

# Tidal Wetlands Management Technical Support

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Center for Coastal Resources Management  
Virginia Institute of Marine Science  
Grant #NA14NOS4190141, Task #7

11/9/2015



**Virginia Coastal Zone**  
MANAGEMENT PROGRAM

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# Product 1: General Technical Guidance

The Wetlands Program continues to provide technical advice to both the general public, and regulatory and non-regulatory authorities with regard to tidal shorelines.

Upon request, the Center for Coastal Resources Management (CCRM) provides general technical guidance and Joint Permit Application (JPA) Reviews. General advice is provided via phone, email, and/or when feasible on-site. In order to maximize the efficacy of site visit efforts, we focus on requests that involve proposed living shoreline projects and those from more rural localities. JPA Reviews are typically requested by the Virginia Marine Resources Commission (VMRC) and involve large, complicated, unusual or protested projects that impact the marine environment. Project specific advice is derived from routinely used data and tools including on-line resources at CCRM/VIMS, from other coastal partners and agencies, aerial imagery, decision tools and decision models.

In addition, as of November 2014, Wetlands Program personnel began routinely writing VIMS Tidal Shoreline Management Recommendations for all JPA's involving shoreline erosion control projects advertised on local wetlands boards' agendas, these do not need to be requested. The new VIMS report is the preferred shoreline best management practice as identified from the Comprehensive Coastal Resource Management Portal (CCRMP) for completed localities and/or the applicable CCRM Decision Trees, without regard to the specific project. The reports are made available on CCRM and VMRC's permit websites in addition to being emailed to the local wetlands board members and staff, property owner, agent, and contractor.

The Center continues to populate a database to track our advisory work to enable adaptation of our guidance development and outreach program to address issues identified through data analysis.

In summary, The Center provides two categories of advice 1) requested, including general technical guidance and JPA Reviews and 2) systematically provided, which includes both types of VIMS Tidal Shoreline Management Recommendations.

## **Requested Advice:**

155 Technical Advisory and General Information

14 JPA Reviews

169 Total Responses

## **Provided Advice:**

271 VIMS Tidal Shoreline Management Recommendations

**Total Technical Guidance Provided: 440**

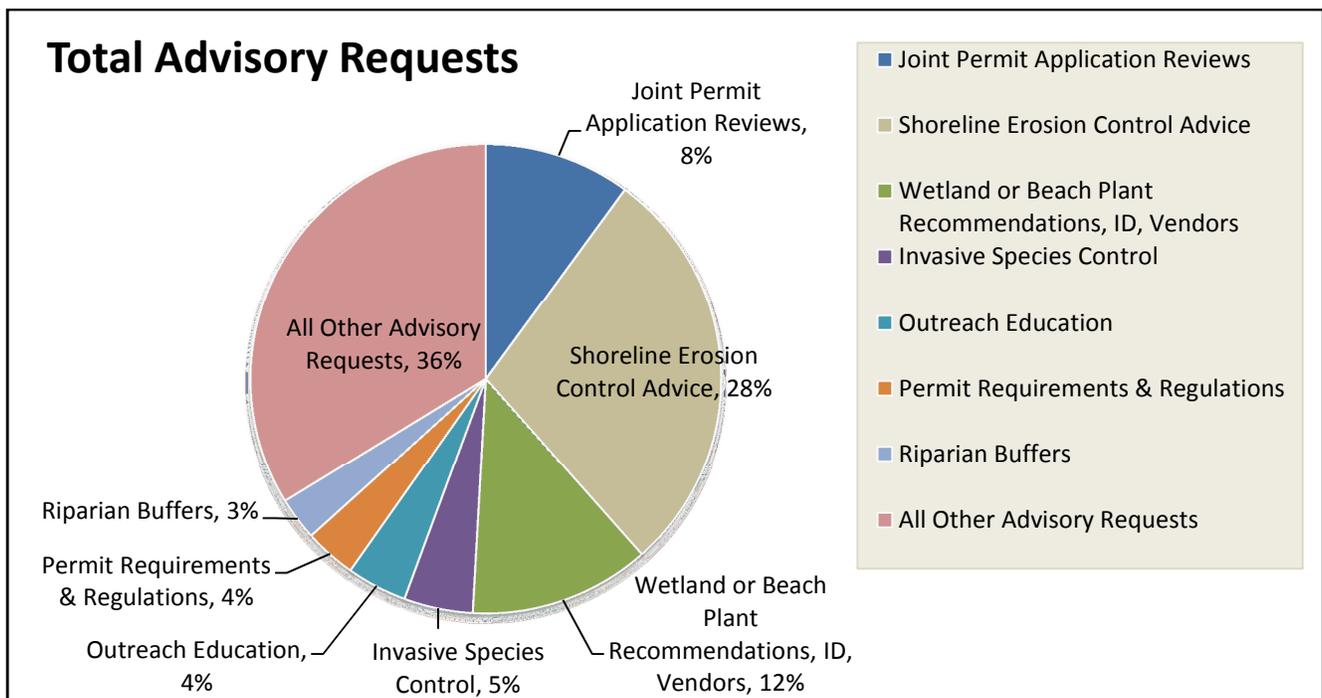
## Details of Advisory Requests:

