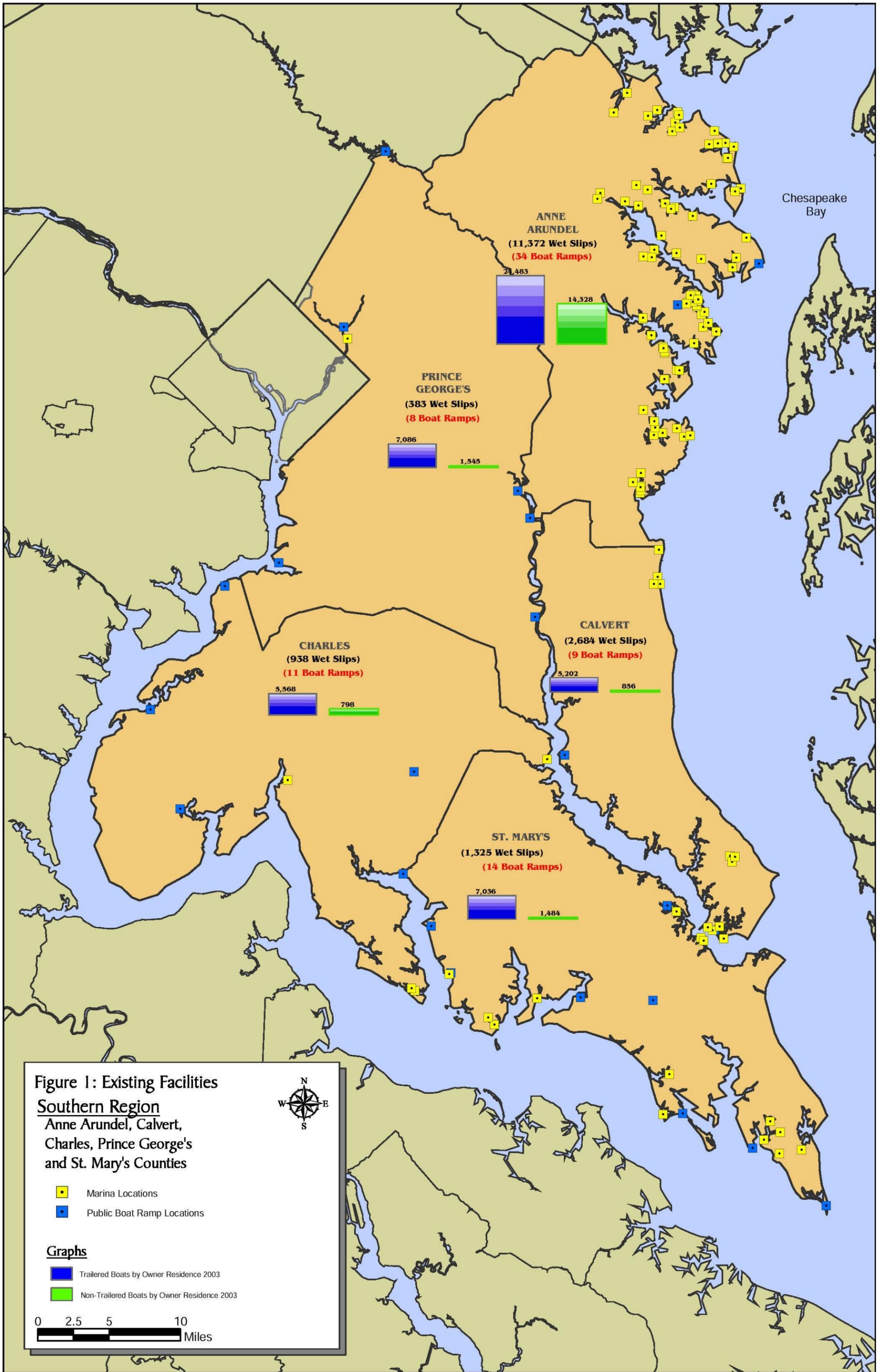
Facilities

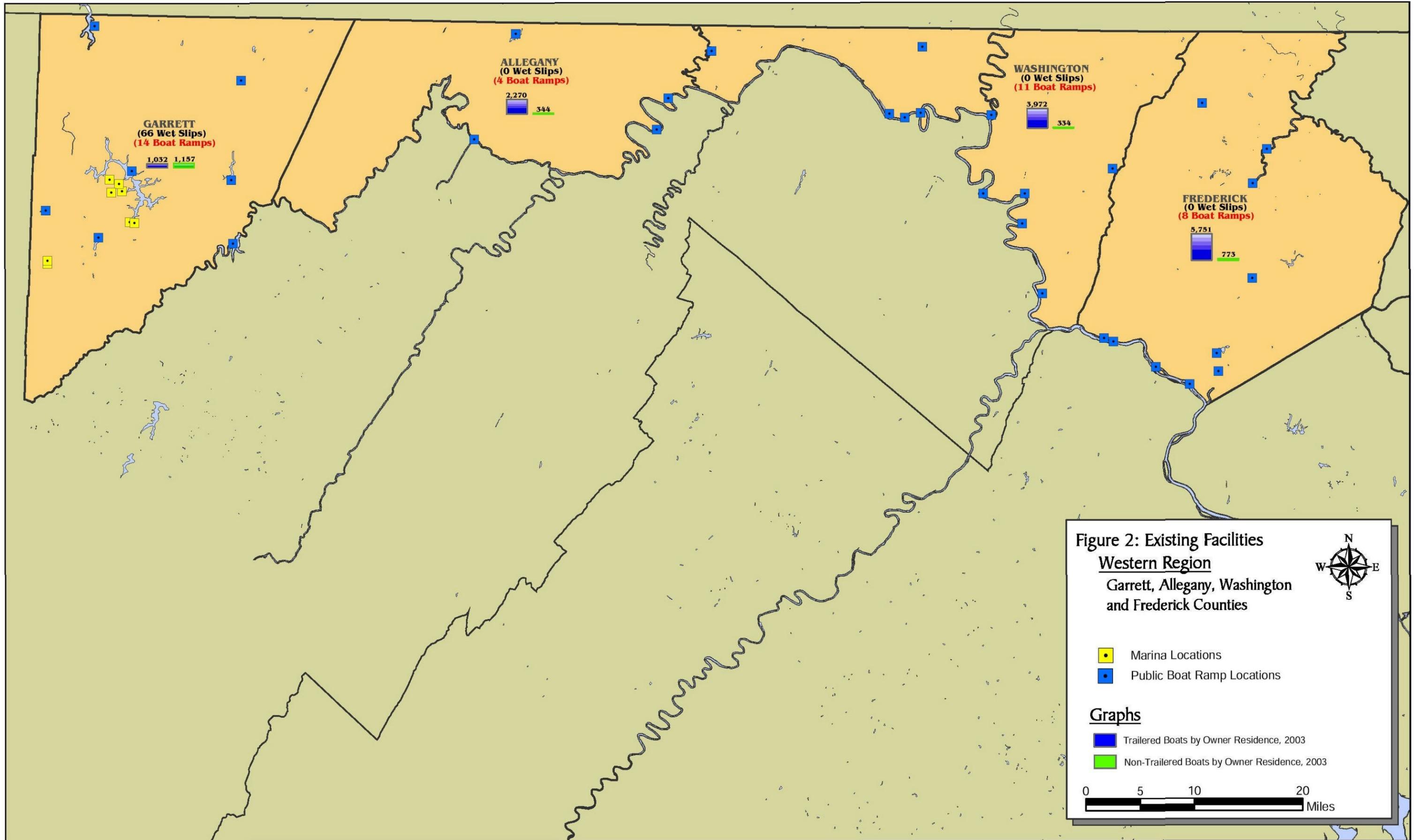
According to the DNR database, Maryland has 628 boating facilities that provide over 43,000 wet slips at public and private facilities throughout the state. In addition, there are about 292 public launch ramps that primarily serve trailered boat owners. Marinas, launch ramps, and transient tie-up facilities are the three key facilities supporting boaters. Other facilities such as restrooms, jetties, fuel docks, pump-out stations, utilities, and recycling facilities may be provided in conjunction with either of these key facilities, but are rarely provided independently.

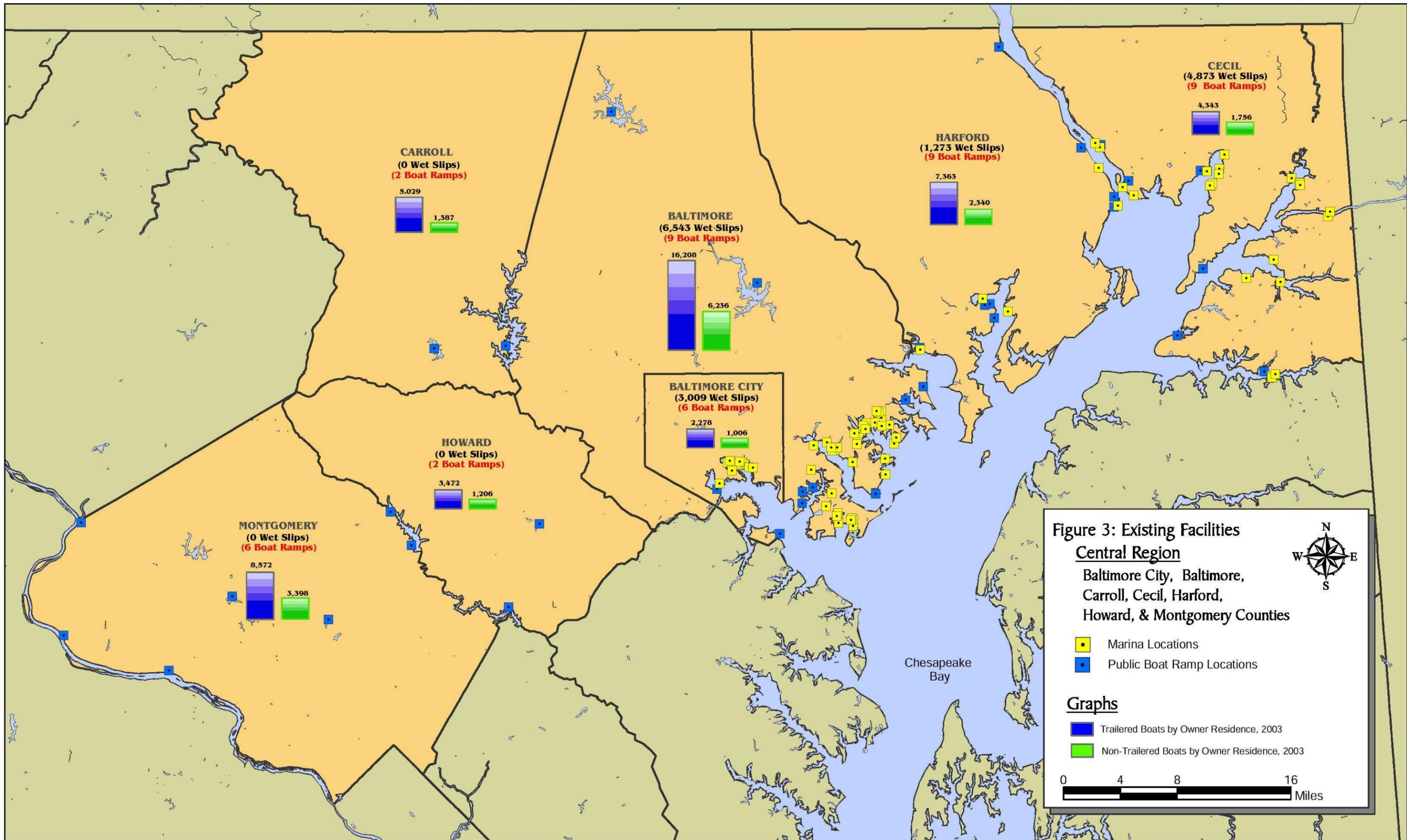
Figures 1 through 4 show the location of existing marinas, wet slips, and launch ramps in each region. Marinas shown are under both public and private ownership. Launch ramp locations are shown only for public launches. (Existing data bases do not allow demonstration of privately-owned launches and accurate coordinates were not available for 100% of the public launch sites.)

In general, both public and private boating facilities in Maryland were built in response to a burgeoning recreational boating industry following World War II. Many of the facilities are over 30 years old and have reached the end of their life cycle. They require refurbishment and renovation just to meet new building codes and requirements.

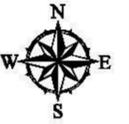
To more fully understand the nature of facilities in each region, the number and distribution of wet slips must be examined. The number of reported wet slips in Maryland is shown on previous Figures 1 through 4 for each county. **Table 3** indicates the distribution of wet slips correlates well with the number of non-trailered registered boats in each region.







**Figure 4: Existing Facilities
Eastern Region**

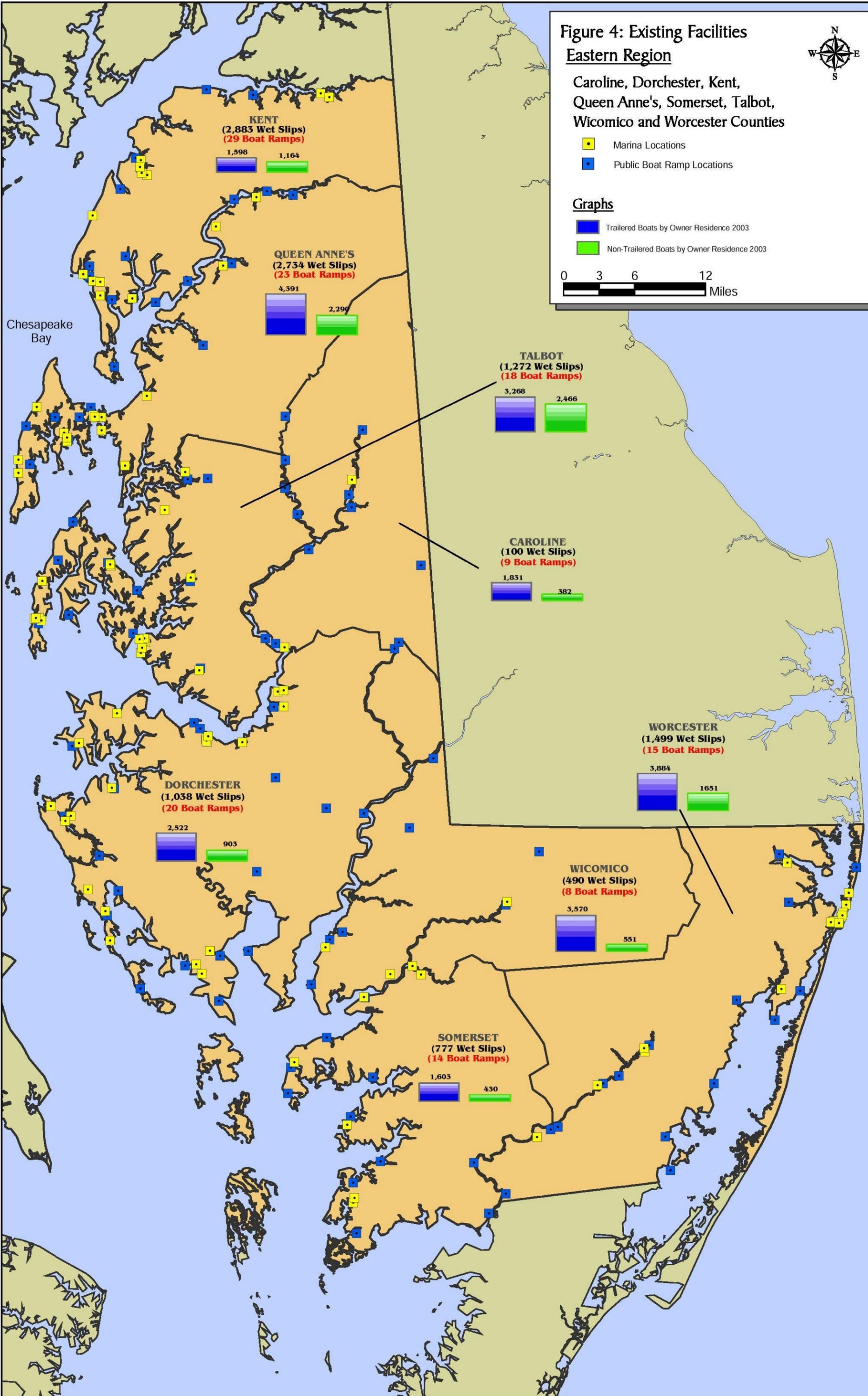
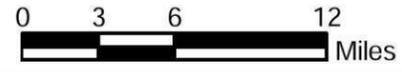


Caroline, Dorchester, Kent,
Queen Anne's, Somerset, Talbot,
Wicomico and Worcester Counties

- Marina Locations
- Public Boat Ramp Locations

Graphs

- Trailered Boats by Owner Residence 2003
- Non-Trailered Boats by Owner Residence 2003



Chesapeake Bay

Table 3: Wet Slips

Region	Wet Slips	Percent of Total	Non-trailerred Boats	Percent of Total
Southern	16,702	38.6%	19,011	39.0%
Western	66	0.2%	2,608	5.3%
Central	15,698	36.2%	17,329	35.5%
Eastern	10,793	25.0%	9,837	20.2%
Total	43,259	100.0%	48,785	100.0%

A substantial number of non-trailerred boat owners do not rely solely on marina wet slips for moorage; rather, they have personal moorings and docks at their shoreside residences. Based on responses from the UB Maryland Waterway Use Survey (2003), these personal moorages may constitute about 23,500 “wet slips” additional to those provided in marinas. The Maryland Department of Environment reports that for the last 10 years approximately 1,000 permit applications have been received annually for new, expanded or renovated personal docks.⁶ Boaters with personal moorages still have a demand for moorings and slips when cruising overnight or longer.

Marinas and public moorings/slips are a primary provider of transient moorage/tie-up space to both in and out-of-state boaters. The exact number of transient slips available to boaters varies depending on boating facility occupancy and occupancy is driven by seasonal demand. However, larger boats and a trend to travel longer distances have increased the need for transient moorage and tie-up facilities.

Launch ramps are also key facilities for boat owners. Launch ramps may be provided in association with a marina, in conjunction with a park or recreation site, or as singular facilities essentially unassociated with other facilities. They are under either public or private ownership. The previous data demonstrate that, historically, marinas have responded with wet slips generally in proportion to the demand of non-trailerred boats in their regions. It is more difficult to find similar correlations for launch ramps and trailerred boats, as shown in **Table 4**.

Table 4: Launch Ramps

Region	Launch Ramps	Percent of Total	Trailerred Boats	Percent of Total
Southern	76	26.0%	49,375	37.3%
Western	37	12.7%	13,025	9.8%
Central	43	14.7%	47,265	35.7%
Eastern	136	46.6%	22,667	17.2%
Total	292	100.0%	13,2332	100.0%

This lack of correlation is not surprising considering that 47% of trailerred boat owners currently drive over 16 miles to a launch facility and do not feel restricted by doing so. The UB *Maryland Waterway Use Survey* (2003) also found that 78% of respondents would be willing to drive over

⁶ Rick Ayella. Chief, Eastern Region, Wetlands and Waterways Program, Maryland Department of the Environment, 2004.

16 miles to launch their boat.⁷ Many trailered boat owners appreciate the flexibility afforded by a trailered boat; they can change fishing spots, scenery, or company by varying their launch ramp. The Eastern Shore is a particularly desirable area for boating, and with an extensive amount of shoreline, flat topography, and less dense development, there has been more opportunity for placement of ramps in this region.

Congestion

Maryland's most popular boating spots result from a confluence of population, geography and resource attractiveness. Traditionally, in Maryland these factors have resulted in high use of waterways in the following areas:

- **Southern Region** – Severn River, South and West rivers, Selby Bay, Herring Bay, Patuxent River
- **Western Region** – Deep Creek Lake
- **Central Region** – Baltimore Inner Harbor, Patapsco River, Middle River, C&D Canal, and Lower Susquehanna River
- **Eastern Region** – Swan Creek, Choptank River, Eastern Bay, Tred Avon River, Ocean City and the Coastal Bays.

Over the years, rapid residential shoreside development and the increase in permanent and seasonal residents have placed intense demands, especially during the summer months, on the above areas. Boat traffic has been increasing and the types of vessels and activity patterns have become more varied. While Maryland has ample miles of shoreline and acres of water, much of the boating activity is clustered around the portion of the Chesapeake Bay adjacent to Anne Arundel County on both the western and eastern shores. There is also a great deal of boating in the vicinity of Ocean City and the northern Coastal Bays as well as Solomons Island. The DNR regulates boat speeds in most congested areas. All major tributary systems have some restrictions, which are marked with buoys and/or signs.

Waterway related congestion includes upland support facilities such as launch ramps, parking, and pedestrian access. All of these support facilities are expanding in their requirements for land due to larger boats, disability access, and proliferation of carry-down craft such as kayaks and canoes.