### Type of Advice Requested:

• Erosion Control Advice (36 of these specific to living shorelines)	48
• Wetland/Beach/Dune Plant Recommendations, ID, & Vendor Info	21
• Joint Permit Application (JPA) Reviews	14
• Phragmites/Invasive Species Control	8
• Outreach Education	7
• Permit Requirements/Regulations/Process	6
• Questions/Comments on VIMS Reports	6
• Riparian Buffers	5
• VIMS Permit Record Website	5
• Sea Level Rise/Climate Change	4
• CCRMP/Decision Trees	7
• Miscellaneous (SAV, habitat, stormwater management, etc.)	38

### Advice Requested From:

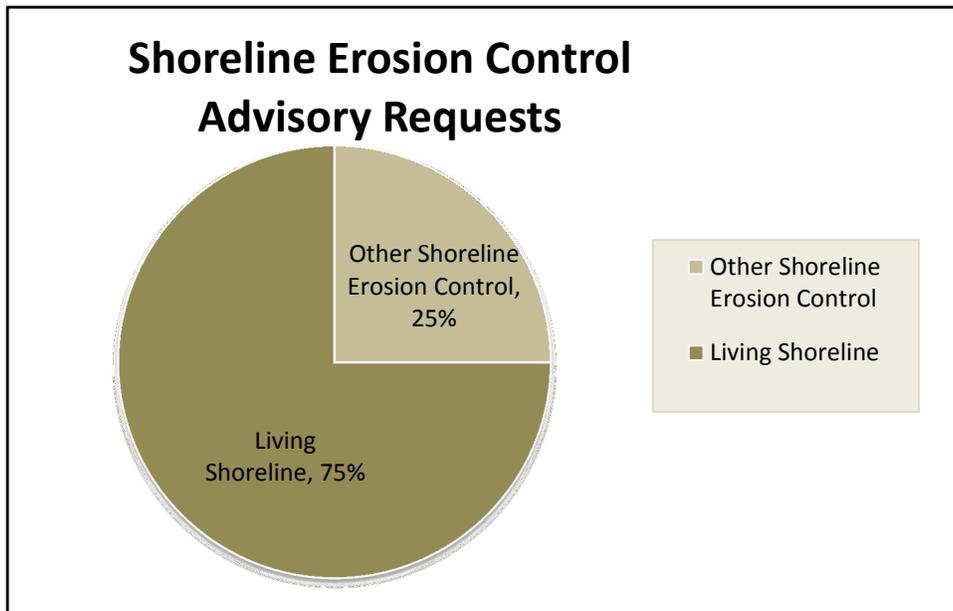
• Citizen/Property Owner	54
• Local Government & Wetland Board Staff or Member & Elected Officials	44
• VMRC Staff	25
• Community/Non-Profit/NGO/Master Gardener/Naturalist	10
• Consultant	9
• Marine Contractor	8
• Academic/Research	7
• Other (agent, out of state, attorney, Corps, etc.)	12