Boating Activities

A survey of Maryland residents to determine the level of participation in a variety of recreational activities during 2002 showed power boating and fishing from a boat to be among the top 15

⁷ Department of Natural Resources, *Maryland Waterway Use: A Survey of Boaters and Marina Owners/Operators*, 2003, Schaefer Center for Public Policy, University of Baltimore.

recreational pursuits (out of 83 activities listed) undertaken by residents statewide, with 12.1% and 12.0% of individuals participating respectively.⁸

In a companion survey that asked Maryland residents about activities engaged in while visiting a State Park or State Natural Resource Land, results indicate that boating is a primary reason for residents' visits to State lands and that State facilities provide key access to paddlers and sailors, as shown in **Table 5**.

Table 5: Boating Activities at State Parks and Natural Resource Areas in Maryland

(Selected results regarding boating activities on State lands)

Region	Activity	Percent	Region	Activity	Percent
Southern	Fishing	21.3%	Central	Fishing	32.3%
	Canoe/Kayak	19.9%		Canoe/Kayak	22.0%
	Power	19.1%		Power	24.3%
	Sail	8.5%		Sail	14.3%
Western	Fishing	25.3%	Eastern	Fishing	45.2%
	Canoe/Kayak	24.0%		Canoe/Kayak	25%
	Power	15.8%		Power	28.2%
	Sail	4.8%		Sail	16.9%

Source: Maryland Institute for Policy Analysis and Research, "State Parks and Natural Resource Areas in Maryland: A Survey of Public Opinion" (May 2003).

B. Boating Trends

Although existing conditions may not necessarily reflect industry trends, trends must be considered an "existing condition" themselves. This section examines trends in the industry and projects their implications for Maryland.

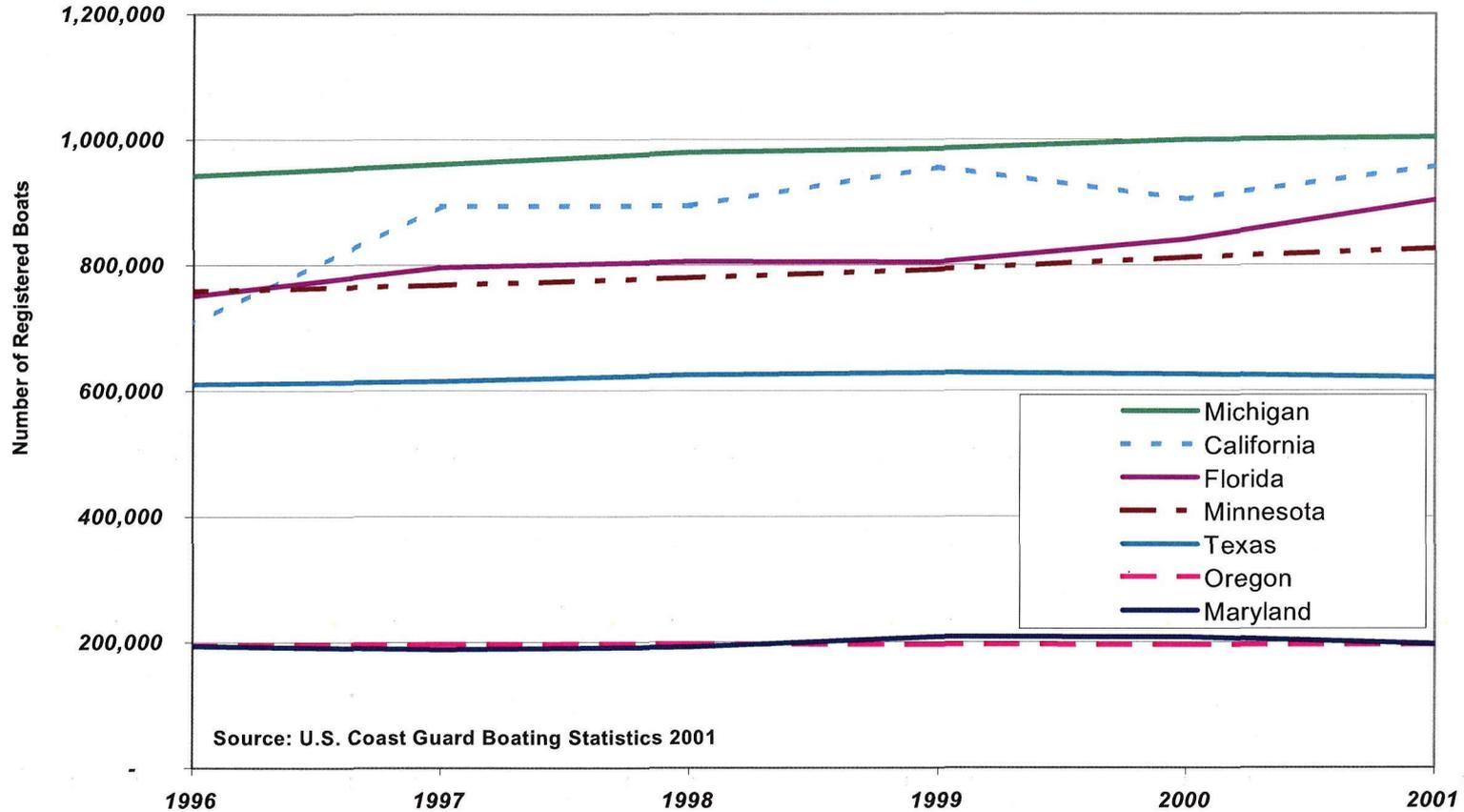
National

Recreational boating developed in the United States following World War II. By 1998, the industry had grown to one that involved 75 million Americans, over 25% of the total population. An example of this growth is in Florida, where the recreational marine industry is twice the size of the citrus industry and represents a total economic state output of over \$14.1 billion. **Figure 5** depicts national boating trends for all registered boats by selected states from 1996-2001. Each Maryland boater spends about \$7,000 annually on boating related equipment and activities. This indicates that recreational boaters in Maryland spent over \$1.9 billion on purchases of new equipment, annual boat-related expenses and trip-related expenses in 2002. These numbers are impressive considering the recreational marine industry is in its first 60 years of growth.

As a leisure activity, recreational boating is directly affected by the overall economic climate. Increases and decreases in boat registrations tend to reflect patterns in the economy as a whole. Lower loan interest rates tend to coincide with high boat sales and vice versa. Currently, the

⁸ Maryland Institute for Policy Analysis and Research, *Participation in Local Park and Recreation Activities in Maryland, A Survey of Households in Maryland and Seven Sub-Regions*, May 2003.

**Figure 5
National Boating Trends:
All Registered Boats By Selected States 1996-2001**



Maryland's Recreational Boating and Infrastructure Plan

“baby boomer” generation and reduction in fishing opportunities due to environmental restrictions are factors affecting industry demographics as well. National trends and their effects include the following:

Trend to Larger Boats

Boaters are buying larger boats, and boats over 16 feet now comprise the majority of vessels.⁹ The fastest growing boat size is from 26 feet to 39 feet; nationally, the number of registered boats in this size range grew 58% between 1996 and 2002. Therefore:

- Marinas are retrofitting existing slips to accommodate wider and longer boats, and expanding and retrofitting their facilities to meet the needs of boaters taking extended trips.
- Marinas will require utility upgrades, especially electricity. Future boats will require at least one 50-amp service and larger boats at least 100 amps or more. Cable television and internet access are becoming more important to boaters in wet-slips.
- Ramps will require wider launch lanes and parking spaces.
- Additional dredging may be required to accommodate vessels with deeper drafts.

Technology Advances

Advancing technologies in location devices such as Global Positioning Systems (GPS) and Emergency Position Indicating Radio Beacons (EPIRBs), and ever-expanding boater amenities will encourage boaters to extend their travel range.

Increasing demands on boating infrastructure and leisure time will broaden the general time span for boating-related activities. Increased activity in boating during ‘shoulder’ seasons, April through May, and September through October is already apparent. By 2010, average boat trips will be 3 to 10 days in length, and the average cruising distance will be between 15 and 30 miles per day.¹⁰

Governmental Influences

The U.S. Coast Guard’s ability to address boater safety issues has declined as a result of the events of September 11, 2001, the agency’s transfer to the Homeland Security Department, and a refocusing of resources. Greater responsibility for safety issues will fall to state and local governments.

Under the Transportation Equity Act for the 21st Century (TEA-21), States were guaranteed \$59 million as a minimum level of annual funding for boating safety programs, and may receive as much as \$71.6 million. States with approved boating safety programs that meet the participation

⁹ U.S. Coast Guard/NMMA, 2004.

¹⁰ National Association of State Boating Law Administrators, *Futures Forum on Recreational Boating, Proceedings*, 2001.

requirements in 46 U.S.C. 13102 may apply annually to the Coast Guard for their share of available funds. Maryland received \$1.9 million in 2003 under this program.

Environmental

Climatic trends and global warming will lead to receding waters on inland rivers and lakes where marinas and ramps will have to deal with poor dock access, increased dredging and facility retrofits. On the coasts and bays, water levels are expected to rise while glacial ices are melting and ocean waters expand under increasing temperatures. By the year 2100, sea-level rise is expected to affect coastal areas and cause access problems, inundation of many coastlines, and loss of shoreline development. Impact estimates vary. The Conference Statement for Chesapeake Bay at the Crossroads, October, 1996, states “along the coast of Maryland, a rise of about two feet in the next century is most likely, with a small risk that sea level will rise three or four feet.”¹¹

Environmental concerns such as air quality, fresh water availability, and habitat preservation will continue to affect boating. Boaters desire a pleasant experience with unspoiled scenery, diverse wildlife and clean water. The restoration of lakes and waterways will increase opportunities for and attract recreational boaters. (In the UB boater survey, boaters rated water quality as very important to the boating experience, giving it 4.23 on a scale of 1 to 5, with 5 being “extremely important.”)

Statewide

Figure 6 illustrates the trends in boater registration, by type, in Maryland between 1980 and 2002. Over the 20-year period covered by the data, boat registrations have remained steady. Powerboats are the predominant boat type, constituting about 95% of registered boats. **Figure 7** compares overall national with statewide boater registrations. Maryland registrations have generally been consistent with national growth trends. Nationally, registered boats increased 50.1% between 1980 and 2000; in Maryland, the increase during the same period was 48.8%.

Recent data for Maryland demonstrate trends consistent with national projections. Annual boater registrations have hovered around 200,000 over the past seven years but boat ownership is trending to larger vessels. Despite no net gain in the number of registered boats, boat sales remained strong in 2002. Based on DNR excise tax attainment figures, Maryland boat sales in fiscal year 2003 (July 1, 2002 – June 30, 2003) were \$519 million, a 5% increase over fiscal year 2002. The increase is likely due to the trend in buying larger, more expensive boats (a trend that seems to correlate with the drop in loan interest rates).

The trend to larger boats in Maryland will most likely be accompanied by higher demand for more utility capacity and amenities at boating facilities and transient slips. Upgrades to existing boating facilities will be required to accommodate larger vessels and provide expanded utility and other services. Facilities catering to trailered boats will need may require design modifications for ramps and parking. Larger boats will also require wider and deeper access

¹¹ Conference Statement: *Changing Climate, Rising Sea Level, And Chesapeake Bay: Questions And Answers from the Chesapeake Bay at the Crossroads Conference* convened by John Toll President, Washington College, October 18-19, 1996, Chestertown, Maryland.

Figure 6
 Statewide Boating Trends:
 Maryland Registered Boats 1980-2002

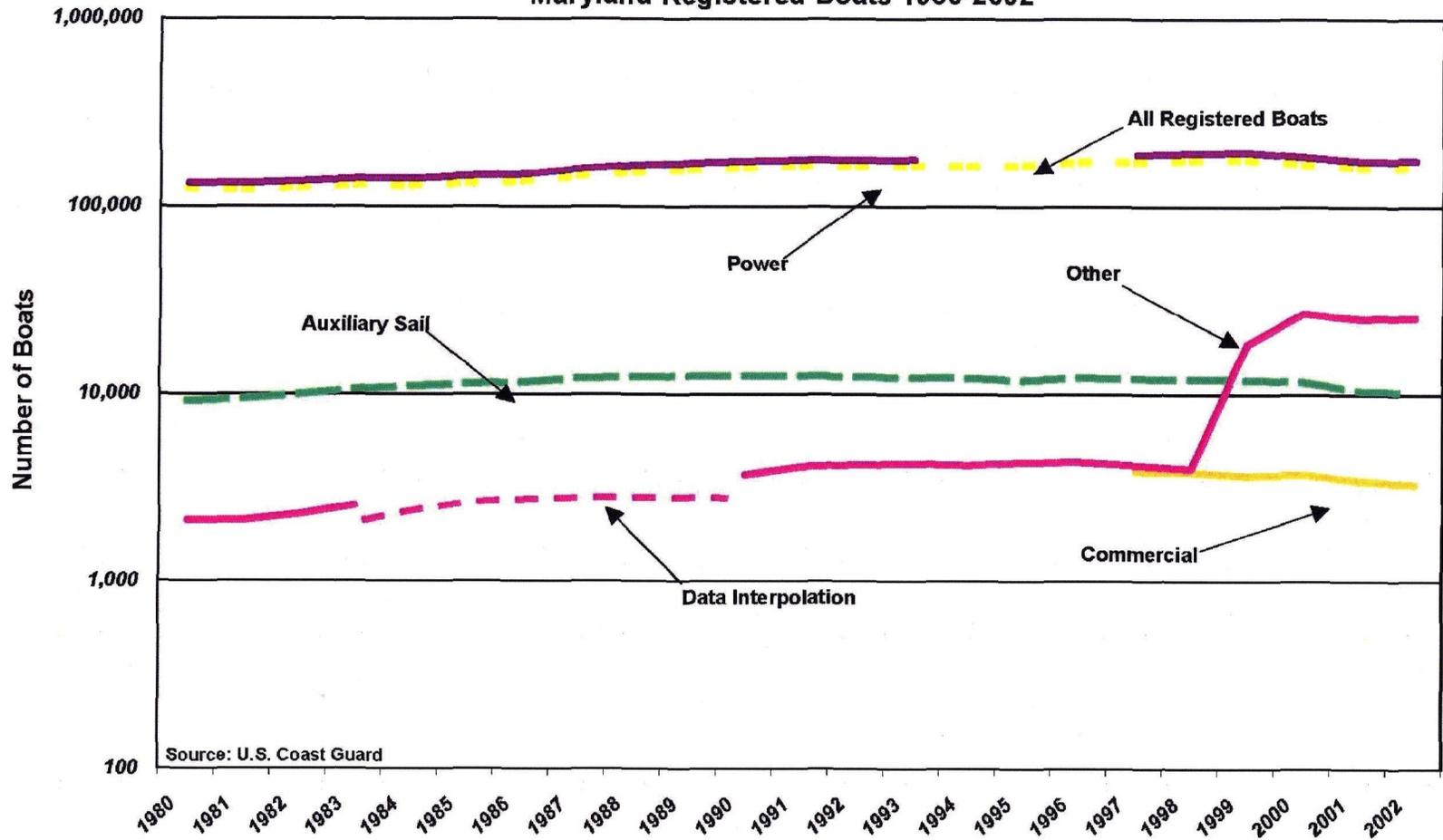
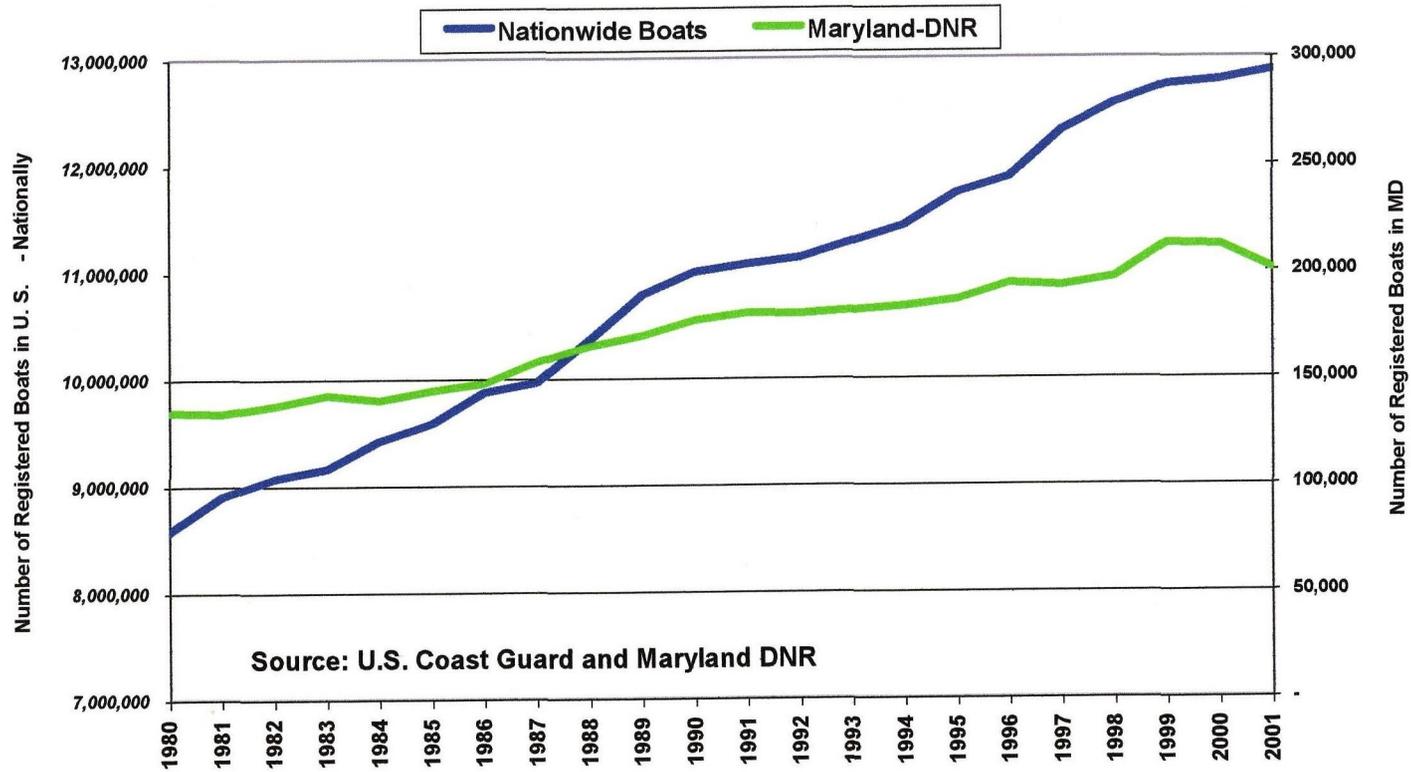


Figure 7
Comparison of Overall National and Statewide Boater Registrations
Number of Registered Boats 1980- 2001



channels. Dredging needs are likely to increase, if only to provide adequate depth to wider channels and maneuvering areas. New and expanded boating facilities will require more water space to accommodate the same number of boats. With respect to public boat ramps, these will require wider launching lanes and in some cases steeper slopes to better serve larger boats. Furthermore, parking areas may have to be modified to accommodate larger vessels and tow vehicles.

As population and household income grow in Maryland, it is anticipated that the number of boats will continue to increase leading to greater demand for boating facilities and dredging associated access channels/harbors. To meet demand, Maryland will have to use all available resources and prioritize projects based on need/demand and the waterway's ability to accommodate new or expanded facilities, while maintaining healthy ecological conditions and maintaining the quality of the boating experience.

THE BOATING ENVIRONMENT

The Boating Environment

There are several challenges to planning and developing recreational boating facilities. First, the characteristics and trends of waterway users must be identified. This data must be considered along with the expressed needs of boaters and boating facilities. These needs often differ. For instance, trailered boaters tend to focus on access provided to waterways by public launch ramps and their attendant upland facilities such as parking and restrooms. Non-trailered boaters are more likely to be concerned with slips and services provided at marinas. Boating facility owners and operators serve the needs of the boating public, but by necessity are focused on the structural integrity of their facilities and access to the waterways.

Other key considerations for boating facility plan development are environmental protection and the regulatory structure within which boating facilities must be approved. Since boating facilities are water-related structures, they are affected by an extensive federal, State and local regulatory structure.

This section briefly summarizes the information and data sources that constituted the environment for Boating Facility Plan development.

A. Survey Data

The primary database used to assist DNR in developing a plan for boating and waterways was the survey conducted by the University of Baltimore Schaefer Center for Public Policy (UB). This survey of boaters and privately/publicly owned boating facility owners and operators was conducted in the fall of 2002.¹² The survey was combined with information on national trends in boating, the economic impacts of boating in Maryland, GIS data on environmental, land use and similar factors affecting boating, and other data to produce Maryland's Recreational Boating and Infrastructure Plan. The Plan is designed to be used by DNR and others as a *tool* for further decision-making regarding the funding of individual projects and improvements.

Since the UB survey was the primary database used for the development of this Waterway Plan, its findings are summarized briefly here. The entire survey report is published separately.

Boater Survey and Results

UB surveyed boat owners who had used Maryland waterways within the past two years. A total of 1,550 surveys were completed from a sample of 9,318 boat owners who supplied telephone information on their boater registration forms and resided in Maryland. The following presents major findings from the Boater Survey.

¹² Maryland Department of Natural Resources, *Maryland Waterway Use: A Survey of Boaters and Marina Owner/Operators*, 2003.

Boat Ownership and Use

Forty-four percent (44%) of all respondents said they owned more than one boat; with 50% of respondents saying they owned one “open fishing or pleasure boat.” Gasoline powered cabin cruisers were next with 29% saying they owned one of these. Sailboats were next most popular with about 16% claiming ownership.

Approximately 92% of trailered boat respondents said they kept their boats at home while another 5% said their boat was kept at a seasonal residence. The “other” places were typically a parking facility or the residence of a relative or friend.

Forty-eight percent (48%) of those with non-trailered boats said they kept their boat at a permanent residence. Forty percent (40%) said they kept it in a dry stack or at a marina. Three percent (3%) reported using a private mooring for their boat.

Boater Infrastructure Needs

Figure 8 and **Figure 9** summarize responses from the UB Survey that indicated boater requests for new facilities. The highest needs identified by trailered boat owners were: launch ramps (71%), parking (57%), restrooms and/or showers (57%), and carry down walkways (47%). Highest needs identified by non-trailered boat owners included: transient slips (59%), restrooms and/or showers (52%), fuel and supply access (48%), dinghy/small boat docks (45%), launch ramps (45%), transient moorings (43%), pump-out stations (43%) and utilities (42%).

A review of the data by watershed indicates that, across the board, facilities related to access are in high demand. For owners of trailered boats these include launch ramps (over 60% of respondents across most watersheds) and parking with 60% or more of those responding indicating a need except in Western region watersheds.

For owners of non-trailered boats, transient slips showed high demand across most watersheds running from a high of 71% on the Bush River. Moorings were also in high demand (over 40% in most watersheds) as were launch ramps running between 40% and 50% across most watersheds. Thirty-five percent (35%) of boaters surveyed indicated a concern with shallow channels/depth.

Marina/Boating Facility Survey and Results

DNR databases identified 628 public and private boating facilities in Maryland. Written surveys were mailed to the owner/operator/manager of each facility. A total of 328 surveys were returned. The following presents major findings from the Survey.

Facility Ownership and Use

Of those facility operators who responded to the survey, 61% were privately-owned, commercial marinas or launch facilities. These tended to be full-service docking and mooring facilities.

Thirty-nine percent (39%) were publicly- or government-owned facilities. These tended to be launch ramps and marinas with fewer services available for boaters.

Figure 8
Trailer Boats: Facilities Needed
-STATEWIDE-

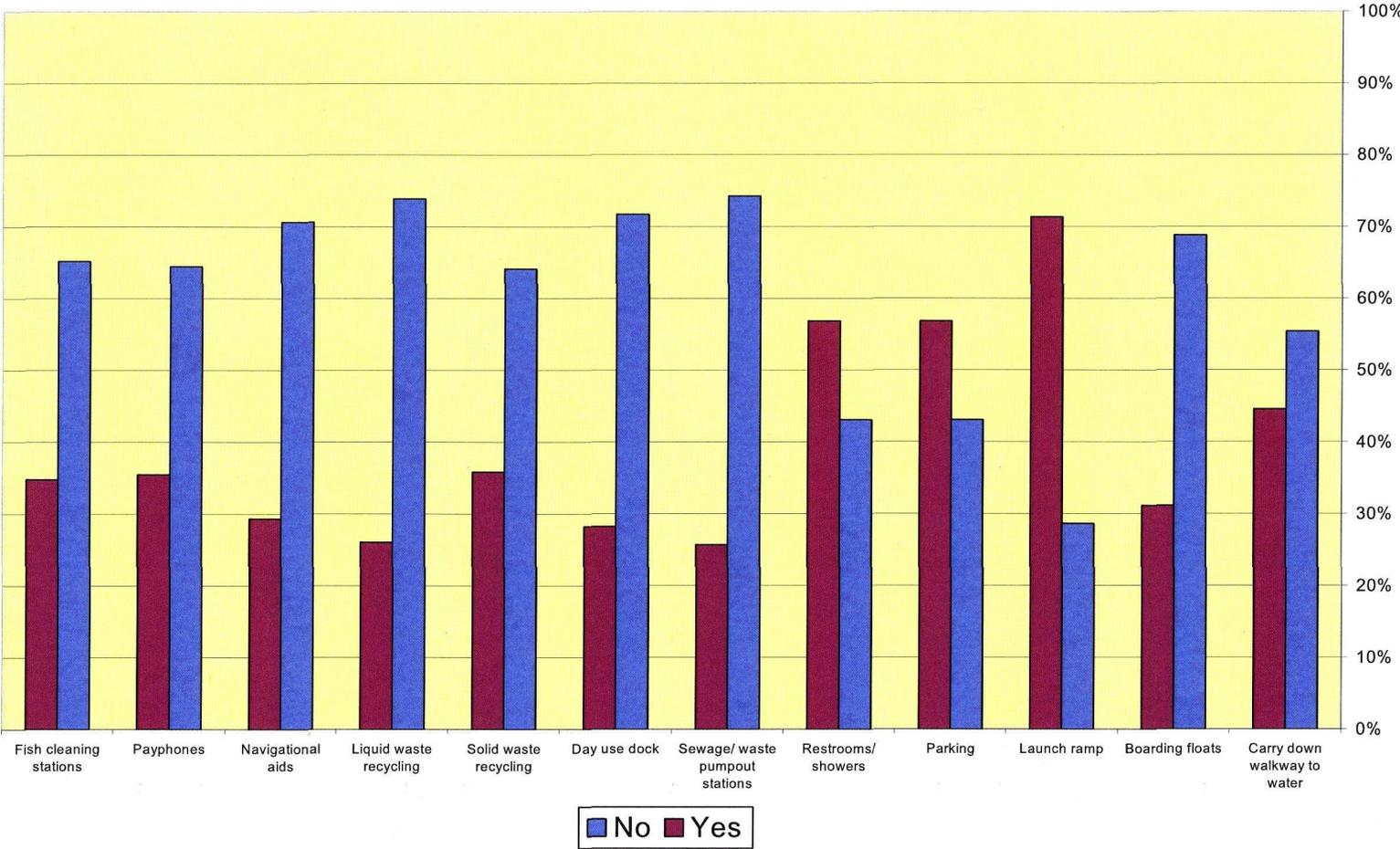
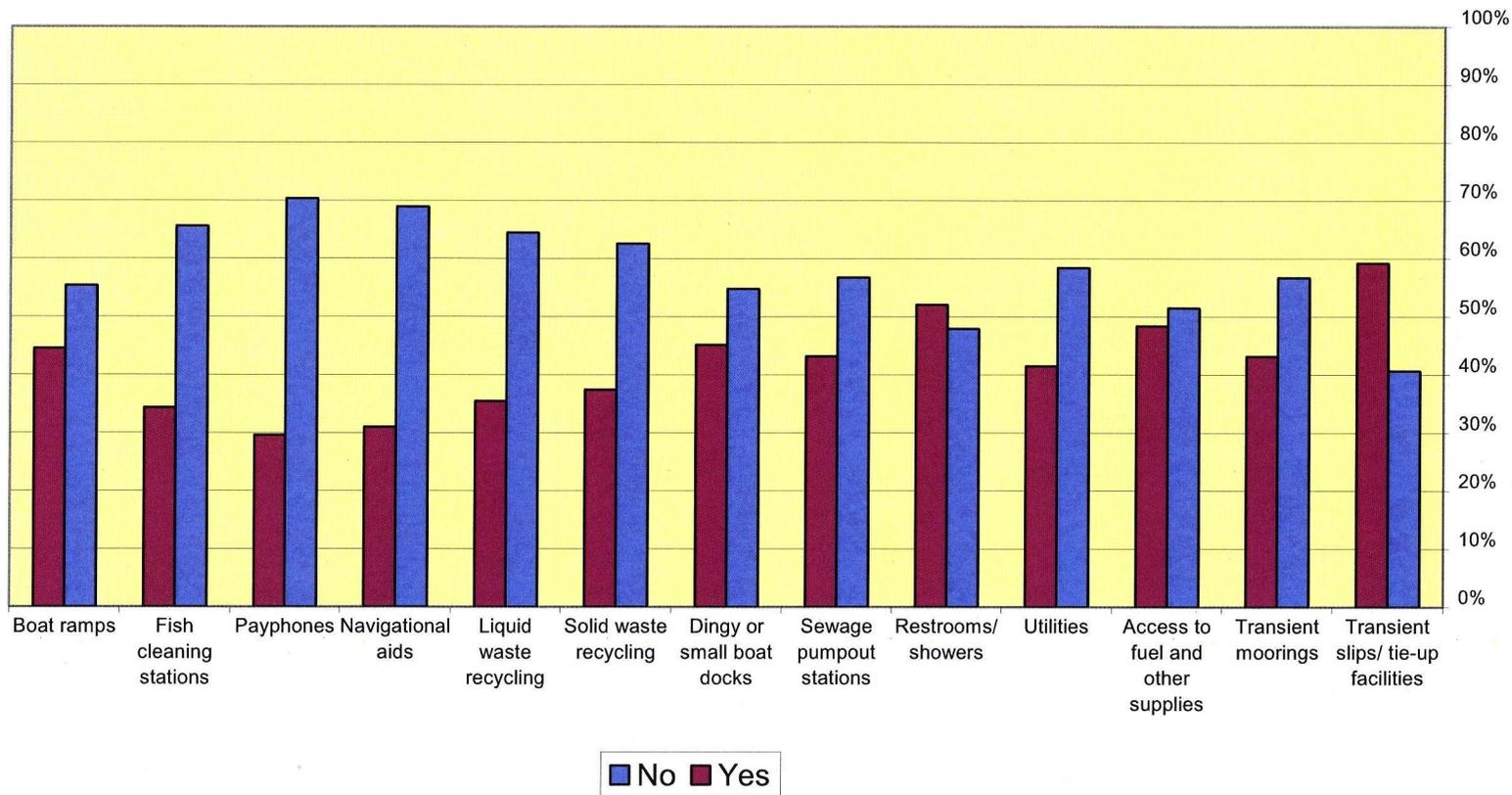


Figure 9
Non-Trailer Boats: Facilities Needed
-STATEWIDE -



Approximately 28% said they catered primarily to trailered boats and 56% said their clientele were primarily non-trailered boats. Twenty-one percent (21%) said they rent space to commercial fishermen, while 62% said they did not.

Infrastructure Needs

Between 25% and 33% of boating facilities reported that their floating docks and fixed piers are in “fair” (requires upgrade within 5 years) or “poor” (requires upgrade now) condition. Almost 20% of boating facilities reported that their slips and launch ramps were in “fair” or “poor” condition.

Facilities that indicated restrooms needed corrective action ranged from a third (33%) of boating facilities in the Southern region to 23% in the Eastern region.

These boating facilities indicated that their bulkheads were in “fair” or “poor” condition and needed corrective action in the Central (37%), the Eastern (44%), and the Southern (43%) regions. The Western region did not report any corrective action needed for bulkheads.

The Central (23%), Eastern (16%), and Southern (25%) regions indicated a need for corrective action for dockside utilities while the Western region reported needing no corrective action for dockside utilities. Sixty-seven percent (67%) of Central region's boating facility respondents said their channels needed dredging. The Southern and Eastern regions followed with 46% and 35% needing dredging respectively.

B. Regulatory and Policy Framework Affecting Boating Facility Siting

The Chesapeake and the Atlantic Coastal Bays and their tributaries are natural resources of great significance to the state. Maryland has over 3,100 miles of coastal shoreline, and all of the tidal shoreline is considered part of the state’s “critical area.” The Chesapeake Bay is the largest estuary in North America – a semi-enclosed coastal body of water with a free connection to the ocean. The Chesapeake Bay offers an incredibly complex ecosystem that includes important habitats as well as a rich bounty of fish and shellfish. As with other bodies of water around the nation, it also faces the negative effects of over-use, population growth and sprawl development, which have led to degraded water quality and loss of healthy habitat.¹³

DNR’s mission is to preserve, protect, enhance and restore Maryland’s natural resources for the wise use and enjoyment of all citizens.¹⁴ The following information, reprinted from the *Maryland Clean Marina Guidebook*, summarizes the regulatory framework and siting considerations for new and expanding boating facilities.¹⁵

¹³ <http://www.mdsg.umd.edu/CB/>, 8/8/03.

¹⁴ <http://www.dnr.state.md.us/mission.html>, 8/5/03.

¹⁵ <http://dnrweb.dnr.maryland.gov/download/cleanmarina/2Siting.pdf>

Critical Area Program

Maryland enacted the Chesapeake Bay Critical Area Protection Program (Natural Resources Article §8-1801-1816 and COMAR, Title 27) in 1984. The program minimizes damage to water quality and natural habitats by fostering more sensitive development along the Chesapeake Bay. The Critical Area Law is meant to:

- Minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have runoff from surrounding lands;
- Conserve fish, wildlife, and plant habitat; and
- Establish land use policies for development in the Chesapeake Bay Critical Area, which accommodate growth and also address the fact that, even if pollution is controlled, the number, movement, and activities of persons in that area can create adverse environmental impacts.

While the Critical Area Law is a State law, it is implemented at the local level. Counties and municipalities have developed local Critical Area Programs. The programs vary slightly from county to county so local programs and ordinances should always be consulted.

Siting Considerations

The Critical Area encompasses all waters and submerged lands of the Chesapeake Bay and Atlantic Coastal Bays to the head of tide and all lands and waters within 1,000 feet of mean high water or from the edge of tidal wetlands. The 100 feet of land closest to the mean high water line is a nearly development-free buffer.

Only “water-dependent” facilities, like marinas and boat ramps, are permitted in the buffer. Non-water dependent structures associated with boating facilities, such as tackle shops or dry storage areas, are not permitted in the buffer. The siting of boating facilities is further restricted to Intensely Developed Areas and Limited Development Areas within the Critical Area. When selecting a site for a new or expanding boating facilities, one must avoid or minimize impact upon the following resources in order to comply with the Critical Area criteria.

- Submerged aquatic vegetation (SAV)
- Tidal and nontidal wetlands
- Shellfish beds
- Rare, threatened, or endangered species
- Spawning, nursery, or propagation areas for anadromous fish
- Shallow water habitat
- Colonial waterfowl nesting sites
- Existing riparian forests
- Forests with interior dwelling bird species
- Natural heritage areas
- Tributary streams
- Waterfowl staging areas

Environmental Review

In addition to the resources listed above, the DNR evaluates all major waterway projects, including those for projects outside of the Critical Area – for impacts to:

- Stream buffers,
- Wildlife corridors,
- Wild and scenic rivers,
- Navigational safety, and
- Fisheries habitat, including natural oyster bars and barriers to migration.

Projects may be submitted as part of the permit process (most environmental permits are issued by the Maryland Department of the Environment) or a preliminary plan may be submitted directly to the Environmental Review Unit. Once a preliminary plan has been reviewed, DNR can advise what the expected impacts and mitigation measures will be.

State Tidal Wetlands Regulations

The State's tidal wetland regulations (COMAR 26.24.04.03) contain siting guidelines for new and expanded boating facilities. These facilities must avoid and minimize impacts to tidal wetlands and other aquatic resources. Furthermore, they must be on waterways with strong flushing characterized by:

- A bottom that slopes from headwaters to mouth without sumps or other features which inhibit complete water exchange,
- An unstricted entrance, and
- Few branches, coves, and other features, which inhibit complete mixing.

New or expanding boating facilities may not be located in water that is equal to or less than 4.5 feet deep at mean low water or in areas where their presence would adversely impact:

- Submerged aquatic vegetation;
- Productive macroinvertebrate communities;
- Shellfish beds;
- Fish spawning or nursery areas;
- Rare, threatened or endangered species, or species in need of conservation; or
- Historic waterfowl staging areas.

U.S. Army Corps of Engineers

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

If an Army Corps Section 404 permit is required, the Maryland Department of the Environment (MDE) must investigate the site prior to construction. The Department of the Environment will document and evaluate water quality and the potential for pollution and adverse effects to living resources caused by boating facility siting and construction. The purpose of the Water Quality Certification process is to certify that federally permitted activities will not violate Maryland's water quality standards. The Water Quality Certification issued by MDE is then incorporated into the federal permit.

Indicators

The regulatory framework outlined in this section also provides a basis for many of the key "indicators" identified by this study. For this study, indicators are the primary environmental factors affecting the selection of sites for boating facilities and navigation related projects. They indicate the presence of a resource or condition that should be considered by DNR and others during project development and review. Resource Conservation portions of the Critical Areas, wetlands, submerged aquatic vegetation (SAV), and shellfish beds were identified as indicators based on the resource policy and regulations described above. These indicators were then mapped on regional maps. (This process is explained in more detail in the *Project Evaluation and Funding* section of this report.) **Figures 10 through 13** show the locations of environmentally sensitive indicators based on the existing GIS databases.