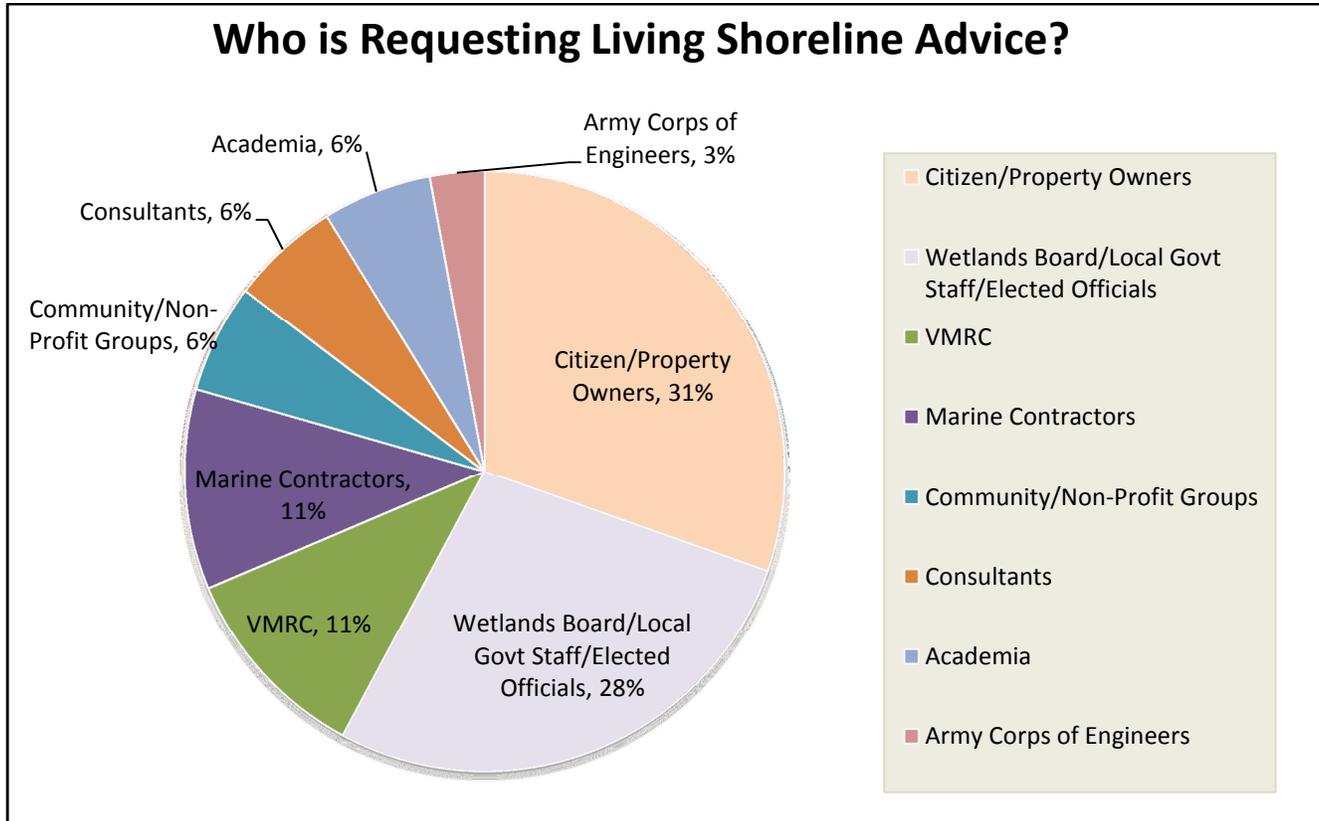
Shoreline erosion control topped the list for the most requested category of advisory service this grant period.

### Living Shoreline Requests:

Of the advisory requests associated with shoreline erosion control (above), 75% were related to the living shoreline management approach:

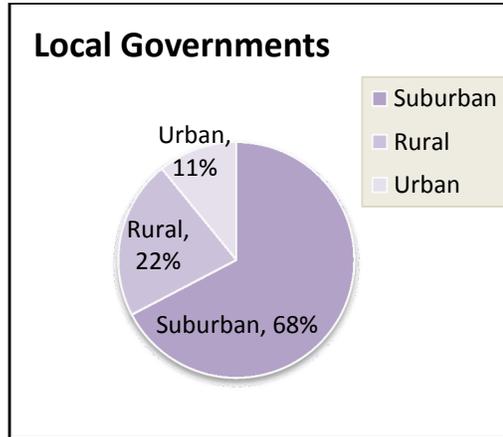
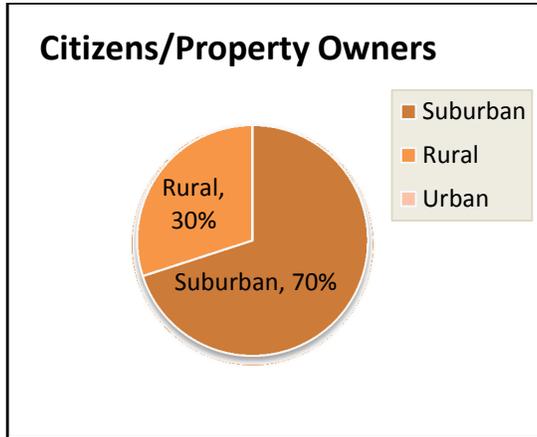


Citizen and property owners were the largest group requesting information on living shorelines, with local government in close second:



### Locality Type of Living Shoreline Advice Requested:

This grant period, living shoreline requests from citizens/property owners: came primarily from suburban areas; slightly increased in rural areas; and remained zero for urban designated localities. The majority of local governments (represented by local government staff, wetlands board, and elected officials) requesting living shoreline advice also came from suburban localities.



\*Locality designation was defined by housing unit density; Rural tracts = less than 64 units per square mile, Suburban tracts = 64 to 1,600 housing units per square mile, and urban tracts = greater than 1,600 housing units per square mile. Housing density information obtained from the U.S. Census.

### Living Shoreline Advisory Requests Summary:

21% of all advisory requests received during this grant period were in reference to living shorelines compared to 16% last grant period. Overall there was a small increase in living shoreline related requests from local governments and a small decrease from citizen/property owners. Site visits were conducted for 11 living shoreline advisory requests. Not all requests warrant a site visit.