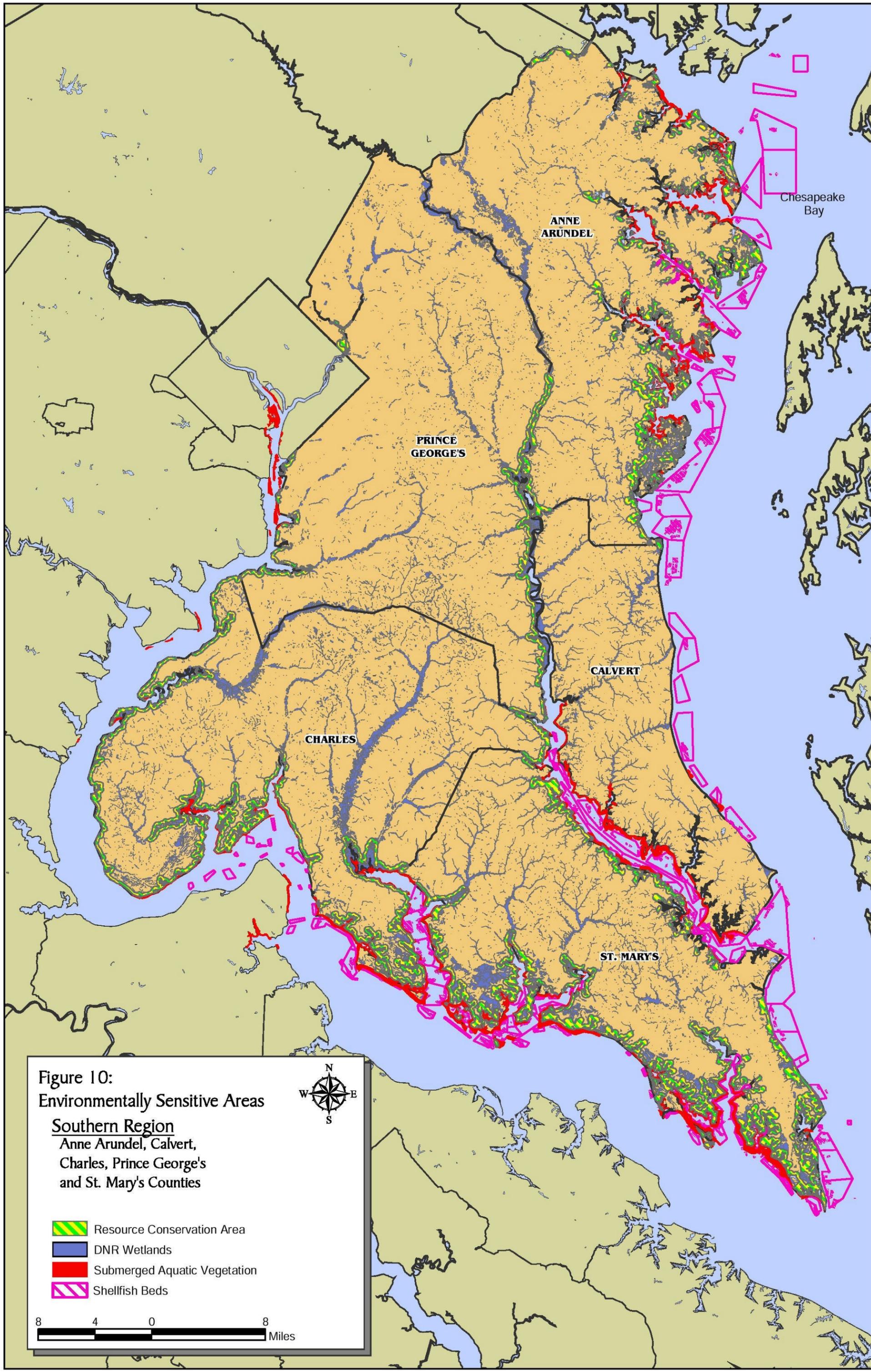


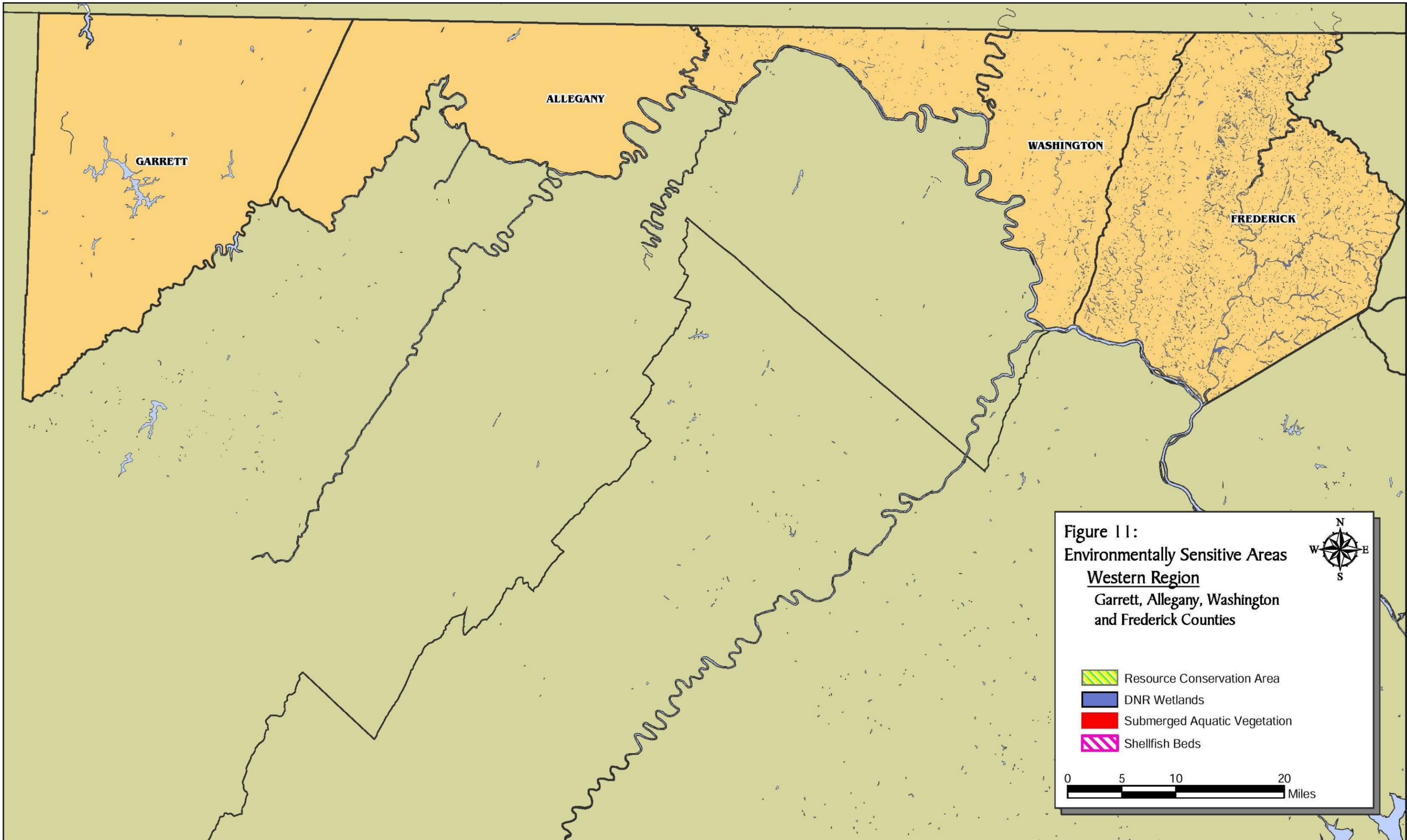
Figure 10:
Environmentally Sensitive Areas

Southern Region
Anne Arundel, Calvert,
Charles, Prince George's
and St. Mary's Counties



-  Resource Conservation Area
-  DNR Wetlands
-  Submerged Aquatic Vegetation
-  Shellfish Beds

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Miles



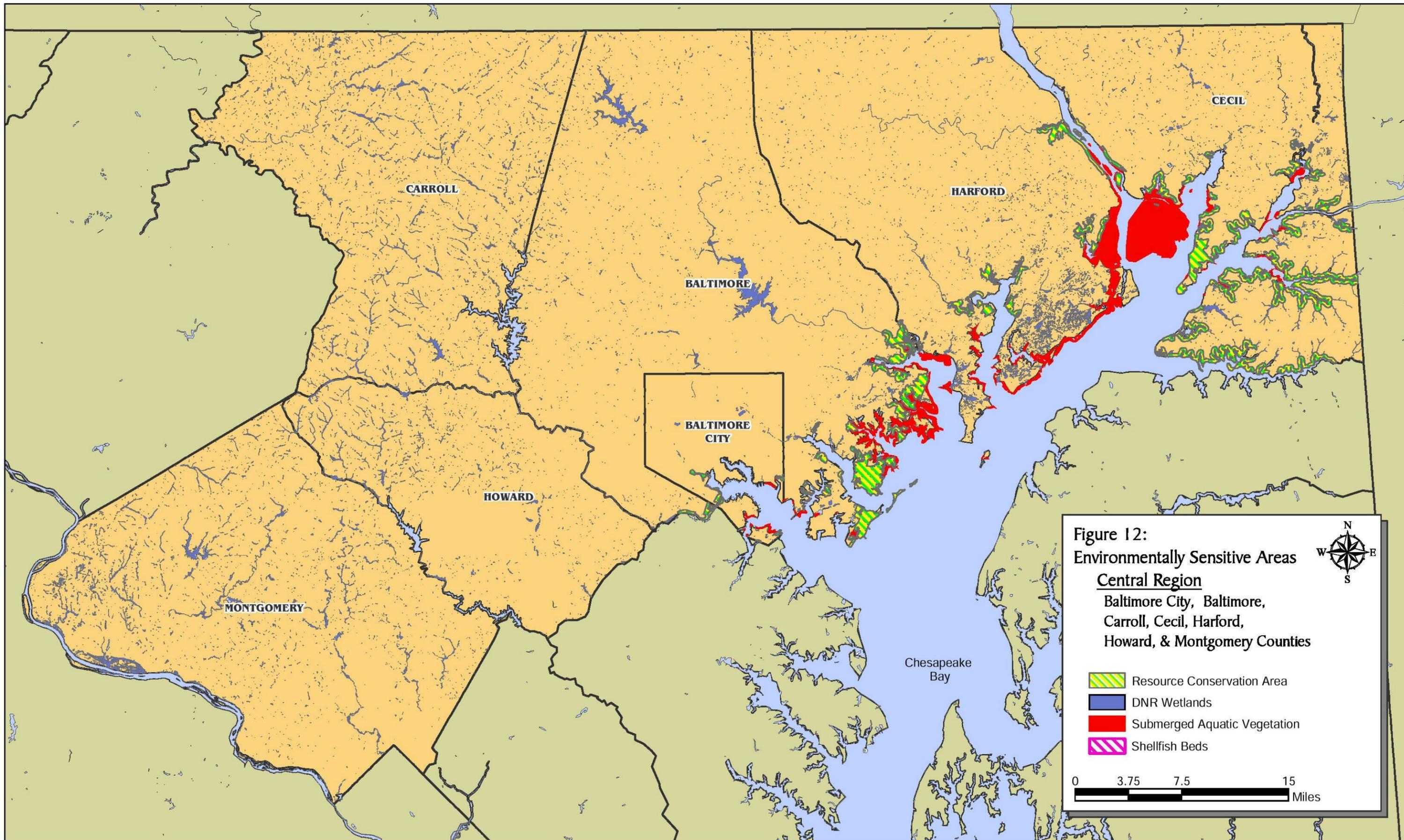
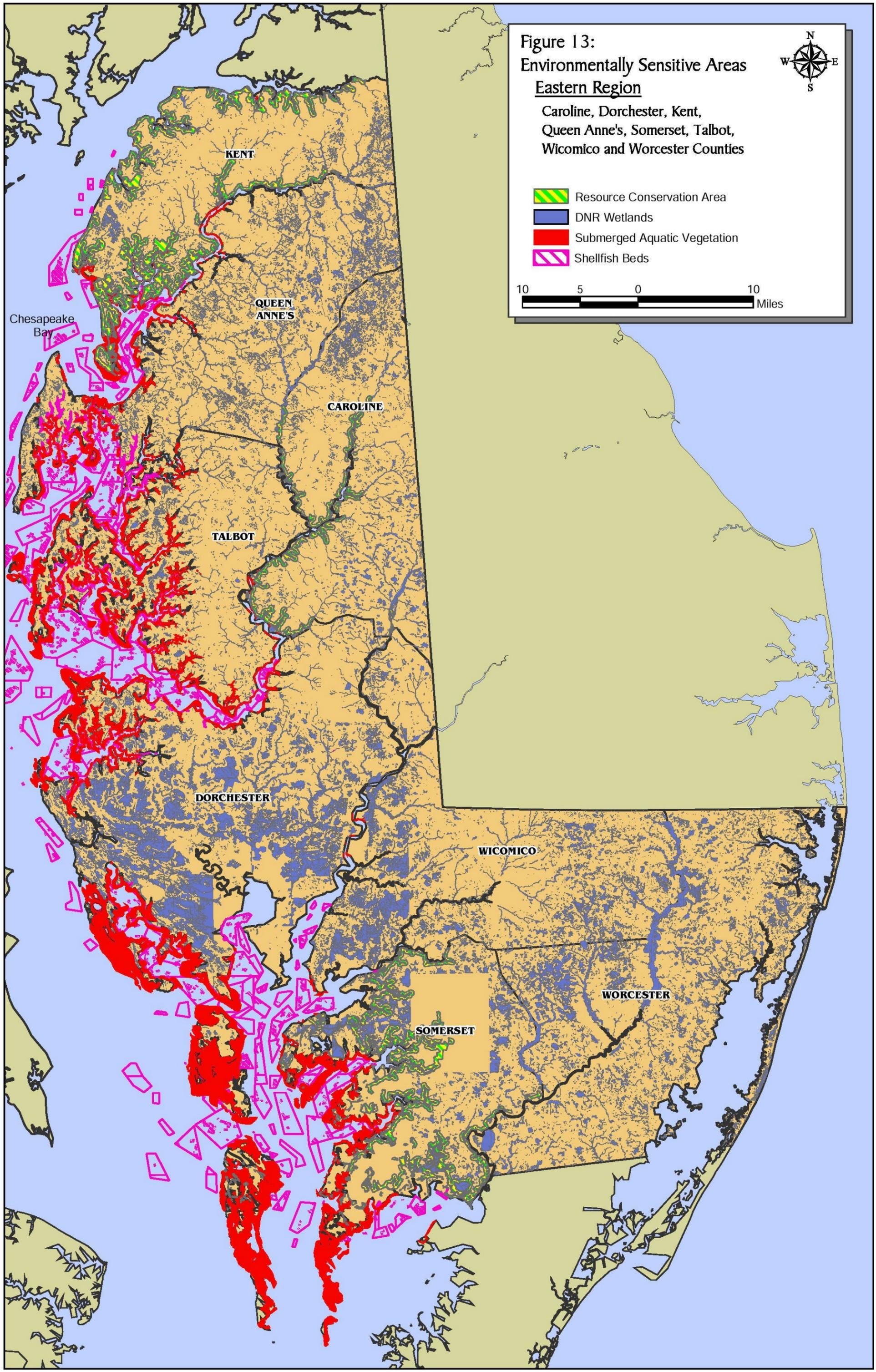


Figure 13:
Environmentally Sensitive Areas
Eastern Region



Caroline, Dorchester, Kent,
Queen Anne's, Somerset, Talbot,
Wicomico and Worcester Counties

-  Resource Conservation Area
-  DNR Wetlands
-  Submerged Aquatic Vegetation
-  Shellfish Beds



REGIONAL BOATING FACILITY NEEDS

Regional Boating Facility Needs

DNR is the primary State agency that provides funding and facilities for the general boating public. Historically, DNR has aided publicly owned boating facilities through the Waterway Improvement Fund (WIF). Since its inception in 1966, the program has provided \$180 million to State and local agencies, with about 25% of funding going to dredging and navigation projects. The agency's funding sources have expanded over the past few years to include federal funding programs as described in the Project Evaluation and Funding section of this report.

The DNR must plan and support boating facility development in a manner consistent with environmental mandates, existing demand and future requirements. This section describes the types of facilities required by recreational boaters in part A and specific needs by region in part B.

A. Boating Facility Overview

DNR receives requests for assistance and funding for a wide variety of projects and facilities that support recreational boating. This section briefly describes the general purpose of facilities and the general range of options available for each.

- **Boarding Floats** – Floating docks specifically designed for boarding passengers. Designs include space allowance for staging vessels, such as excursion or ferry craft.
- **Bulkheads** – Shoreline structure to retain fill for back-land use, protect shorelines from erosion and provide access to the water. Vertical or near vertical structure comprised of stone, steel, timber, vinyl sheeting, concrete and/or aluminum.
- **Carry Down Path** – Access to waterway for pedestrians and portable craft such as canoes and kayaks.
- **Day-Docks** – Dockage for transient vessels, short-term.
- **Debris Deflection Booms** – Floating logs or similar devices used to retain or deflect floating debris and keep the debris from impacting the facility.
- **Dinghy Dock** – Dockage for small vessels that are often attendant to a larger vessel moored offshore.
- **Dockside Utilities/Pay Phones** – Provision of utilities to individual slips or ramps.
- **Dredging** – Removal of sediments from harbors, lakes and rivers to provide navigational depth. Disposal areas are difficult to site and permit. The availability of disposal areas impacts dredging costs.
- **Fish Cleaning Station** – Sinks, tables and sometimes grinders for cleaning fish. To prevent over-nourishing shallow waters, drains should connect to sanitary sewer.
- **Floating and Fixed Breakwaters** – In-water structures to dissipate wave energy. Floating types include solid pontoons or caissons, and dissipative structures such as collections of floating tires and tethered floats. Fixed breakwaters include sheet pile walls, cribs filled with rock, caissons, interlocking blocks and rubble mounds. Geotubes, large textile cells filled with sediment, are an increasingly popular new technology.

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- **Floating Docks and Piers** – Walkways and docks providing moorage and user access for boats. Piers can be fixed or floating; construction options generally include wood, concrete, steel and aluminum.
- **Fuel Docks - Gasoline and Diesel** – Docks for refueling; fuel storage tanks are usually onshore with lines feeding the dock. (Fuel docks may also provide slips.)
- **Launch Ramp** – Inclined surfaces, usually concrete, along a shoreline used to allow movement of trailer type boat handling equipment between the land and the water. Improved launch ramps often include a dock between two access lanes for temporary mooring of boats.
- **Moorings** – The entire infrastructure providing tie-up for a vessel; the bottom anchor or mooring pile, the chain-cable system connecting the vessel to its moorings, and the connection of the mooring lines to the vessel.
- **Navigation Aids** – Buoys, markers, and lights consistent with U.S. Coast Guard vessel navigation rules.
- **Oil Spill Response Kit** – Organized items to help meet requirements of the Oil Spill Response act of 1990 that provides for liability of boating facility owners for oil spills. General contents include a boom long enough to encircle the largest vessel usually served, absorbent pads, sweep, gaff hooks, goggles, and an emergency response plan.
- **Parking** – Includes new or expanded paved/non-paved areas, striping, and stormwater controls.
- **Pump-out Station** – Receiving facility for sewage from vessel holding tanks and portable toilets. (Under federal and state law, all vessels with installed toilets are required to be equipped with an approved marine sanitation device. In Maryland, most large boats with toilets are equipped with holding tanks.)
- **Retaining Wall** – Structure with purpose similar to bulkhead, but sloped.
- **Security** – Includes installation of gates, fencing, and lights.
- **Slips** – On-water moorage space dedicated to berthing a small craft.
- **Transient Facilities and Tie-Ups** – Facilities provided to accommodate overnight moorage or visiting craft. Transient facilities can be set aside permanently or can be handled operationally by renting out slips which are not currently in use.
- **Upland Services** – Types and service levels vary widely; includes showers, supply store, restroom, restaurant, etc.
- **Utilities** – Provision of electrical service and potable water to floating piers and individual docks. Television, sewer, cable, internet, and security connections are increasingly common.
- **Vessel Repair Facilities** – Common use land storage areas available to vessel owners to perform work on their boats.
- **Waste Recycling** – Facilities to accommodate solid or liquid waste, usually upland.

B. Regional Facility Needs

This section presents the facility needs as identified by the responses of boaters and boating facility owners and operators to the UB Survey. Needs are presented by region. **Tables 6 through 9** summarize each region's facility needs.

Table 6: Facility Needs – Southern Region

County	Trailerred Boats	Non-Trailerred Boats	Total	Ramps	Wet Slips
Anne Arundel	24,483	14,328	38,811	34	11,372
Calvert	5,202	856	6,058	9	2,684
Charles	5,568	798	6,366	11	938
Prince George's	7,086	1,545	8,631	8	383
St. Mary's	7,036	1,484	8,520	14	1,325
Total	49,375	19,011	68,386	76	16,702

Watershed	Ranking	Trailerred Boat Needs	Non-Trailerred Boat Needs	*Upgrades	Boating Facility Priorities Regionwide
<i>Lower Potomac</i>	1	Launch Ramps	Restrooms	Solid and Liquid Waste	Floating Docks/Fixed Piers
	2	Restrooms	Launch Ramps; Dinghy Docks	Restrooms	Slips
	3	Parking	Transient Slips; Fuel; Phones; Utilities; Fish Cleaning		Bulkheads
	4	Carry Downs	Pump-Outs; Solid Waste; Navigation Aids		Restrooms
	5	Liquid Waste			Utilities
<i>Patuxent</i>	1	Launch Ramps	Transient Slips	Fuel	
	2	Parking	Launch Ramps; Fuel; Dinghy Docks	Picnic Areas	
	3	Restrooms	Moorings; Restrooms	Restrooms	
	4	Boarding Floats; Day Docks	Utilities; Pump-Outs; Solid and Liquid Waste	Solid Waste	
	5	Fish Cleaning; Pump-Outs			
<i>Washington Metro</i>	1	Launch Ramps	Utilities, Dinghy Docks; Pump-Outs	Fish Cleaning	
	2	Fish Cleaning; Pump-Outs; Solid and Liquid Waste; Restrooms; Phones; Day Docks	Transient Slips; Moorings; Launch Ramps; Fuel; Phone; Solid and Liquid Waste; Navigation Aids	Parking	
<i>W. Chesapeake</i>	1	Launch Ramps	Transient Slips	Launch Ramps	
	2	Parking	Restrooms		
	3	Restrooms	Moorings; Fuel		
	4	Carry Downs	Launch Ramps		
	5	Solid Waste	Dinghy Docks		

Notes: = New facilities requested by over 50% of UB Boater Survey respondents

*Upgrades = Upgrades requested by more than 20% of respondents

Table 7: Facility Needs – Western Region

County	Trailerred Boats	Non-Trailerred Boats	Total	Ramps	Wet Slips
Allegany	2,270	344	2,614	4	0
Frederick	5,751	773	6,524	8	0
Garrett	1,032	1,157	2,189	14	66
Washington	3,972	334	4,306	11	0
Total	13,025	2,608	15,633	37	66

Watershed	Ranking	Trailerred Boat Needs	Non-Trailerred Boat Needs	*Upgrades	Boating Facility Priorities Regionwide
<i>Western Maryland</i>	1	Launch Ramps	Transient Slips; Moorings; Fuel; Phones; Utilities; Solid and Liquid Waste; Dinghy Docks; Fish Cleaning	Solid and Liquid Waste	Floating Docks; Fixed Piers
	2		Launch Ramps; Restrooms; Pump-Outs		Launch Ramps
	3				Restrooms
	4				Slips
	5				Oil Spill Response
<i>Upper Potomac</i>	1	Launch Ramps	Transient Slips	Restrooms	
	2	Parking; Solid Waste	Launch Ramps	Solid and Liquid Waste	
	3	Fish Cleaning; Carry Downs; Day Docks			
	4	Restrooms			

Notes: = New facilities requested by over 50% of UB Boater Survey respondents

*Upgrades = Upgrades requested by more than 20% of UB Boater Survey respondents

Table 8: Facility Needs – Central Region

County	Trailerred Boats	Non-Trailerred Boats	Total	Ramps	Wet Slips
Baltimore City	2,278	1,006	3,284	6	3,009
Baltimore County	16,208	6,236	22,444	9	6,543
Carroll	5,029	1,387	6,416	2	0
Cecil	4,343	1,756	6,099	9	4,873
Harford	7,363	2,340	9,703	9	1,273
Howard	3,472	1,206	4,678	0	0
Montgomery	8,572	3,398	11,970	0	0
Total	47,265	17,329	64,594	43	15,698