LOCALITY	LIVING SHORELINE ADVICE REQUESTED BY				LOCALITY TYPE
	Citizen	Local Gov't	Other	Total	
Hampton	1	4	3	8	Suburban
Gloucester	3	2		5	Suburban
York	3	1		4	Suburban
Norfolk			3	3	Urban
Mathews	1		2	3	Suburban
Chesapeake			3	3	Suburban
Middlesex	2			2	Rural
Albemarle			1	1	Rural
Westmoreland			1	1	Rural
West Point			1	1	Suburban
Northumberland			1	1	Rural
Isle of Wight	1			1	Rural
Arlington		1		1	Urban
Chincoteague		1		1	Suburban
Accomack		1		1	Rural
	11	10	15	36	

## Joint Permit Application (JPA) Reviews:

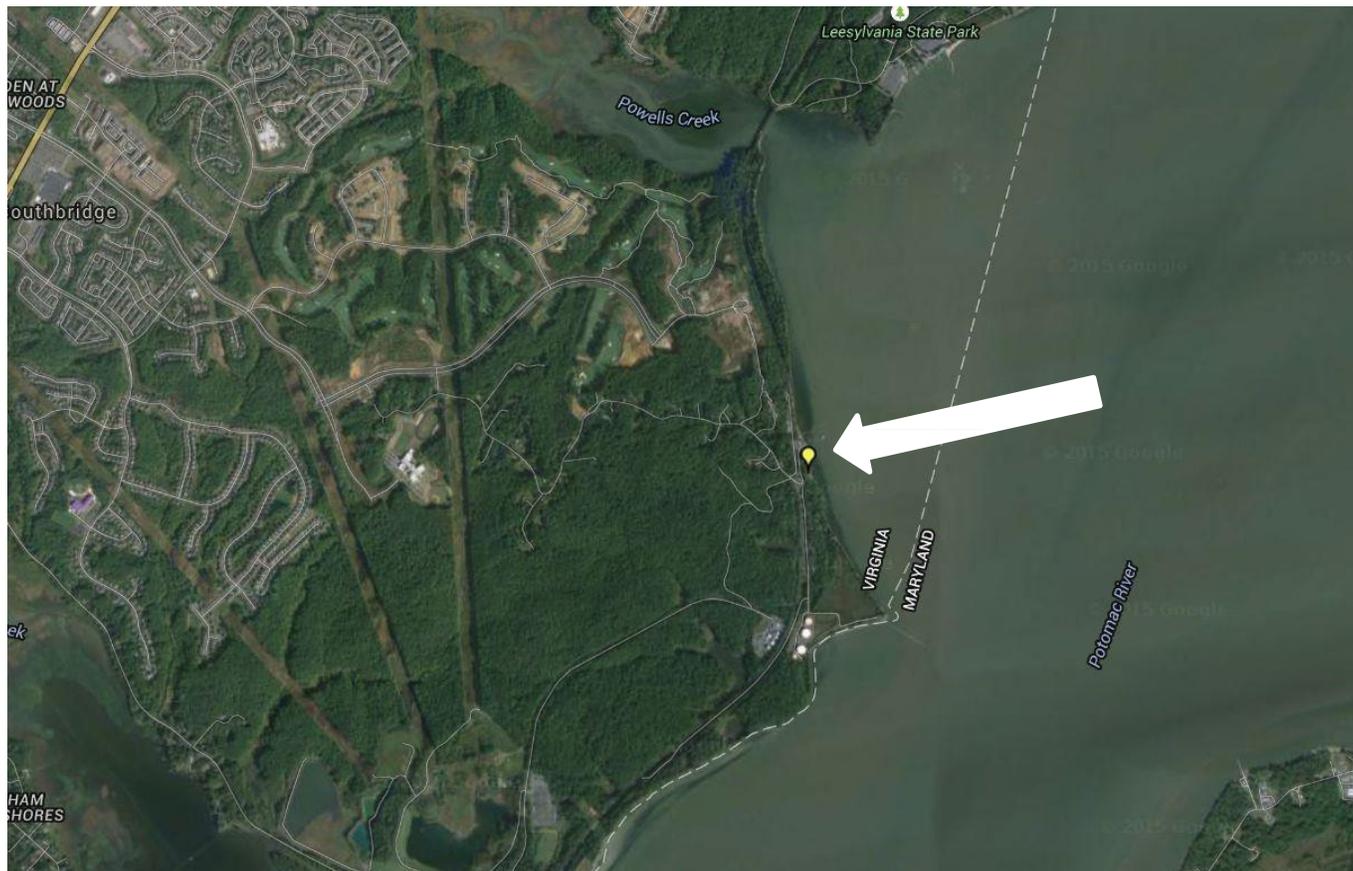
JPA Reviews are VIMS reports written upon special request for joint permit applications that involve activities that impact the marine environment such as dredging, marina expansion, community piers, boat ramps, and utility crossings. These reports provide advisory comments from an integrated coastal management perspective to avoid or reduce adverse impacts to coastal resources in response to the activity being proposed. VIMS JPA Reviews were written for the following proposed projects.