Watershed	Ranking	Trailerred Boat Needs	Non-Trailerred Boat Needs	*Upgrades	Boating Facility Priorities Regionwide
<i>Bush River</i>	1	Launch Ramps	Transient Slips	Pump-Outs	Floating Docks; Fixed Piers
	2	Parking	Launch Ramps; Restrooms; Fish Cleaning; Fuel	Solid and Liquid Waste	Slips
	3	Restrooms/Showers	Moorings; Phones; Utilities; Pump-Outs; Solid and Liquid Waste; Navigation Aids	Launch Ramps	Bulkheads
	4	Phones			Utilities
	5				Restrooms
<i>Elk River</i>	1	Parking	Transient Slips	Fish Cleaning	
	2	Launch Ramps	Pump-Outs		
	3	Carry Downs	Restrooms		
	4	Restrooms/Showers	Fuel		
	5	Solid Waste	Launch Ramps		
	6	Navigation Aids	Moorings		
<i>Gunpowder River</i>	1	Parking	Launch Ramps	Carry Downs	
	2	Launch Ramps	Restrooms		
	3	Carry Downs; Phones	Fish Cleaning		
	4	Phones	Transient Slips		
	5	Restrooms	Phones; Solid Waste		

Notes: = New facilities requested by over 50% of UB Boater Survey respondents

*Upgrades = Upgrades requested by more than 20% of UB Boater Survey respondents

Table 8: Facility Needs – Central Region, Continued

<i>Lower Susquehanna River</i>	1	Launch Ramps; Restrooms	Transient Slips; Launch Ramps; Fuel; Utilities; Pump-Outs; Liquid Waste; Navigation Aids	Parking	
	2	Fish Cleaning; Navigation Aids; Phones	Dinghy Docks, Solid Waste; Restrooms; Phones; Moorings	Pump-Outs	
	3	Pump-Outs; Carry Downs; Parking; Solid and Liquid Waste		Restrooms	
<i>Patapsco River</i>	1	Launch Ramps	Transient Slips	None	
	2	Restrooms	Moorings/Dinghy Docks		
	3	Parking	Launch Ramps		
	4	Carry Downs; Solid Waste	Restrooms		
	5	Phone	Phones; Utilities; Pump-Outs; Solid Waste		

Notes: = New facilities requested by over 50% of UB Boater Survey respondents
 *Upgrades = Upgrades requested by more than 20% of UB Boater Survey respondents

Table 9: Facility Needs – Eastern Region

County	Trailerred Boats	Non-Trailerred Boats	Total	Ramps	Wet Slips
Caroline	1,831	382	2,213	9	100
Dorchester	2,522	903	3,425	20	1,038
Kent	1,598	1,164	2,762	29	2,883
Queen Anne's	4,391	2,290	6,681	23	2,734
Somerset	1,603	430	2,033	14	777
Talbot	3,268	2,466	5,734	18	1,272
Wicomico	3,570	551	4,121	8	490
Worcester	3,884	1,651	5,535	15	1,499
Total	22,667	9,837	32,504	136	10,793

Watershed	Ranking	Trailerred Boat Needs	Non-Trailerred Boat Needs	*Upgrades	Boating Facility Priorities Regionwide
<i>Chester River</i>	1	Launch Ramps	Transient Slips	Restrooms	Bulkheads
	2	Restrooms; Parking	Restrooms		Floating Docks; Fixed Piers
	3	Carry Downs	Fuel		Slips
	4	Liquid Waste	Dinghy Docks		Launch Ramps
	5		Moorings		Restrooms
<i>Choptank River</i>	1	Restrooms	Transient Slips; Fuel	Fish Cleaning	
	2	Parking; Phones	Dinghy Docks		
	3	Carry Downs; Launch Ramps; Fish Cleaning	Utilities		
	4	Pump-Outs	Restrooms; Pump-Outs		
	5		Moorings		
<i>Coastal Area</i>	1	Restrooms	Transient Slips; Launch Ramps		
	2	Carry Downs; Parking	Fuel; Restrooms; Pump-Out; Dinghy Docks		
	3	Launch Ramps; Fish Cleaning; Solid Waste; Navigation Aids	Moorings; Phones; Utilities; Solid and Liquid Waste; Navigation Aids		
	4	Boarding Floats; Day Docks			

Notes: = New facilities requested by over 50% of UB Boater Survey respondents

*Upgrades = Upgrades requested by more than 20% of UB Boater Survey respondents

Table 9: Facility Needs – Eastern Region, Continued

Pokomoke River	1	Launch Ramps	Fish Cleaning	Solid Waste	
	2	Restrooms	Launch Ramps; Utilities; Restrooms; Solid and Liquid Waste		
	3	Carry Downs	Transient Slips; Pump-Outs		
	4	Boarding Floats			
Nanticoke River	1	Launch Ramps	Fuel, Utilities, Restrooms	Fuel	
	2	Restrooms; Phones	Transient Slips	Solid and Liquid Waste	
	3	Parking	Moorings; Launch Ramps; Solid and Liquid Waste	Restrooms	
	4	Carry Downs		Fish Cleaning	
Chesapeake Bay	1	Launch Ramps; Parking; Boarding Floats; Day Docks	Transient Slips	Solid Waste	
	2	Restrooms	Restrooms		
	3		Phones; Pump-Outs; Solid Waste; Dinghy Docks		

Notes: = New facilities requested by over 50% of UB Boater Survey respondents

*Upgrades = Upgrades requested by more than 20% of UB Boater Survey respondents.

Figures 14 through 17 provide a map for each region showing the needed launch ramps, slips and tie-up facilities within the watersheds of that region. Watersheds are used as the geographical units for facility locations because the UB Survey data were aggregated by watershed.

In Tables 6 through 9, if 50% or more boater respondents expressed a need for an additional facility in a watershed, that need is highlighted in blue. Needs were also ranked. As an example, Table 6 shows Facility Needs for the Southern Region. In the Lower Potomac watershed of the Southern region, trailered boaters identified launch ramps as their main need and non-trailered boaters identified restrooms as their primary need.

The 'Upgrades' column in each table lists the most frequent responses when boaters were asked: "what repairs, replacement, expansions, or additions are needed at the facilities you use the most?" Respondents were asked to select among a list of needed facilities as shown on the horizontal axes of Figures 8 and 9. Most boaters did not suggest any needed improvements at their favorite boating locations, indicating they were generally satisfied with their facilities. Therefore, the 'Upgrades' column on Tables 6 through 9 indicate items mentioned by 20% or more boating respondents rather than 50%.

The Boating Facility Priorities column provides the top five improvements identified by a region's boating facility owners and operators as needed. These improvements are for the entire region and are not disaggregated by watershed.

Locations for needed launch ramps, slips, and mooring facilities are based on the responses of trailered and non-trailered boaters within watershed subareas. If 50% or more respondents expressed a need for these additional facilities, they are shown on the maps. A white circle depicts a need for launch ramps in the waterway's drainage area; a deep red circle depicts a need for slips, moorings and tie-up facilities. The cross-hatched areas, 'Areas in Need of Dredging,' represent general geographic areas where a preponderance of facility owners or operators indicated dredging is required.

The maps also show some of the key environmental indicators that affect project design and permitting as described in the maps' legends. Key environmental indicators are limited to those for which existing GIS data were available.

Southern Region

The Southern Region has the highest number of registered boaters and contains the popular boating areas of West Chesapeake Bay, Solomons, and the Severn, South, West and Patuxent rivers. The region has 650 registered trailered boats per launch ramp. Additional launch ramps are the number one priority of trailered boater respondents in each watershed; non-trailered boaters expressed a high need for restrooms and transient slips.

Launch ramps were cited as a need in all subareas in this region. Transient slips were the top need reported by non-trailered boats in the Patuxent and West Chesapeake Bay subareas, and a strong need for moorings was also noted for West Chesapeake. Restrooms and parking were

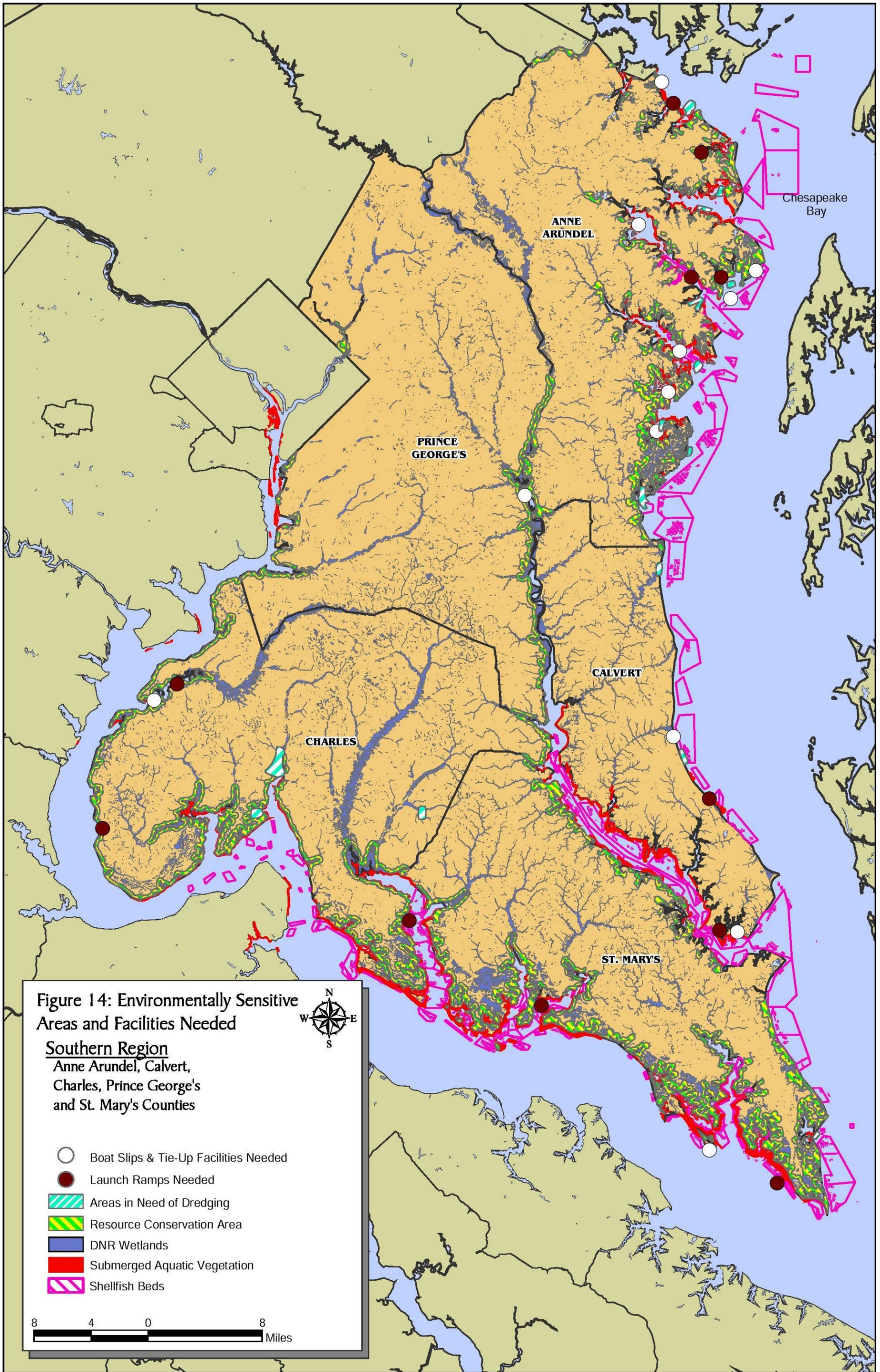
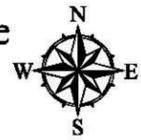


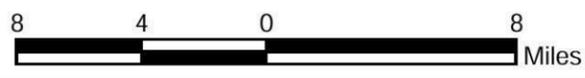
Figure 14: Environmentally Sensitive Areas and Facilities Needed

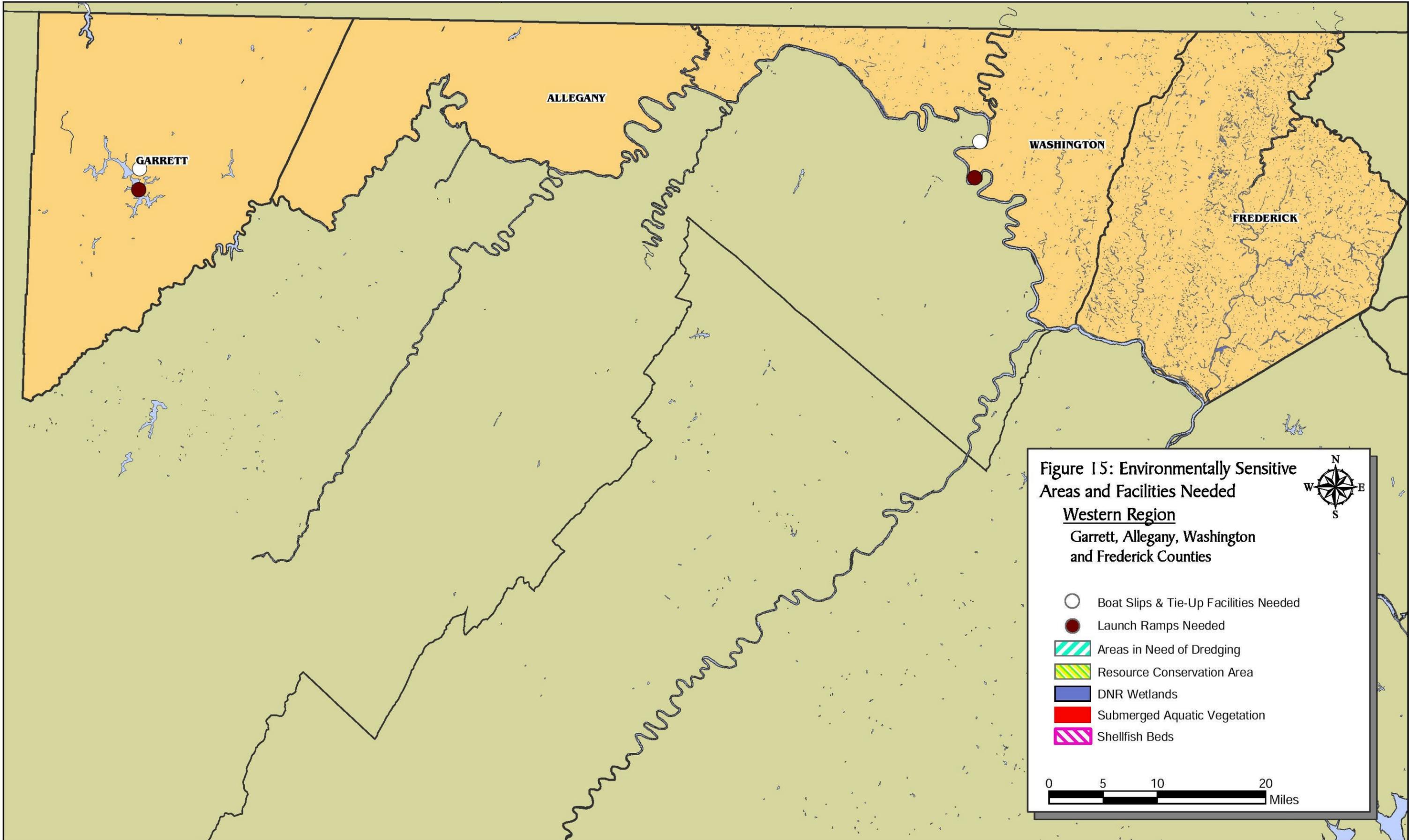
Southern Region

Anne Arundel, Calvert,
Charles, Prince George's
and St. Mary's Counties



- Boat Slips & Tie-Up Facilities Needed
- Launch Ramps Needed
- ▨ Areas in Need of Dredging
- ▨ Resource Conservation Area
- DNR Wetlands
- Submerged Aquatic Vegetation
- ▨ Shellfish Beds





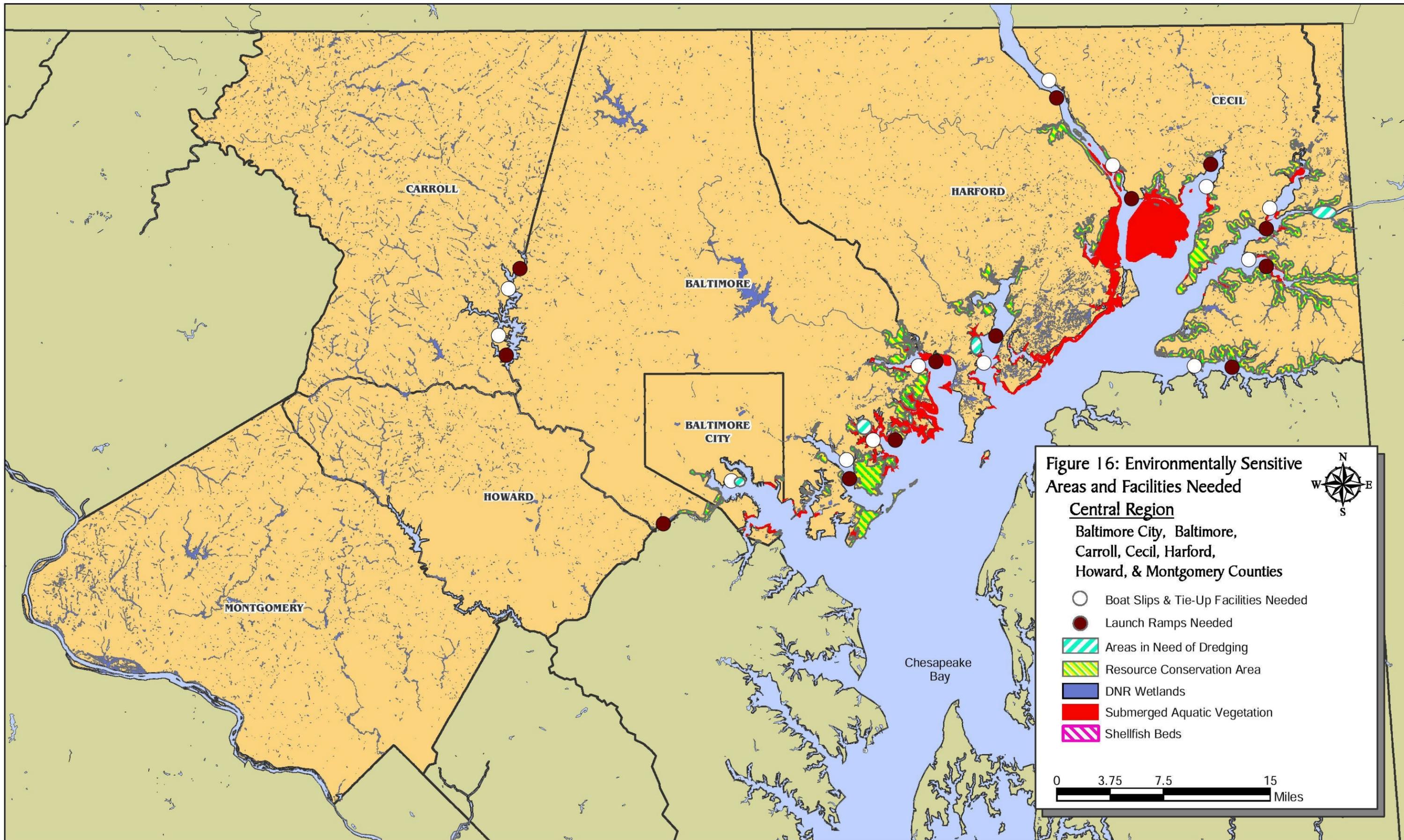
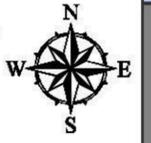


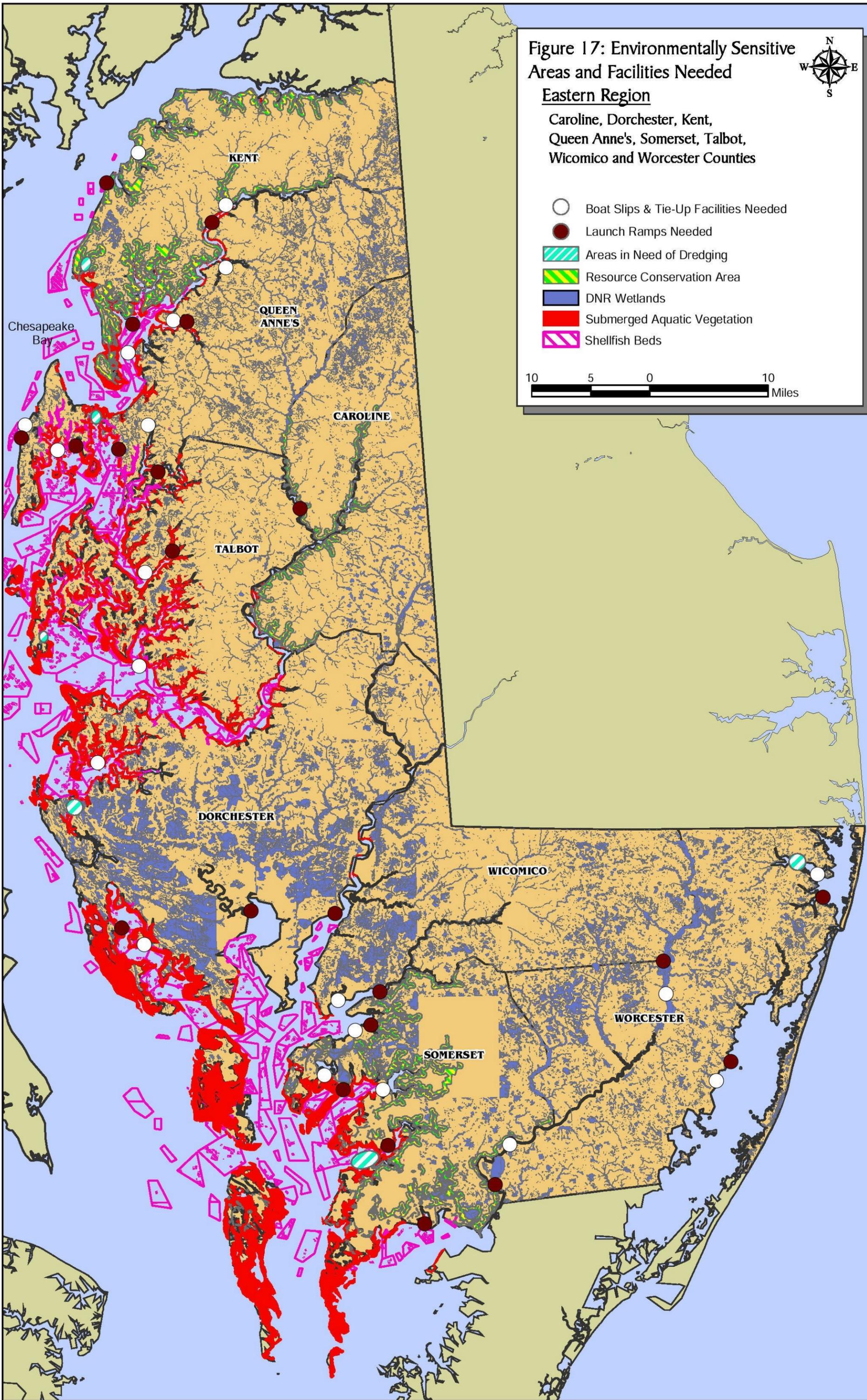
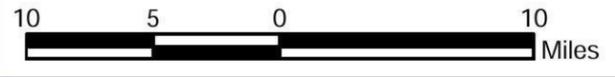
Figure 17: Environmentally Sensitive Areas and Facilities Needed



Eastern Region

Caroline, Dorchester, Kent,
Queen Anne's, Somerset, Talbot,
Wicomico and Worcester Counties

-  Boat Slips & Tie-Up Facilities Needed
-  Launch Ramps Needed
-  Areas in Need of Dredging
-  Resource Conservation Area
-  DNR Wetlands
-  Submerged Aquatic Vegetation
-  Shellfish Beds



among the highest reported needs in all subareas. Boating facility operators reported the need for additional floating docks and fixed piers, slips, bulkheads, restrooms, and utilities.