<b>PERMIT</b>	<b>NAME</b>	<b>LOCALITY</b>	<b>PROJECT</b>
14-1169	Thomas Nolte	Lancaster	Geothermal system in tidal pond
14-1414	Robert Elliott	Northumberland	Breakwater, beach nourishment, revetment/sill
15-0245	Bridge Marinas, LLC	Middlesex	Renovation of marina facility & dredging
15-0263	DCR, First Landing State Park	Virginia Beach	Revetment
10-1787	Dominion Resources	Chesterfield	Installation of pilings
15-0632	City of Richmond	Richmond	Dredging
15-0522	Westmoreland County	Westmoreland	Utility crossing
15-0711	Kingsmill Marina	James City	Floating dock & pier
15-0745	Harbor Station Communities	Prince William	Community pier
15-0227	Hampton Yacht Club	Hampton	Boat slips
15-0933	Henrico County	Henrico	Marina expansion
15-0477	Henry Branscome	James City	Pier
15-0898	Mill Creek Shellfish	Northampton	Commercial pier & outfall

## Joint Permit Application Review

**VMRC # 15-0745**

Applicant: Harbor Station Communities, LLC



**Locality:** Prince William

**Immediate Waterway:** Potomac River

**Requested by:**  
Mark Eversole, VMRC

**Report Date:** 6/15/2015

**Proposed Project:**

The applicant proposes to construct a fishing and recreational open pile pier, 100 foot long by 8 foot wide with 20 x 8 foot wide T-head, within the Potomac River to serve the Potomac Shores residential community.

**Comments/Recommendations:**

The Potomac River has been identified as confirmed habitat for anadromous fish use. Little is known of the effects of noise on estuarine fauna; however, some evidence exists linking excessive and prolonged non-natural noise to alterations of migratory behavior in fish (Gregory 2000). The specific effects of pile driving during pier construction on fish depend on a wide range of factors including the type of pile, type of hammer, fish species, environmental setting, and many other factors.

In the absence of data on the effects of pile driving noise on the behavior of anadromous fish species found in the Chesapeake Bay, VIMS' best professional judgment is that the potential for adverse effects from noise is a concern that warrants consideration since any effects on anadromous fish migratory behavior in the river could impact spawning success. When data is limited or absent, a conservative approach can prevent unforeseen consequences. Therefore, we recommend that time of year restrictions for anadromous fish spawning runs be considered for pile driving activities associated with pier construction.

Comments regarding SAV impacts in consultation with Dr. J.J. Orth and Dr. Ken Moore with the VIMS Department of Biological Sciences: SAV will be impacted by the construction of the pier. However, from what we see of other piers in dense freshwater SAV's, the grass will eventually grow in and around it. For effective fishing, a large portion of the pier would have to go beyond the end of the grass or the grass would make fishing nearly impossible inside the meadow. It appears that the proposed pier may potentially need to be located further channelward to clear the SAV. In addition, the height of the bottom of the decking should be 4 feet above MHW or MHHW not "open water" as indicated on the JPA. Fall to early spring (October-April) would be the best time for construction in the freshwater SAV environment found here.

Elevating the pier would also reduce shading impacts on microalgae. Piers do offer structure in the aquatic environment which has been shown to serve as habitat for attached organisms and finfish.

The environmental impact of the pier is expected to be minor; however there is the unknown impact on the behavior of anadromous fish species from the effects of pile driving noise. There will be temporary water quality and bottom disturbance during construction. All construction equipment and materials should be staged in the upland area.

From a marine environmental viewpoint, community piers that serve multiple users are preferred to private piers on individual sites serving single users. Sufficient garbage receptacles should be provided and maintained at the pier site to reduce solid waste entering the waterway from the public. Signs to encourage proper handling of garbage and waterway stewardship should be posted.

Gregory, J. 2000. An appraisal of hydroacoustic techniques for monitoring the spawning migration of shad on the river Wye. Research and development technical Report W226 to the Environment Agency, Wales, UK. Abstract only.

## VIMS Tidal Shoreline Management Recommendations:

The new VIMS reports being generated are based on VIMS comprehensive coastal resource management guidance which provides recommendations for the preferred shoreline stabilization approach to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise.

The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

There are two types of reports. For localities where a Comprehensive Coastal Resources Management Portal (CCRMP) has been developed a geo-spatial model that is based on the comprehensive coastal resource management guidance and incorporates the data on the natural resources and physical characteristics of a shoreline collected during the VIMS shoreline inventory, is used to determine the preferred shoreline management recommendations. <http://ccrm.vims.edu/ccrmp/index.html>

For localities where a CCRMP has not yet been developed, the CCRM Decision Trees, also based on the coastal comprehensive resource management guidance, are used to determine the preferred shoreline management recommendation using natural resource and physical characteristics of a shoreline obtained from the CCRM Shoreline Assessment Mapper (SAM) tool, Google Earth, joint permit applications, property owners, and other sources. <http://ccrm.vims.edu/decisiontree/>

VIMS Tidal Shoreline Management Recommendations were provided for the following proposed projects advertised on local wetlands boards' agendas.

<b>PERMIT</b>	<b>APPLICANT</b>	<b>LOCALITY</b>	<b>DATE</b>
14-0105	Skipper Davis	Fairfax	11/17/2014
14-1560	David Roberts	Gloucester	11/17/2014
14-1611	Anne B. Terhune	Richmond County	11/18/2014
14-1612	Riverdale Farm Inc.	Richmond County	11/18/2014
14-1610	Robert Sperry	Mathews	11/19/2014
14-1621	Stephen & Penelope Pastiva	Mathews	11/19/2014
14-1622	Edwards Mill Point Trust	Mathews	11/19/2014
14-1625	James W. Brooks, Jr.	Gloucester	11/19/2014
14-1617	Carrie & Mark Levinson	Gloucester	11/20/2014
14-1421	Ann P. Stokes Landscape Architects	Norfolk	11/21/2014
14-1486	Richard Urban	Middlesex	11/21/2014
14-1503	Todd & Lynn Gere	Middlesex	11/21/2014
14-0759	Army Corps of Engineers	Norfolk	11/24/2014
14-1481	Nancy Luck Hubbard	Middlesex	11/24/2014
14-1542	Benton S. Halsey Trust	Middlesex	11/24/2014
14-1573	Barbara P. Tennant	Middlesex	11/24/2014
14-1581	James O. Ash	Northumberland	11/24/2014
14-1694	Chris & Courtney Gepford	Northumberland	11/24/2014

14-1684	Donald Gutermuth	Northumberland	11/25/2014
14-1687	Mary Halsey	Northumberland	11/25/2014
14-1741	Tallysville Land & Timber	New Kent	11/28/2014
14-1670	Richard & Christina Loving	Northumberland	12/01/2014
14-1683	Stephen & Sharon Loving	Northumberland	12/01/2014
14-0892	Tom & Sally Kenevan	Stafford	12/02/2014
14-1514	Scott & Anastasia Kezman	Virginia Beach	12/02/2014
14-1588	Oletha Wilkerson	Northumberland	12/02/2014
14-1688	Anthony & Laura Tridico	Northumberland	12/02/2014
14-1689	Wayne & Carolyn Rohrbach	Northumberland	12/02/2014
14-1557	Lionell & Carol Hancock	Virginia Beach	12/03/2014
14-1579	Billy Dunn	Virginia Beach	12/03/2014
14-1676	Kelly Capps	Virginia Beach	12/03/2014
14-1681	Thomas Musselman	Virginia Beach	12/03/2014
14-1497	Robert Mance, Jr.	Accomack	12/04/2014
14-1480	William & Lori Trolan	James City	12/18/2014
14-1646	Agnes Swynford	James City	12/18/2014
14-1784	Robins & Strickler Properties, LLC	Northumberland	01/05/2015
14-1788	George & Karla Homich	Mathews	01/05/2015
13-1861	Charles Wanko, Jr.	Northampton	01/08/2015
14-0179	Gary & Ruth Cole	Northampton	01/08/2015
14-1344	Robert & Airlia Gustafson	Northampton	01/08/2015
14-1654	Carson Barco	Virginia Beach	01/08/2015
14-1686	James Woodward	Gloucester	01/08/2015
14-1704	Kenneth & Patricia Houtz	Gloucester	01/08/2015
14-1572	Samuel Gaddy	Middlesex	01/09/2015
14-1766	Philip Stephens	Northumberland	01/09/2015
14-1769	Willis & Suzette Hutchens	Middlesex	01/09/2015
14-1789	Anne Hart	Northumberland	01/09/2015
14-1469	Jean-Marie Kanyinda	Norfolk	01/12/2015
14-1762	Matthew Greene	Lancaster	01/12/2015
14-1831	Suzanne & Gerald Yount	Lancaster	01/13/2015
14-1659	Robert Pembroke	Isle of Wight	01/14/2015
14-1680	Lester Terhune	Richmond County	01/14/2015
14-1753	Christopher & Sharon Smalley	Westmoreland	01/14/2015
14-1809	Michael & Susan	Lancaster	01/14/2015
14-1445	Kenneth & Lillian	Westmoreland	01/15/2015
14-1671	Kevin Schwarts	Westmoreland	01/15/2015
14-1729	Wayland & Mary Beth Carter	Westmoreland	01/15/2015
14-1752	Turn-Key Homes, Inc	Westmoreland	01/21/2015
14-1830	Amy & Mathew Calvin, Jr.	King George	01/21/2015
14-1787	Ronald T. Sopko	Mathews	01/28/2015
14-1842	Thomas Ruhf & Kevin Jones	Mathews	01/28/2015
15-0041	Stephen George	Northumberland	01/28/2015
14-1763	Walter Reiser	York	01/29/2015