Western Region

The Western Region contains the Upper Potomac watershed and Deep Creek Lake. It is the only region without direct access to Chesapeake Bay or the Ocean. There are 352 trailered boats per launch ramp. Because the waterways in this region are non-tidal tributaries, the environmentally sensitive indicators identified for this study are generally not present.

Trailered boat owners identified a need for additional launch ramps and non-trailered boat owners indicated a need for slips, moorings, fuel and utilities. Boating facility operators cited a need for floating docks and fixed piers along with launch ramps, restrooms, slips, and oil spill response kits.

Central Region

The Central Region is characterized by the mouths of the Elk, Susquehanna, Bush and Gunpowder rivers that empty into northern Chesapeake Bay. Baltimore Harbor is also located in the Central Region. The region has the second highest number of registered boaters. Seventy-three percent (73%) of boaters trailer their boats. The region has the fewest launch ramps per trailered boat: 1,350 trailered boats per launch ramp.

Additional launch ramps, parking and restrooms were identified as a strong need by trailered boaters throughout the Central region. Non-trailered boaters expressed a need for additional transient slips, restrooms, and fuel. Boaters also cited a need for additional pumpouts in the Lower Susquehanna subarea and the Elk River subarea. Boating facility operators in this region identified floating docks and fixed piers, slips, and bulkheads as primary needs.

Eastern Region

The Eastern Region is bordered on the west by Chesapeake Bay, the north by the Chesapeake-Delaware Canal, and on the east by the Atlantic Ocean. This region is an especially popular destination for both trailered and non-trailered boaters statewide. It is also frequently traversed by “snowbirds” and other transient boaters following the Atlantic Coast north or south. The region has a trailered boat to launch ramp ratio of 167:1. New restroom facilities are a high priority for both trailered and non-trailered boaters as are launch ramps and transient slips.

Additional restrooms were identified as a top need in most subareas in this region. Transient slips were identified as the top need by non-trailered boats in three subareas (Coastal Area, Choptank, and Chester). Fuel and utilities were also a primary need in the Choptank and Nanticoke. In addition, over 50% of respondents reported a need for pumpouts in the Choptank. Boating facility operators reported a need for bulkheads, floating docks and fixed piers, slips, launch ramps, and restrooms.

PROJECT EVALUATION AND FUNDING

Project Evaluation and Funding

A. Existing Boating Access Funding Programs

Historically, boating has provided the primary means of transporting people and goods along coastal and inland waterways, but has evolved to become less commercial and more recreational in nature. Today, recreational boating is a substantial economic activity in many areas of the country and Maryland. In Maryland, The DNR administers the National Boating Infrastructure Grants (BIG), Sport Federal Aid in Sport Fish Restoration (SFR) Act, and the State Waterway Improvement Fund (WIF) programs to address the need for improved boating facilities and services in Maryland. DNR manages these grants through the Waterway Improvement Program (WIP).

National Boating Infrastructure Grant (BIG) Program

The BIG Program, administered by the U.S. Fish and Wildlife Service, is designed to provide funding for public and private projects that benefit large (26' or longer), non-trailerable boats. Nationally, about four percent, or 600,000, of recreational boats are of this size. In Maryland, it is estimated that 24% of registered and documented boats (about 51,000) meet this size definition. Many out-of-state boats of this size also utilize Maryland waters.

The goals of the Program are to address the following needs:

- Create dockage for transient recreational boats 26 feet or more in length for recreational opportunities and safe harbors;
- Provide navigational aids for boaters to use these facilities;
- Enhance access to recreational, historic, cultural, natural, and scenic resources;
- Strengthen local ties to the boating community and its economic benefits;
- Promote continuity of public access to the shore; and
- Promote awareness of transient boating opportunities.

Projects eligible for funding include mooring buoys, day-docks, transient slips, safe harbor facilities, floating and fixed piers and breakwaters, dinghy docks, restrooms, retaining walls, bulkheads, dockside utilities, pump-out stations, recycling/trash receptacles, dockside electric, water and telephones, navigational aids (channel markers and buoys), and marine fueling stations. Eligible projects will:

- a. Construct, renovate, and maintain either publicly- or privately-owned boating infrastructure tie-up facilities;
- b. Do one-time dredging only, to give transient vessels safe channel depths between the tie-up facility and maintained channels or open water;
- c. Install navigational aids, limited to giving transient vessels safe passage between the tie-up facility and maintained channels or open water;
- d. Grant administration costs for approved projects;

Maryland's Recreational Boating and Infrastructure Plan

- e. Fund preliminary costs including conducting appraisals and preparing cost estimates; and
- f. Produce information and education materials such as charts, cruising guides, and brochures.

The Program offers two tiers of funding for boating projects. Tier I funding is non-competitive and provides \$100,000 to each state for public or private projects that provide facilities/services for large, non-trailerred boats. Thirty-five (35) states have utilized Tier I funding since the program's inception. The Program began in 2000, and Maryland has taken full advantage of Tier I funding in each year, for a total of \$400,000.

Tier II funding is a competitive round that offers larger grants to states to fund public or private projects that serve large, non-trailerred boats. The minimum project cost under Tier II is \$100,000. There is no maximum project amount; however, there are limitations given the overall amount of funding available annually (roughly \$4 million/year). Fourteen (14) states have utilized Tier II funds since the program's inception. In federal fiscal years 2000 and 2001, 10 states received Tier II funding. In federal fiscal year 2002, 8 states received Tier II funding, and in federal fiscal year 2003, 6 states received Tier II funding. Maryland has submitted a limited number of Tier II proposals, but none have scored high enough for Program awards.

In terms of dollar amounts, South Carolina, Oregon, Ohio, and Virginia have been the most successful in securing Tier II funding, as shown in **Table 10**. In terms of the number of projects, Virginia has had the highest number with eight grant awards.

Table 10: Tier II Boater Infrastructure Grant (BIG) Awards

State	Number of BIG Projects	Total Tier II BIG Awards
South Carolina	4	\$2,778,363
Oregon	7	\$1,830,335
Ohio	1	\$1,817,676
Virginia	8	\$1,637,057
New Jersey	1	\$1,500,000
Louisiana	2	\$1,486,668
Illinois	2	\$1,397,968
Washington	2	\$1,254,982
Iowa	1	\$1,156,428
Florida	2	\$1,095,365

BIG program requirements include a 25% match by the local sponsor. However, the amount of match plays a substantial role in scoring, and a higher match can improve chances of a funding award. In the round of federal fiscal year 2003 awards, the lowest match ratio was 1:1 (\$1 BIG funding to \$1 match). Several of the awards were for projects that provided matching funds of three to six times the grant award.

The most substantial weakness in Maryland's proposals to date has been the local cost share match offered and in the comprehensiveness of the proposals. Any proposal from a private boating facility must have substantial private matching funds and must include planning, design,

engineering, and detailed budgets. Proposals that are only at the conceptual stage are not competitive. This funding is more suited for projects that are already designed and/or ready to construct. Projects must address the principal goal of the BIG program, which is to increase facilities for large transient boaters. Projects designed to protect or rehabilitate existing facilities are not competitive.

Since Maryland boating facilities and owners of non-trailer boats reported a strong need for additional moorings, slips, floating docks and fixed piers, these types of projects would appear to be good future candidates for BIG projects. Dredging was also an important need mentioned by boating facility operators. BIG can fund one-time dredging projects. Dredging of an access channel to an area with new transient facilities would be another possibility.

Sport Fish Restoration (SFR) Grants

While the federal BIG program is a relatively new source of funds, states have long received federal funding for boating programs and projects directed at smaller, trailer boats. The Federal Aid in Sports Fish Restoration Act, commonly known as the Wallop-Breaux Act, provides funding for states for a variety of activities including: sports fish restoration, aquatic education, and boating facilities. Maryland has taken full advantage of this funding and should continue to use this source for projects that meet the federal criteria.

Waterway Improvement Fund Grants

The Waterway Improvement Fund (WIF) was established in 1966 (*Annotated Code of Maryland* Sec. 8-707 of the State Boat Act) for the purpose of funding projects on public lands which improve and promote the recreational and commercial capabilities, conditions and safety of Maryland's waterways for the benefit of the general boating public. The WIF program finances public boating facility projects as well as recreation-related navigation projects in cooperation with local, state, and federal agencies (including the U.S. Army Corps of Engineers). Projects are funded on a grant reimbursement basis and are managed in DNR by the Waterway Improvement Program (WIP).

Dredging and navigation related projects can be funded in the following three ways, a 100% State grant, a matching fund grant (maximum 50% State), or a 25-year interest free tax district loan. All projects must be sponsored by the Department and/or local governing body, and be approved by the state legislature. The type of funding selected for a project is dependent on the degree the project benefits the general boating public, the cost/benefit of the project, as well as statutory guidelines. Those projects that service public boating facilities and/or major entrance channels and associated thoroughfares qualify for 100% state funds. Projects that primarily benefit local residents qualify for tax district loans. For those that fall in between, the DNR can provide matching fund grants.

The revenues for this fund are obtained primarily from the one time 5% excise tax that is paid to the State when a boat is purchased and titled in Maryland. In addition, the fund also receives 3/10 of one percent of the State motor fuel tax as a result of purchases made to fuel boats.

Maryland's Recreational Boating and Infrastructure Plan

The WIF is the primary source of funding for public boating access projects in Maryland. The DNR annually budgets funding for project grants to federal, state, and local agencies.

The amount of grant requests for public boating access projects consistently exceeds the available funding. Typically, funding is only available to finance about 50% of the grant requests submitted to DNR during any given fiscal year. Much of the boating infrastructure in Maryland was constructed in the 1960s, 1970s, and early 1980s. With an average life span of about 20-30 years for this type of facility, there is now a very large demand for major upgrades and replacements for public boating facilities. As a result, the vast majority of projects funded by WIF tend to be maintenance or repair related. In order to support the State's current boating infrastructure, Maryland should, at a minimum, maintain existing levels of funding for boating projects and should consider the use of State General Obligation Bonds (and other fund sources referenced below) to supplement existing funds as a means to address this need within the State.

One possibility for increasing revenues into the WIF would be to raise the percentage of the state motor fuel tax that is provided to the Fund. States using this source of funding contribute varying percentages for completing boating access projects, generally ranging from 0.3% to 2%. Raising the percentage in Maryland from the existing 0.3% to 1.0% would provide an additional three million dollars per year to complete various public boating access projects. This would also include completing navigation projects (i.e. dredging channels and harbors) that are essential to providing safe access to Maryland's waterways.

BoatUS is currently campaigning to have states re-evaluate the estimates of how much gas boaters actually buy and to adjust funding formulas accordingly. At the federal level, the percentage of gas tax attributed to boating is 1.08% (a percentage based on use estimates obtained over 10 years ago). A recent study in Minnesota estimated the percentage of all fuel sold in the State attributable to motorboats at 1.5%. These figures indicate that a higher portion of fuel taxes may be warranted for boating projects and programs in Maryland.

Maryland should also consider converting the sales tax on canoes, kayaks, and other paddle boats to an excise tax and directing these revenues to the Waterway Improvement Fund. The growing participation in these water sports, and the subsequent demand for more public facilities for these boaters, warrants additional funding. DNR's current policy is to primarily fund projects that serve that segment of the boating public that contributes to the Fund (i.e. owners of motorized or powered vessels). Some waterfront towns are interested in providing passive boating facilities and water trails as a means to provide access to residents and tourists. In addition, passive facilities can also relieve crowded conditions at launch ramps used by trailered boats. Converting the current sales tax to an excise tax for non-motorized vessels would address the issue of funding these facilities. This segment of the boating public has historically not supported such an action in that it often leads to having to register their boat. However, if an excise tax can be implemented without requiring the registration of the vessel and these additional funds are dedicated to financing and supporting passive boating facilities, then this segment of the boating public should support this proposal.

Eligible Projects

Section 8-707 of the State Boat Act, (Subtitle 7 - *Annotated Code of Maryland*, Natural Resources Article) determines the eligibility, type and amount of funding that can be expended

for each project. According to this legislation, the WIF program can finance the following specific types of public waterway improvement projects:

1. Marking of channels and harbors and establishing aids to navigation.
2. Clearing of debris, aquatic vegetation and obstructions from navigable waters of the State.
3. Dredging channels and harbors, and constructing jetties and breakwaters, including those projects in cooperation with the U.S. Army Corps of Engineers.
4. Construction of marine facilities beneficial to the general boating public.
5. Installation of marine sewage pump-out stations.
6. Improvement, reconstruction, or removal of bridges, drawbridges or similar structures over or across water if those structures delay, impede, or obstruct the boating public.
7. Evaluation of water oriented recreation needs and capacities of Maryland waterways and the development of comprehensive plans for waterway improvement projects.
8. Boating related structural and nonstructural shore erosion control.
9. Boating information and education.
10. Construction of marine facilities for marine firefighting, police, first aid and medical assistance, and communications for promoting safety of life and property and general service to the boating public.
11. Acquisition of State equipment and vessels for marine firefighting, policing, first aid and medical assistance, and communications for promoting safety of life and property and general service to the boating public.

Existing Project Evaluation Process

Grants under the WIF program are awarded by the WIP each year based upon the highest ranked eligible grant applications received, until all available funds have been depleted. DNR administers the BIG, SFR, and WIF Programs; however, the subsequent discussion and recommendations focus on the WIF Grants program with the understanding that DNR would modify the process as necessary to accommodate the requirements for the SFR and BIG Grant programs.

Figure 18 summarizes the current process that DNR uses in evaluating Waterway Improvement Fund (WIF) grant applications. The following presents the WIF grant process:

Eligible Grant Applicants

Maryland counties, municipalities, and state/federal agencies.

Schedule

Project requests are accepted throughout the year by the WIP. The cut-off date for receiving "Waterway Improvement Project Request Forms" is on or about July 15th for the next fiscal year (state fiscal year is July 1st - June 30th), after which time a list of proposed projects is prepared

Figure 18

Waterway Improvement Program (WIP) Existing Project Evaluation Process

Initial Inquiry for Proposed Waterway Improvement Fund Project

- Inquiry is made to WIP for a proposed project.
- Projects can originate from federal, state, and local agencies, elected officials, and the general boating public.
- WIP Regional Project Managers will conduct site visit with potential grant applicant.

Applicants Submit Grant Request and Application Forms to WIP

- Maryland counties, municipalities, and state/federal agencies can apply for grants.
- Applicant simultaneously submits a Waterway Improvement Project Request Form and Waterway Improvement Fund Application and Project Agreement to WIP.

Preliminary Evaluation and Project Score by WIP Regional Project Manager

- WIP Regional Project Managers determine to what degree the projects benefit the general boating public and preliminarily evaluate, score, and prioritize their respective projects based on eight evaluation criteria and any supplemental information provided by the applicant.
- Dept. of Budget and Management conducts annual meeting for the upcoming capital budget to assess progress of previously appropriated projects, reviews existing DNR policies impacting potential projects, uses of the WIF, as well as funding projections for potential projects.

Preliminary Projects List Developed

- WIP develops a master list of all project application requests.
- All WIP Regional Project Managers and the WIP Director complete an extensive evaluation. Grant requests are jointly evaluated, scored, ranked, and geographically distributed. Larger, more extensive projects are further evaluated to ensure that they meet established statutory requirements, project criteria, and DNR policies.
- Projects are included in priority order on a Preliminary Projects List.

Regional Team Evaluation and Preliminary Projects List

- Preliminary Projects List is forwarded to the DNR Regional Teams for review and comment. Regional Teams are comprised of the major units within DNR, incl. environmental and enforcement agencies. Extensive environmental review of potential impacts to resources and habitat is conducted on each project.
- Regional Team comments/recommendations are forwarded to WIP for consideration.

Draft Final Projects List Developed

- WIP reviews Regional Team comments, adjusts project criteria scores and associated project rankings as necessary.
- WIP adjusts Preliminary Projects List to meet final projected WIF funding amount to be budgeted by DNR for projects for the next fiscal year. At this point, the "Preliminary List" becomes a "Draft Final Projects List".
- Draft Final Projects List is forwarded to DNR Office of the Secretary (OOS) for consideration.

Final Projects List Selected

- Once approved by OOS, the Final Projects List is forwarded to the Department of Budget and Management (DBM) for review/comment.
- Once approved by DBM, the Final Projects List is included in the Governor's budget request for DNR and forwarded to the Maryland General Assembly for approval.

Award Grants and Final Reimbursement

- Office of the Governor and/or DNR sends an award letter to each grant recipient confirming funding approval.
- WIP Regional Project Managers monitor project through completion.
- WIP Regional Project Managers and WIP Director approve grant reimbursements to applicants.

and submitted to the State Legislature for approval. If approved, the grant applicants are so notified and the funding becomes available on July 1st (the first day of the new State fiscal year).

Initial Inquiry

Requests for projects originate from government agencies, elected officials, and the general boating public. When an inquiry is made to the DNR for a potential project, the Waterway Improvement Program (WIP) contacts the appropriate government entity and has a staff member inspect the site to make a preliminary analysis to determine if the project can qualify for State funding in accordance with DNR criteria and statutory guidelines. All project requests are submitted on a "Waterway Improvement Project Request Form" (**Figure 19**) and a "Waterway Improvement Fund Application and Project Agreement" (**Figure 20**) to the WIP.

A local jurisdiction can apply for a grant by submitting the application and a "Waterway Improvement Fund Application and Project Agreement" to the Waterway Improvement Program. Eligible applicants include any state, local or federal agency.

Grant Types

Projects found to be eligible for State assistance from the WIF may receive funds in the form of grants as described below. The type of funding selected for a project is dependent upon the scope of the project, statutory guidelines, technical and environmental considerations as well as to what degree the project benefits the general boating public.