14-1823	Stephen & Margaret Montgomery	Middlesex	01/29/2015
14-1826	Stephen & Patricia Barresi	Virginia Beach	01/29/2015
14-1827	Walter Kitonis, III	Virginia Beach	01/29/2015
15-0042	Potomac View Cottage, LLC	Northumberland	01/29/2015
15-0050	VA Homebuilders LLC	Virginia Beach	01/29/2015
15-0053	Carolyn Gray	Virginia Beach	01/29/2015
14-0161	Patricia King & Lillian Austin	Norfolk	02/05/2015
14-1035	THS Family Limited Partnership	Northampton	02/05/2015
14-1703	Robert & Kimberly Gayle	Norfolk	02/05/2015
15-0026	Town Creek, LLP	Lancaster	02/05/2015
14-1556	Jessica Couch	Norfolk	02/06/2015
14-1556	Riverpoint Property, LLC	Norfolk	02/06/2015
14-1699	Herbert Teachey	Westmoreland	02/10/2015
14-1840	Upper Brandon Plantation	Prince George	02/10/2015
15-0011	Vanessa Hummel	Westmoreland	02/10/2015
15-0027	Charles & Linda Moore	Richmond County	02/10/2015
15-0062	James & Sharon Creedon	Lancaster	02/10/2015
15-0063	Linda Long	Lancaster	02/10/2015
15-0072	Donald & Amy McGonegal	Lancaster	02/10/2015
15-0073	Courtney & Douglas Ludeman	Lancaster	02/10/2015
15-0078	Paul Summers, III	Lancaster	02/10/2015
15-0020	George Maihafer	Norfolk	02/11/2015
15-0065	Douglas Terry	Mathews	02/11/2015
14-1793	Lawrence Slade	Virginia Beach	02/12/2015
15-0170	Ruth Downs	Mathews	02/13/2015
15-0005	Scott Boze	Middlesex	02/23/2015
15-0143	Mariners Point Homeowners Association	Middlesex	02/23/2015
15-0199	Phillip & Margaret Blevins	Middlesex	02/23/2015
15-0203	Samantha Futrell	Northumberland	02/23/2015
15-0107	Roger Wright	Norfolk	02/25/2015
15-0194	Greg Pickens	Northumberland	02/25/2015
14-1533	Pedro Becerra	Virginia Beach	02/27/2015
15-0071	James & Nancy Townsend	Northampton	02/27/2015
15-0093	City of Virginia Beach	Virginia Beach	02/27/2015
15-0235	Stephen Konikoff	Virginia Beach	02/27/2015
15-0136	Robert & Joanne McMahon	Northampton	03/02/2015
15-0219	Ronald Mitchell	Essex	03/03/2015
15-0220	Georgia Broyles	Essex	03/03/2015
13-0465	3323 Shore Drive, LLC	Virginia Beach	03/04/2015
15-0079	Jerome Meyers	Hampton	03/05/2015
15-0161	Denise McAdams	Accomack	03/05/2015
15-0003	Chincoteague Landmark LLC	Accomack	03/06/2015
15-0123	Alexander Ruddock	Northumberland	03/10/2015
15-0238	George & Carolyn Chung	Mathews	03/10/2015
14-1014	Roane Point LLC	Mathews	03/23/2015

15-0218	Ron Lambert	Mathews	03/23/2015
15-0285	John Tyler	Mathews	03/23/2015
14-1660	Jack Dorsey	Norfolk	04/01/2015
15-0246	Glenn & Michelle Rauchward	James City	04/01/2015
15-0251	Suzanne Stetler Mitrovic Rev. Trust	James City	04/01/2015
15-0340	Philp & Cheree David	Northumberland	04/07/2015
15-0345	Thomas Nutt, Jr.	Northumberland	04/07/2015
15-0249	William Wirt	Northumberland	04/08/2015
15-0361	Dorothy Robinson	Northumberland	04/08/2015
14-1239	Robert Edwards	Isle of Wight	04/09/2015
15-0158	Steven Taubman	Virginia Beach	04/10/2015
15-0225	Wheeler REIT, LP	Virginia Beach	04/10/2015
15-0190	Kelly & Kimberly Campbell	Fairfax	04/14/2015
15-0268	Keith & Carolyn Comer	Westmoreland	04/14/2015
15-0293	Dean Simmons	King William	04/14/2015
15-0339	Hazen & Laura Marshall	Westmoreland	04/14/2015
15-0508	Howard Aderholt	Northumberland	04/23/2015
15-0409	David Wolfram & Tammy Gill	Gloucester	05/01/2015
15-0434	Micheal Soberick	Gloucester	05/01/2015
15-0196	Norfolk Southern Corporation	Norfolk	05/11/2015
15-0316	Robert Kidd	Norfolk	05/11/2015
15-0338	Jonathan & Kristian Gathright	Middlesex	05/11/2015
15-0358	Elizabeth River Project	Norfolk	05/11/2015
15-0435	Nam VU	Gloucester	05/11/2015
15-0436	Nam VU	Gloucester	05/11/2015
15-0465	Randy & Suzanne Scott	Gloucester	05/11/2015
15-0500	Deborah Linkenauger	James City	05/11/2015
15-0288	Shelia Eldridge	Virginia Beach	05/12/2015
15-0347	Jerry Miller	Virginia Beach	05/12/2015
15-0509	Ann Adams	Virginia Beach	05/12/2015
15-0440	Tonya & Roger Flynn, Jr.	Northampton	05/13/2015
15-0341	David & Nina Turney	Lancaster	05/14/2015
15-0470	Piedmont Hospital LLC	Lancaster	05/14/2015
15-0590	Lawson Bay Properties LLC	Lancaster	05/14/2015
15-0180	Captains Cove Golf and Yacht Club	Accomack	05/18/2015
14-1606	N. Gornto	Virginia Beach	05/19/2015
15-0369	Keith Mason	New Kent	05/19/2015
15-0469	Bryan & Terrie Flag	Mathews	05/19/2015
15-0488	George LaRock	Accomack	05/19/2015
15-0507	Howard Winder	Mathews	05/19/2015
15-0334	William Wise	Hopewell	05/20/2015
15-0563	Richard Forbes, Jr.	New Kent	05/20/2015
15-0564	John Vosnick	New Kent	05/20/2015
15-0557	Norman & Linda Withers	Northumberland	06/03/2015
15-0638	Richard & Jill Newton	Northumberland	06/03/2015