Capital Grants

1. **100% Grants (Not to exceed \$5,000)** – The DNR may expend a total of \$125,000 each fiscal year, for a total of (25) grants not exceeding \$5,000 each, for projects such as minor construction, repair, and navigation projects at local, state or federal government boating facilities.
2. **100% Grants (Not to exceed \$100,000)** – When available, these grants are made to local or federal agencies for the engineering, construction, and maintenance of public boating facilities.
3. **100% Grants** – Projects for dredging, marking channels and harbors, construction of jetties and breakwaters; clearing debris, aquatic vegetation, derelict boats and obstructions from navigable waters; as well as construction of boating facilities on lands owned or leased by the DNR may be financed 100% by the Waterway Improvement Fund.
4. **Matching Grants (50/50)** – Projects exceeding \$100,000 may be financed on a 50/50 matching basis for the engineering, construction, dredging and maintenance of public boating facilities. Other state funds may not be used as the local cost share.
5. **100% Interest Free Long Term Loans (Tax Districts)** – A local governing body may borrow interest free funds for a maximum 25-year term for waterway improvement projects within a Waterway Improvement Tax District. In addition, loans can be provided for dredging projects benefiting residential property owners or a group of

Figure 19 Waterway Improvement Project Request Form

Date:		Project Name:		WWI Grant #	
County/Municipality:			Contact:		
Department:			Title:		
Location:			Address:		
Latitude: _____		Longitude: _____			
Datum 83 Sources:	Maps - <input type="checkbox"/>	GPS - <input type="checkbox"/>			
E-mail Address:			Phone Number:		
			Fax Number:		

Detailed Project Description:

Detailed Project Justification:

Previous Funding Amount:		Maintenance Project:	<input type="checkbox"/> Yes , <input type="checkbox"/> No
Amount Requested:		New Project:	<input type="checkbox"/> Yes , <input type="checkbox"/> No
		Multi-Year Phased Project:	<input type="checkbox"/> Yes , <input type="checkbox"/> No
Proposed Beginning Date:		Proposed Completion Date:	

Detailed Current Project Status: (i.e. permit process, engineering, etc.)

Detailed Estimated Construction Costs:

1	Engineering	\$
2	Site Work	\$
3	Demolition and Removal	\$
4	Construction	\$
5	Equipment	\$
6	Miscellaneous	\$
7	Contingencies	\$
8	Dredging Costs	\$
9	DMP Site Costs	\$
	Totals	\$

Check Type of Funds

<input type="checkbox"/> 100% LG (\$100,000)	
<input type="checkbox"/> 50% MF (Non-State Match)	
<input type="checkbox"/> SP	
<input type="checkbox"/> DG 100%	
<input type="checkbox"/> MFDG 50% (Non-State Match)	
<input type="checkbox"/> DG Spur Loan/Tax Dist.	
<input type="checkbox"/> MFFR 50% (Non-State Match)	
<u>Source of Matching Funds</u>	
<input type="checkbox"/> Federal \$	
<input type="checkbox"/> Local \$	
<input type="checkbox"/> Other \$	

Figure 20

Shaded areas for state use only

Maryland Department of Natural Resources
Capital Grants and Loans Administration
Waterway Improvement Program

Waterway Improvement Fund Application And Project Agreement

1.	APPLICANT'S NAME	WWI #
2.	PROJECT TITLE	
3.	(County/Municipality)	Individual Project <input type="checkbox"/> Multi-Year (phased) Project <input type="checkbox"/>
4.	LEGISLATIVE DISTRICT	Last WWI Grant Issued # (at this site) Amount \$
5.	PROJECT LOCATION	Street Address: Lat: City, Town, or Community: Long:
	County Tax Map #	Grid Parcel # ADC Road Map Edition # Map # Grid Ltr Grid #
a.	Number of boating public currently served:	b. Existing annual attendance: Visits/Yr.
c.	Number of boating public projected at site:	d. Projected annual attendance: Visits/Yr.
6.	PROJECT DESCRIPTION: (Give a detailed description of project)	
7.	TOTAL PROJECT COST	\$ 100.00 % (Source of Funds)
a.	LOCAL FUNDING	\$ %
b.	OTHER FUNDING	\$ %
c.	FEDERAL FUNDING	\$ %
d.	AMOUNT REQUESTED	\$ % Total WWI Funding Requested
e.	GRAND TOTAL	\$ 100.00 %
8.	LOCAL PROJECT COORDINATOR:	
	(Print Name)	(Print Title) (Telephone Number)
	(Address)	(City) (State) (Zip) (Fax Number)
9.	PROJECT PERIOD:	e-mail address:
	This Grant	
	<input type="checkbox"/> Multi-Year Project	To: (This project completion date)

Describe below how this application relates to the total multi-year project:

10. DETAILED COST ESTIMATE: (Round all estimates to nearest even dollar)

Fiscal Year Request <input style="width: 100px;" type="text"/>			Contract Cost	Force Account Costs	Total Estimated Costs
<u>Detailed Estimated Construction Costs:</u>					
1	Engineering	\$ <input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>
2	Site Work	\$ <input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>
3	Demolition and Removal	\$ <input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>
4	Construction	\$ <input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>	<input style="width: 80px;" type="text"/>
5	Equipment	\$ <input style="width: 80px;" type="text"/>			
6	Miscellaneous	\$ <input style="width: 80px;" type="text"/>			
7	Contingencies	\$ <input style="width: 80px;" type="text"/>			
8	Dredging Costs	\$ <input style="width: 80px;" type="text"/>			
9	DMP Site Costs	\$ <input style="width: 80px;" type="text"/>			
10	Other Costs	\$ <input style="width: 80px;" type="text"/>			
	Totals	\$ <input style="width: 80px;" type="text"/>			
Total Project Costs					

Multi-Year Costs:

Year One \$

Year Two \$

Year Three \$

Total Cost \$

(State Use Only)

11. GRANT AGREEMENT RECEIVED	DATE <input style="width: 100px;" type="text"/>	Number <input style="width: 100px;" type="text"/>
12. ON-SITE INSPECTION	DATE <input style="width: 100px;" type="text"/>	BY <input style="width: 100px;" type="text"/>
WWI FUND SOURCE		
13. ASSIGNED	AMOUNT \$ <input style="width: 100px;" type="text"/>	
14. DEPARTMENT OF NATURAL RESOURCES – WATERWAY IMPROVEMENT APPROVAL		
<input style="width: 100%; height: 20px;" type="text"/> (Director's Signature)	<input style="width: 100%; height: 20px;" type="text"/> (Approval Date)	<input style="width: 100%; height: 20px;" type="text"/> (General Assembly Date)

15. Terms and Conditions: In submitting this Project Proposal, the Governing Body hereby accepts the Terms and Conditions set forth in the State Boat Act (Section 8-701-9) and the following:

- A. The applicant will not discriminate against any person on the basis of race, color, creed or national origin, in the use of any property or facility acquired or developed pursuant to this proposal.
- B. The design and construction of the project will be by or under the supervision of the Local Governing Body. All necessary Federal, State and local permits and approvals must be secured by said Governing Body prior to start of construction.
- C. Plans and Specifications, including all contract documents and any subsequent changes, must be submitted for review and approval by the Department of Natural Resources (DNR).
- D. The Governing Body will publicly advertise the project for bids. Bids will be received and compiled by the Governing Body involved. The Department of Natural Resources reserves the right to have a representative present at the bid opening.
- E. Project contracts with a value of \$500,000 or more for which the State provides 50% or more of the funding will be advertised as prevailing wage contracts (COMAR 21.11.11).
- F. The Governing Body will prepare a tabulation of bids and submit same to the Department of Natural Resources with comments and recommendations prior to the award of any contract.
- G. The Governing Body must submit invoices and a copy of paid canceled check(s) or certification that payment has been made for reimbursement of the State's share of the project to the Department of Natural Resources upon completion of the project.
- H. The Governing Body will post the project, in a prominent location, as a "Public Facility" and, will place a permanent sign, approved by the Department, acknowledging project funding by the Waterway Improvement Fund.
- I. If a fee is to be charged for use of the facility, the Governing Body must obtain prior approval from the Department of Natural Resources.
- J. The Governing Body agrees to maintain the proposed project in regards to litter, refuse, and necessary supervision.
- K. Any project funded in whole or in part with Waterway Improvement Fund grants must remain available and open for use by the general boating public. The Department must approve changes in use of a project before it is removed from public access and use, such as through sale, donation, or commercial use of the facility. If approved, the local governing body must replace the project with a facility open to the general boating public with equal value at the nearest approved location, at no cost to the Department. The local governing body may be required to repay the Department for the current value of the project in proportion to the total cost of the project paid by the State. The Department may require two independent appraisals to determine the amount to be reimbursed to the Waterway Improvement Fund.
- L. All projects must be in compliance with the Forest Conservation Act of 1991 and the Maryland Economic Growth, Resource Protection, and Planning Act of 1992 prior to the reimbursement of any State funds.
- M. The Department of Natural Resources reserves the right to revert any unexpended or unencumbered balance from this grant not used during the duration of the project specified in Section (9) of this application. Funds from projects over four years old will automatically revert to the Waterway Improvement Fund.
- N. Projects financed through State bonds must be approved by the State Board of Public Works prior to the reimbursement of any State funds.
- O. The Governing Body, agrees that it will if necessary, unless previously approved by DNR:
 - 1. Provide, without cost to the State of Maryland, all necessary lands, easements, rights-of-way, and dredge disposal site(s) required for project;
 - 2. Hold and save the State of Maryland free from damages that may result from the construction of the project;
 - 3. Accomplish, without cost to the State of Maryland, alterations and relocations as required in sewer, water supply, drainage and other utility facilities; and
 - 4. Will assure that the facility will be designed and constructed for handicapped persons pursuant to the Annotated Code of Maryland and the Americans with Disabilities Act (ADA).

16. LOCAL GOVERNMENT AUTHORIZATION

As the authorized representative of this Political Subdivision, I have read the terms of the "Project Agreement and Terms & General Conditions" of the Waterway Improvement Program, and _____ hereby agrees to abide by the project terms and conditions.
County/Municipality

(Signature)

(Print Name)

(Print Title)

(Date)

property owners with land abutting a channel adjacent to a main channel or harbor dredging project. This property must however, be included in a Waterway Improvement Tax District by the governing body prior to dredging the adjacent channel.

Operational Grants

1. **Service Contract Grants** – DNR annually budgets \$175,000 in WIF for boater-generated trash and portable restroom facilities at public boating facilities. Funds are provided to federal, state, and local governments on a grant reimbursement basis for a contract period of a maximum of nine months of any given calendar year.

Project Evaluation Criteria

Every grant request is evaluated using the following eight (8) criteria. Applications are scored based on adherence, conformity, and support of these criteria. Each criteria has been assigned a scale of internally weighted points based on the applicants' responses in the grant request, on-site inspections completed by WIP Regional Project Managers, and supplemental information provided by the applicant.

Explanation of Project Rating Criteria

1. **Expand/Improve Public Boating Access** – A score of (40) is assigned to each project that directly provides increased boating access for the general boating public such as new launch ramps, additional parking at ramps, additional launch lanes, improve/maintain major navigation channels/harbors, and increase launch area holding/boarding piers. A score of (20) is assigned to the replacement of or major improvements to existing boating access facilities as well as projects that do not actually increase boating access opportunities but improve the quality of boating access. Any project that does not directly increase or improve boating access but provides other amenities or performs an ancillary function, such as picnic areas, boardwalks, etc., or provide limited access to the general boating public receive a score of (1).
2. **Safety** – Any project that directly improves boating safety, such as any fire fighting improvements, lighting, guard rails, handicapped accessibility improvements, dredging projects that remove dangerous shoals, breakwaters that improve navigation, etc., receives a score of (40). Those projects that indirectly improve boating safety such as replacing worn decking, pier widening, common dredging projects, mooring buoys, site regrading, repaving, etc., receive a score of (20). Projects that do not affect boating safety such as new comfort stations, painting, re-roofing, new parking areas, etc, receive a score of (1).
3. **Cost/Benefit** – Those projects that have a high cost/benefit ratio such as those that increase the usage capability or include major improvements to a public boating facility (such as parking lot expansion, additional launch lanes, comfort station(s), additional slips/docking), navigation projects that directly support public boating facilities and/or act as major thoroughfare channels, and ADA related improvements receive a score of (30). Those projects that have a low cost/benefit ratio such as projects that benefit a very limited segment of the boating public such as spur channel dredging, tax district loans, etc., receive a score of (1).

4. **Regulatory Permits/Environmental Review** – Those projects that already have permits (or will imminently be issued permits) and/or a favorable environmental review receives a score of (30). If no permits are issued and/or there are other environmental issues that could delay the permits for at least one year or more from July 1st, the project receives a score of (1).
5. **Projected Expenditure Rate** – If 100% of the funds for the proposed project are expected to be expended within the approved fiscal year (July 1 to June 30), a score of (20) is assigned. All projects that are anticipated to have 100% expenditures made within 1 to 2 years receive a score of (10), and any projects anticipated to have 100% expenditures made after 2 years receive a score of (1).
6. **Continuation of a current project under Contract** – If the proposed project is a continuation of a current project, the score assigned is (10). All other projects receive a score of (1).
7. **Boating Congestion** – Any project that aggravates or adds to boating congestion (on a waterway identified as being highly congested) receives a score of (1). An example would be the construction of additional launching lanes or increased parking that increases use at a facility on a waterway that already experiences high congestion and/or legal citations. Any project that does not impact boating congestion in any manner receives a score of (10).
8. **Other** – This criterion assigns additional points to projects that either have a special circumstance or a high local/state priority. Furthermore, this criterion can be used to deduct points if a project has substantial negative environmental and/or boating impact.

Scoring/Project Selection

The WIP reviews each grant request to determine if the project benefits the general boating public, meets the statutory guidelines, and is consistent with Departmental policies. All projects are initially evaluated by the respective WIP Regional Project Manager based on the above referenced criteria, the results of the site inspection, and any other support information provided by the potential applicant. These proposed projects are then submitted to DNR's Regional Teams, where they are reviewed to determine if they are consistent with DNR policies. The grant requests are then jointly evaluated, ranked, scored, and geographically distributed by the WIP Regional Project Managers and the Program Director. Those projects given a low priority for funding in any given fiscal year may reapply for funding in the next budget cycle.

All projects are then included in priority order on a "Preliminary" Waterway Improvement Fund Projects List. This list is then adjusted in accordance with the projected funding level for the next fiscal year to create a "Final" Project List, which is then submitted to DNR's Office of the Secretary and Department of Budget and Management for review, after which it is forwarded to the State Legislature for approval.

Grant Award

Following the State Legislature's approval of the Final Project List, the Office of the Governor and/or DNR sends an award letter to the applicant confirming funding approval. Applicants are

advised that they must abide by the “Terms and Conditions of the Grant Application” to receive reimbursement for the grant.

B. Existing Grant Process Recommendations

The existing WIF application, evaluation, and project selection process works well and meets the needs for selecting and prioritizing WIF projects. However, there are several recommendations that can be easily implemented by WIP to improve the grant process.

Current Application and Recommendations

- The current application does not require information for all of the criteria that would be used to evaluate projects. It is recommended that fields be added to the existing application to address this issue.
- The current two-stage application process (i.e.: “Request Form” and “Application”) creates additional and redundant paperwork. It is recommended that a single, one-stage form be adopted to streamline the review and application process.
- Insufficient information is included in the application for major projects and facilities that require more extensive environmental analysis. However, sufficient information is provided in the application to address routine maintenance and minor enhancement projects.
- Paper applications require duplicate data entry, once on the part of the applicant and again by WIP staff. It is recommended that DNR implement on-line electronic application filing.

Current Project Evaluation Process and Recommendations

- Existing criteria are sufficient to provide a process for adequately ranking and prioritizing the majority of projects funded by WIP.
- More detailed information should be presented by the applicant for major projects or new facilities. If the applicant can't provide such data, then the project should be phased in a manner whereby this information can be provided to WIP for analysis. Additional information could include:
 - Copy of permit or permit applications. Identify needed permits and include, as a minimum, copy of permit applications “as filed” with jurisdictional agencies.
 - Conceptual layout/preliminary engineering designs (sketches “to scale” as a minimum)
 - Other documented evidence (maps/photos/reports) demonstrating and supporting the need for project. For example, applicant could include photos of a crowded parking lot and launch ramp to illustrate capacity problems at a facility.

- More detail and analysis on environmental impacts (i.e. submerged aquatic vegetation surveys, wetland delineations, etc).
- Project elements eligible for BIG funding.
- Supplemental information, not included in the project application, may be used in evaluating grant requests along with personal judgments for specific projects. Such decisions should be documented in the application by the WIP in order to support project priorities and evaluations.
- If all funds are distributed for a particular funding year, require all applicants who did not receive funding and who wish to be eligible again next year to resubmit applications with updated information.
- Summarize applicable State policy acts and programs for the applicant. Provide detailed information on such acts and programs or “hotlinks” to applicable information sources.
- Provide photographs for projects deemed suitable for funding. WIP Regional Administrators should continue to be responsible for site visits, confirming application data, and commenting on proposed projects.
- Incorporate applicable study data into evaluation process for potential projects
- Expand use of GIS environmental data layers for those projects that have significant potential environmental impacts. Data layers that provide information on relevant environmental conditions and boating activities should be expanded and updated. DNR should review the current procedures for reporting the number of registered boats in the state to ensure that an official number is reported to all agencies requesting this information.

Use of GIS Indicators in the Project Evaluation Process

In addition to application forms and processes, this study developed additional strategies to improve the use of existing GIS and database sources in recreational boating facility planning to enhance selection for larger projects through the WIF program. The following presents a summary of recommendations designed to improve project evaluation and result in a more effective use of funding under the WIF program. DNR's goal is to provide funding for projects that are consistent with identified demand and public policy as well as those projects most likely to be approved and built.

For this study, “indicators” are the primary factors that impact potential project sites such as the Resource Conservation portion of the Critical Areas, state wetlands, submerged aquatic vegetation, and shellfish beds. These indicators are available as GIS layers and should be considered in the evaluation of complex project proposals for the WIF, SFR, and BIG Programs.

2003 UB Boater and Boating Facility Surveys

UB collected and evaluated surveys of boaters and boating facility operators that presented DNR with a clearer picture of the priorities and needs of the boating public. The surveys included

information about existing facilities and reported boating needs throughout the State, specifically, facility needs (e.g., restrooms, fish cleaning stations, etc.) and capacity and safety enhancements (e.g., transient slips, navigational aids, launch ramps, etc.). This data has been coded by 8-digit watershed and can be useful in project evaluations.

Existing Use of GIS Indicators in the Project Evaluation Process

WIP utilizes GIS as part of the current evaluation process for proposed larger facility projects. This effort consists of examining printed maps produced for WIF application review by the DNR GIS. These maps are labor intensive to produce. As a result, the use of spatial analysis as a tool to support the WIF application process has not been fully leveraged.

At the same time, however, it is the intention of DNR to further develop their GIS capabilities and they have a general vision for building those capabilities over time. Within the last two years, DNR has made great strides in organizing, managing, and sharing data that support various programs. Relational databases have been developed and custom applications have been implemented that allow staff in various departments to input, track, and analyze the data utilized in evaluating larger projects. The functionality of the database thus far has been limited to non-spatial tabular data, but placeholders have been created for maps. **Figure 21** shows a screenshot of the Project Data Entry screen with the “Project Info” dialogue tab highlighted, while **Figure 22** shows a screenshot of the Project Data Entry screen with the “Rating Criteria” tab highlighted.

C. Recommended GIS and Database Enhancements

DNR has created an excellent foundation on which spatial data can be assembled. DNR staff has actively been discussing ways in which spatial data sets could be used to a greater extent in evaluating complex projects. PB recommends that DNR move towards this objective in several ways:

First, by better integrating DNR's GIS data into the WIP evaluation process for projects that could have more extensive environmental impacts. For example, a map was developed, based on GIS data provided to PB by DNR, for environmentally sensitive areas for the Magothy River sub-watershed (**Figure 23**).

PB recommends that DNR consider developing Waterway Priority Areas (WPAs) in the future, which could be used for supplemental analysis to “flag” areas for further investigation. WPAs are a proposed new GIS layer, which DNR could adopt, that represent areas identified as being appropriate for new facility development. A simple scoring system can be developed for WPAs based on the overall suitability for new facilities. **Figure 24** shows the WPA concept applied to the Magothy River sub-watershed.

PB also recommends utilizing DNR's Digital Orthophoto Quarter Quad maps to supplement the vector GIS data. The Digital Orthophoto Quarter Quad aerial imagery serves as a key visual aid to give a better sense of the project area, and potentially identify issues that may not be flagged by the data. **Figure 25** shows a sample of what one of these maps would look like for the Magothy River sub-watershed.

Figure 21
Existing DNR Project Data Entry Screen - Project Info Tab

Waterway Improvement - [Waterway Improvement - 2002]

File Edit Insert Records Window Help

Project Data Entry

Project Info. | Rating Criteria | Estimated Cost | Schedule/Funds/Const. | Maps | History | Return to Main Menu

Project ID Number: 44 | Priority: | County: Calvert

Region: Southern | Locality: |

Previously Requested: | What FY Previously Requested: |

Previously Funded:

Project Location: Chesapeake Beach

Project Description: Provide tie-ups for vessels to have access to the town and trail

Project Types: LG

Requested Amount: \$100,000.00

Fundable Amount: \$100,000.00

Contact Name: | Fiscal Year: |

Status: |

Type of Grants

- Matching Fund Grant (50/50)
- 100% Local Grant (NTE \$100,000)
- 100% Dredge Grant
- 100% State Grant
- 100% Dredge Loan
- GO Bonds
- Matching Funds Fire/Rescue
- Matching Funds Dredging Grants

Record: 2 of 162

Location: \\tawesdata\cgla\Data\Waterway 681 bytes My Computer

Start | Inbox - Microsoft ... | C:\Documents a... | Waterway Im... | 10:00 AM

Figure 22
Existing DNR Project Data Entry Screen – Rating Criteria Tab

The screenshot displays the 'Project Data Entry' application window. The title bar reads 'Waterway Improvement - [Waterway Improvement - 2002]'. The menu bar includes 'File', 'Edit', 'Insert', 'Records', 'Window', and 'Help'. The 'Project Data Entry' window has several tabs: 'Project Info.', 'Rating Criteria', 'Estimated Cost', 'Schedule/Funds/Const.', 'Maps', 'History', and 'Return to Main Menu'. The 'Rating Criteria' tab is active and contains the following data:

Criteria	Value	Score
1 Local Government or State Priority	100 High	100
Serves the Boating Public	Provides Increased Boating Access	100
Safety To Boating	Indirectly Improves Boating Safety	30
Benefit and Cost	High	50
Continuation of a current project	YES, Continuation of current project	50
Regulatory Permits	Approved/Imminent or Not Need	30
Projected Expenditure Rate	1 Year	30
Boating Congestion	Moderate	10
Conflict with Existing Facilities	No Conflict	15
Potential Usage	Limited Potential Usage	1
Other - Competitive Status	Value between 0 and 500 >> 0	0
Total Score >>		416

At the bottom of the window, the status bar shows 'Record: 2 of 162'. The Windows taskbar at the bottom indicates the location as '\\awesdata\cgla\data\Waterway', 681 bytes, and the time as 10:02 AM.

Figure 23
 Sample Database Screen – Environmentally Sensitive Areas

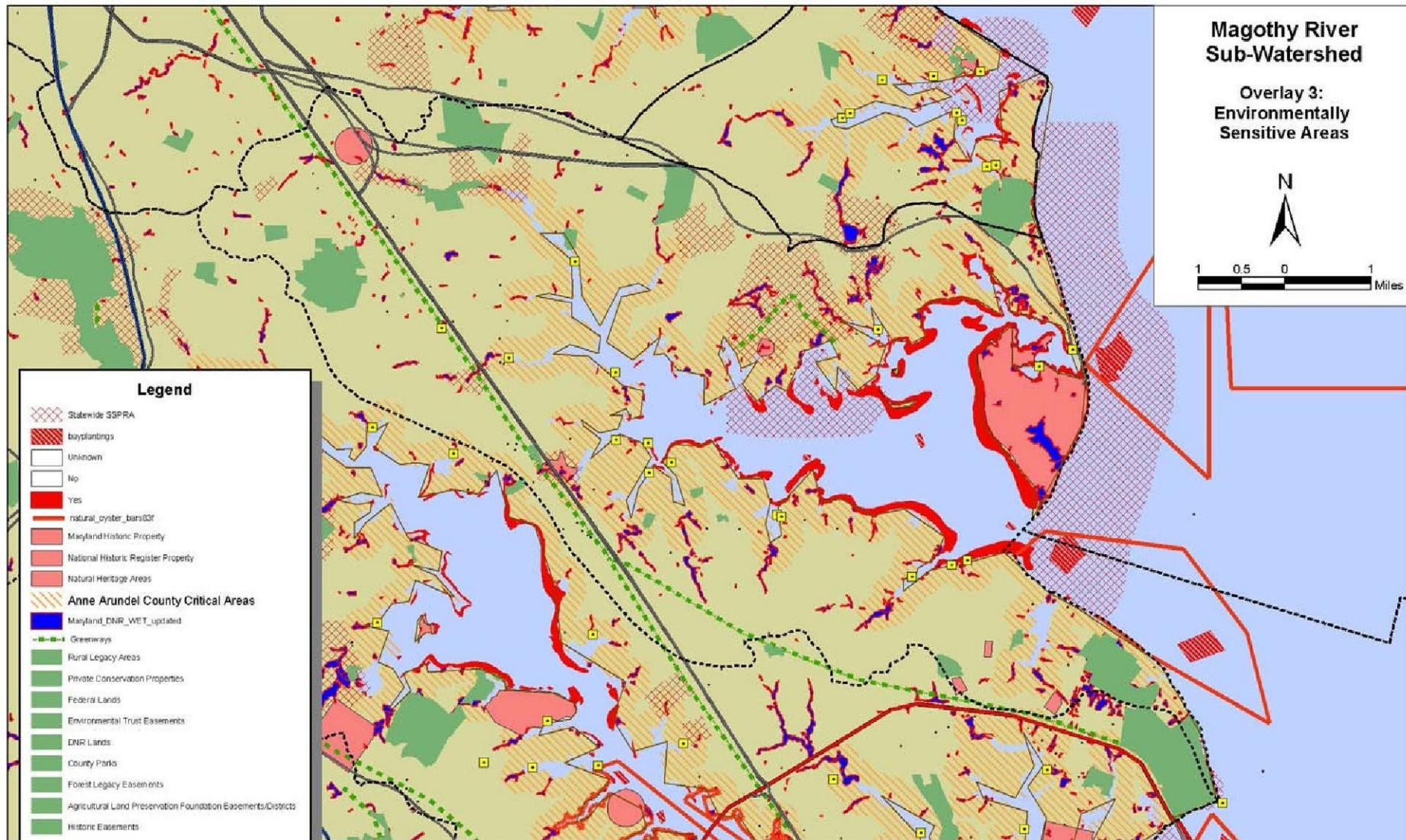


Figure 24
Sample Database Screen – Waterway Priority Areas

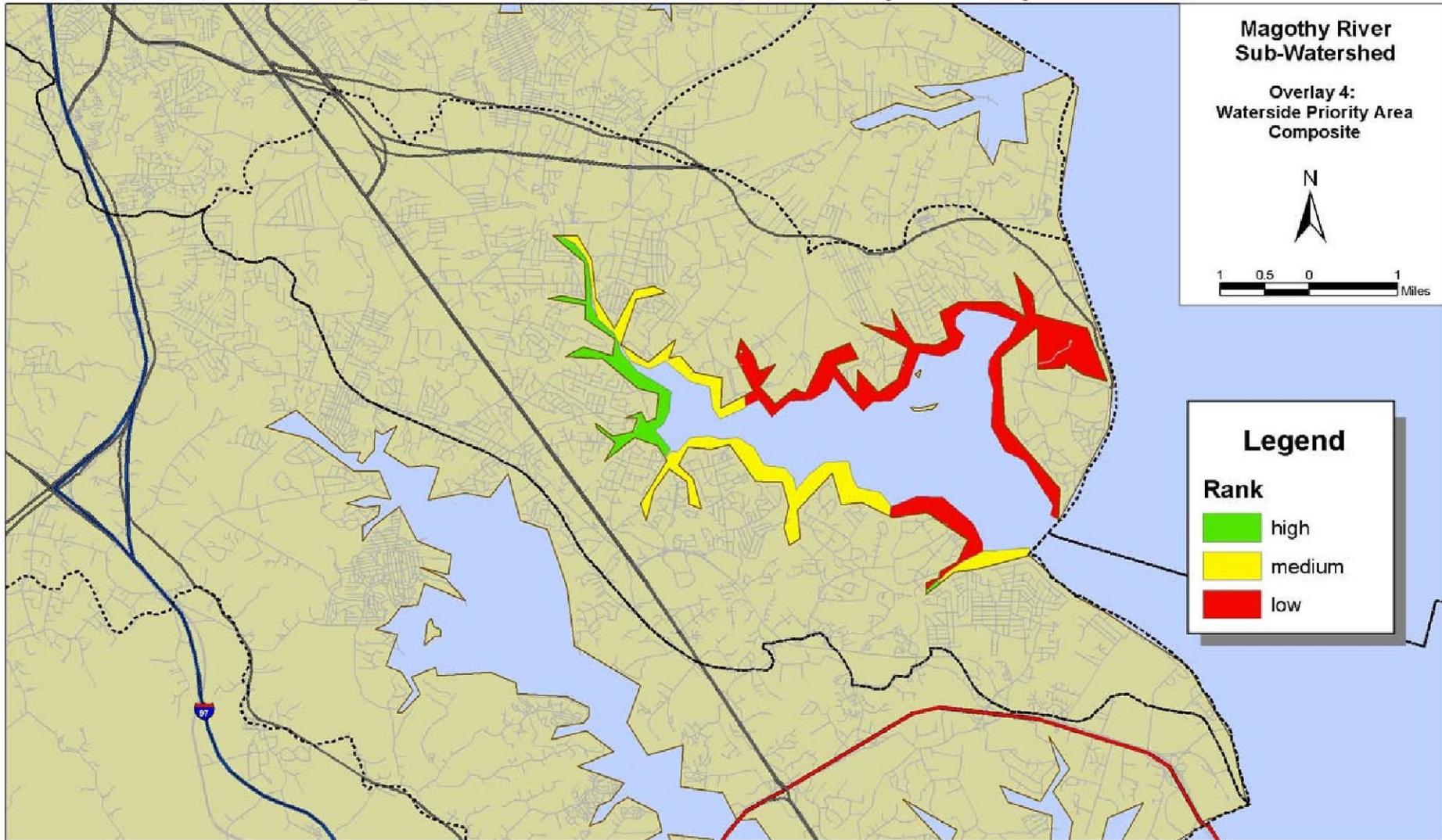
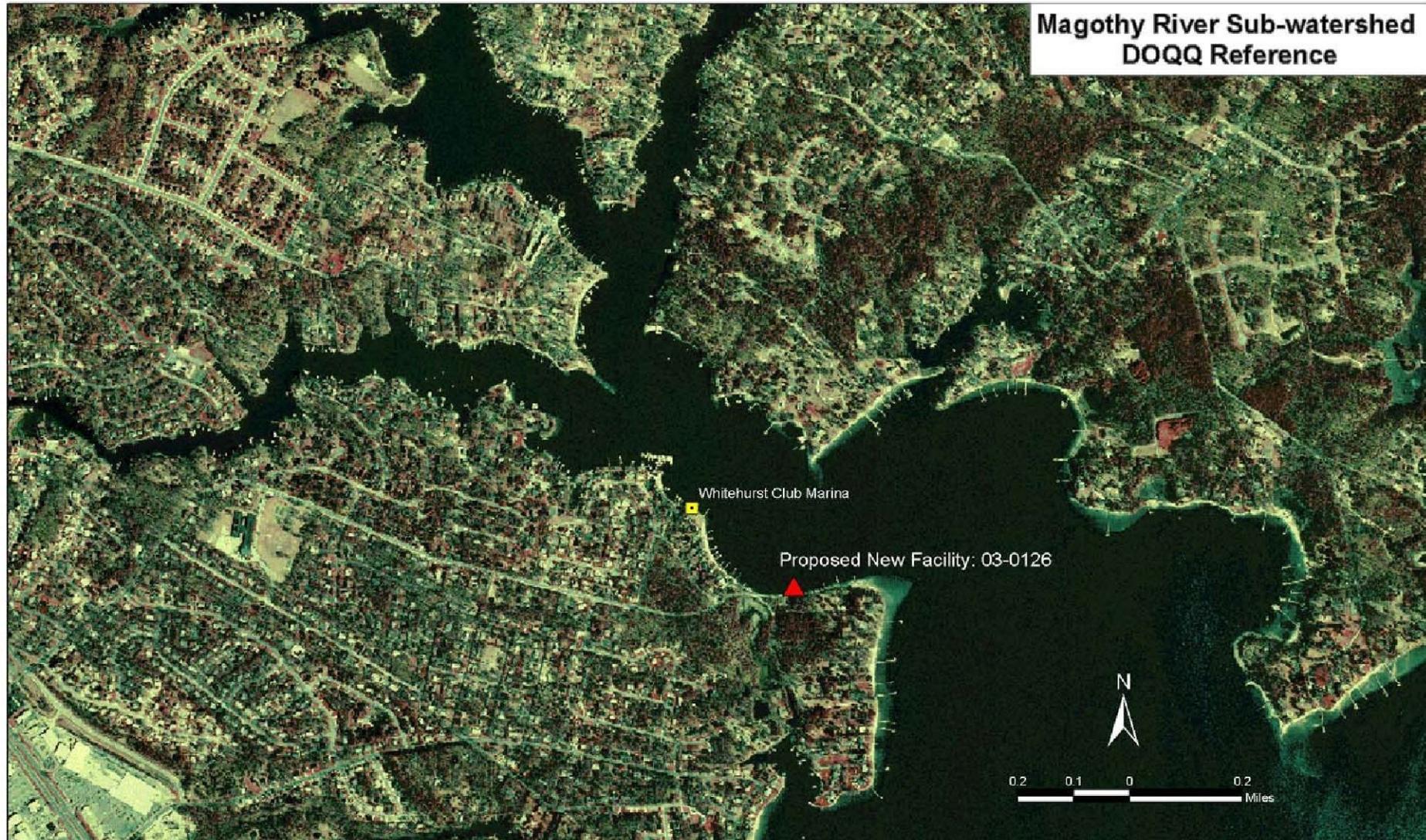


Figure 25

Sample Database Screen – Digital Orthophoto Quarter Quads (DOQQ) Aerials



Finally, to further leverage DNR's investment in GIS by placing these tools directly in the hands of the end user, PB recommends that an intranet-based application be developed that allows Regional Project Managers to work with the mapping data without the benefit of desktop GIS software or training. Through the use of a standard Internet browser, non-GIS staff could zoom into any scale of a project area, pan around, turn various layers on and off, and print out custom maps with a few simple mouse clicks. This would greatly improve the quality of information beyond what can be provided by static maps and make reviewers more productive.

D. Implementation

If these recommendations are accepted by DNR, implementation could be accomplished in a phased approach. PB has developed project templates for creating the regional environmentally sensitive area maps, waterway priority areas, and the Digital Orthophoto Quarter Quad maps. These will be provided to DNR and should serve as an immediate enhancement without any additional effort. Additional enhancements to GIS data sets as outlined herein and incorporating them into the WIF process will be accomplished by DNR as resources allow on an ongoing basis.

The first phase of enhancements would be to utilize the regional data layers and PB survey information included in this Plan for evaluating proposed projects. A second phase could include automation of map production and GIS data evaluation, as described earlier, along with other custom productivity tools. A third phase could include development of the intranet-based GIS application for end users.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions and Recommendations

The greatest percentages of boats in Maryland (71% using 2003 registration data) are trailered. Maryland also has a relatively high percentage of large, non-trailerred, boats. Recent trends show an increase in the size of boats being purchased in the state. Boating facilities are already being modified to accommodate larger boats and many indicate a need for larger boat ramps and parking areas as well as additional transient slips, moorings, and docking facilities in the immediate and near future. The following summarizes the major conclusions and recommendations described in this report to meet recreational boating facility needs and streamline the grant process:

Facility Needs

1. There is a significant demand for public launch ramps in all regions. Siting new launch ramps is problematic in many locations. To address this need and the public access goal contained in the Chesapeake Bay Agreement, State and local governments should seek opportunities to purchase waterfront properties with suitable environmental conditions for launch ramps. Locations in Baltimore, Garrett, Anne Arundel, and Cecil counties would be especially well-suited to existing needs identified in the UB Survey.
2. Maryland should consider possible sites, where new transient facilities for large boats could be located. Expansion or retrofitting of existing facilities (throughout the Chesapeake and Coastal bays) to accommodate larger boats and provide services currently in high demand (utilities, cable, pump-outs) should also be a focus.
3. Moorings are in relatively short supply in Maryland and are a cost-effective way of providing dockage to large boats. An average mooring slip costs approximately \$1,500 compared to \$15,000-\$20,000 to construct a slip at a marina, and the need for dredging is greatly reduced. DNR should investigate suitable areas for moorings, taking into account the potential impact on navigation and environmental factors.
4. Dredging will be a continuing need in Maryland. DNR should seek acquisitions for use as dredge material placement sites including, but not limited to, beneficial use sites.
5. Promote dual-purpose waterway access points that are designed to safely accommodate boat launch ramps and carry down access for smaller watercraft. Carry down access and launch ramps for motorized boats can be separated by vegetation or other aesthetically pleasing buffers. This allows sharing of other features, such as parking, restrooms, fish cleaning and recycling.
6. Encourage partnerships and cooperation among existing neighboring boating facilities to optimize upland infrastructure such as parking, restrooms, recycling and waste facilities.
7. Maximize previous infrastructure and site investment, and minimize environmental impacts, by encouraging renovation and expansion of existing facilities where doing so does not add to already congested facilities.

Funding

1. At a minimum, maintain existing levels of funding for completing public boating access related projects from current sources. Consider ways to increase funds for boating projects from existing or new sources to meet the demand for new facilities and maintenance of existing boating infrastructure.
2. Consider converting the current sales tax on canoes, kayaks, and rowboats to an excise tax, with funds collected going to the Waterway Improvement Fund. Currently, there are limited funds available for facilities for non-motorized boats and there is a growing user population and demand. These facilities typically involve fewer impacts and siting challenges.
3. Update the estimate of fuel used by boaters, considering the trend towards larger boats, bigger engines, and the growth in sales of high-fuel-consumption personal watercraft. An appropriate state agency should develop a new estimate of the number of gallons of fuel attributable to motorboats, and a commensurate adjustment to the percentage of the fuel tax going to boating projects and programs should be considered. An increase from 0.3% to 1.0% would translate to about an additional \$3 million in funding for boating in Maryland. This amount would make a substantial difference in the State's ability to fund recreational boating projects and provide an equitable allocation of funds among users paying the taxes.

Database Enhancements

1. Collect more detailed information such as erosion rates, sedimentation rates, water depth, and dredging patterns that would provide better data for decision-making purposes. Better coordinates are needed for some facilities to improve the accuracy of the facility location maps.
2. Evaluate the impact of the growing number of private piers. More information on the number and location of these facilities would be needed.
3. Review the current procedures for reporting the number of registered boats in the state to ensure that an official number is reported to all agencies requesting this information.

Project Application

1. Add fields to the existing application that will provide support information for the criteria used in evaluating projects.
2. Request more detailed information for major projects that require more extensive environmental analysis. (Sufficient information is provided in the current application to address routine maintenance and minor enhancement projects.)

3. Combine the current two-stage application ("Request Form" and "Application") into a single document as a means to streamline the grant application process.
4. Enhance the current grant application by allowing electronic on-line application filing.
5. Provide a detailed on-line manual for grant applicants and the public that includes project selection criteria/guidelines, statutory/policy references, as well as a detailed description of the grants process. Provide detailed information on such acts and programs or "hotlinks" to applicable information sources.

Project Evaluation

1. Consider adding a dedicated staff position to coordinate the administration of the BIG and SFR Programs. This would greatly enhance DNR's ability to obtain additional federal funding for small boating facilities through SFR as well as complete more comprehensive federal grant applications for Tier II funding for transient boating facilities through the BIG Program. Expanded use of both federal fund sources will complement existing WIF projects and provide improved services for the general boating public.
2. If all funds are distributed for a particular funding year, require all applicants who did not receive funding and who wish to be eligible again next year to resubmit applications with updated information.
3. Provide photographs for projects deemed suitable for funding. WIP Regional Administrators should continue to be responsible for site visits, confirming application data, and commenting on proposed projects.
4. Incorporate applicable study data into evaluation process for potential projects.

GIS Enhancements

1. Integrate GIS data sets that DNR has readily available, as well as the sample maps included in this Plan. Expand and update the data layers that provide information on relevant environmental conditions and boating activities.
2. Expand use of GIS environmental data layers, specifically in evaluating larger and more complex boating access projects.
3. Create Waterway Priority Areas (WPAs), which could be used for supplemental analysis to identify areas for further investigation. WPAs are a proposed new GIS layer, which DNR could adopt, that represents locations appropriate for new boating facility development.
4. Use DNR's Digital Orthophoto Quarter Quad maps to supplement the vector GIS data. The Digital Orthophoto Quarter Quad aerial imagery serves as a key visual aid to give a better sense of the project area, and potentially identify issues that may not be flagged by the data.

5. Automate the production of maps with custom scripts or other productivity tools that are used in evaluating projects. In addition, develop an intranet-based application that provides WIP Regional Project Reviewers with mapping data for reviewing projects without the benefit of desktop GIS software or training.
6. Continue to expand the GIS database and mapping for factors that affect boating. Such factors may include accident information, private boat launches, pump-out facilities and fueling stations.
7. If necessary, implement a phased approach for enhancements to GIS data sets. The first phase of enhancements could be to utilize the regional data layers and UB survey information included in this Plan for evaluating proposed projects. A second phase could include automation of map production and GIS data evaluation, as described earlier, along with other custom productivity tools. A third phase could include development of the intranet-based GIS application for end users.