15-0660	Robert Morris	Northumberland	06/03/2015
15-0662	Simeon Bright	Northumberland	06/03/2015
15-0681	Jon Hanson	Northumberland	06/03/2015
15-0560	Jeff Mershon	Gloucester	06/04/2015
15-0594	Larry Fox	Gloucester	06/04/2015
15-0675	David Purcell	Northumberland	06/04/2015
15-0677	Benjamin Seward	Gloucester	06/04/2015
15-0708	Talbot Hall West LLC	Norfolk	06/04/2015
15-0483	David Lee	Middlesex	06/08/2015
15-0559	Floyd Ward	Middlesex	06/08/2015
14-1146	Stephen Ballard	Virginia Beach	06/09/2015
15-0555	Donald Snyder	Virginia Beach	06/09/2015
15-0556	Stephen Ballard	Virginia Beach	06/09/2015
15-0606	Scott Seery	Virginia Beach	06/09/2015
15-0612	Constance Saunders	Virginia Beach	06/09/2015
15-0647	Thomas Hill	Accomack	06/11/2015
15-0667	Linda Mormile	Accomack	06/11/2015
15-0781	Christopher & Marianne Mize	Essex	06/11/2015
15-0810	D. Wayne & Judith Wessells	Essex	06/12/2015
15-0679	Micheal O'Brien	James City	06/19/2015
15-0684	Paul & Karen Reilly	James City	06/19/2015
15-0596	Kenneth & Susan Mills	Lancaster	06/23/2015
15-0670	Graylend Horn	Lancaster	06/23/2015
15-0757	Peter Baron, II	Lancaster	06/23/2015
15-0783	James Novotny, Sr.	Gloucester	06/23/2015
15-0784	John Oldfield	Gloucester	06/23/2015
15-0732	Clyde Ratcliffe	Northumberland	06/24/2015
15-0644	E. Fleet	Middlesex	06/25/2015
15-0645	Harold Moore	Middlesex	06/25/2015
15-0668	Christine Major	Middlesex	06/25/2015
15-0824	Marshall & Anna Terry	Middlesex	06/25/2015
15-0826	William Wilcox	Northumberland	06/25/2015
13-1356	William & Joyce Gibbings	Virginia Beach	06/30/2015
13-0442	Talmadge Hunt	Norfolk	07/01/2015
15-0622	Mary Mason	Norfolk	07/01/2015
15-0787	Neal Wheat	York	07/01/2015
15-0869	Thomas Diggles, Jr.	Westmoreland	07/01/2015
15-0466	Rick & Stephanie Baltzelle	King George	07/10/2015
15-0891	Robert Dively	James City	07/14/2015
15-0988	Robert Leitzel	Mathews	07/15/2015
14-0909	David Serway & Michelle Ritter	Middlesex	07/22/2015
15-0856	Dora Warren	Middlesex	07/22/2015
15-0884	Philip Webb	Middlesex	07/22/2015
15-0873	John Reece	James City	07/23/2015
15-0911	Paul & Judy Lyons	James City	07/23/2015

15-0975	Brian Rever	Northumberland	07/23/2015
15-0977	Maria Sweeney	Northumberland	07/23/2015
15-1000	T. McDaniel	Northumberland	07/23/2015
15-1015	Keyvan Keyvanfar	Northumberland	07/23/2015
15-0992	Corbin Hall Property Owners' Association	Accomack	07/29/2015
15-0832	Penny H. Pfeil Revocable Trust	Gloucester	07/30/2015
15-0978	Mary Hamilton	Gloucester	07/30/2015
15-0979	Burton Bland	Gloucester	07/30/2015
15-0850	Jose Nieves	York	07/31/2015
15-0852	Vernon Holloman	Gloucester	07/31/2015
15-0956	Stan Wagner	York	07/31/2015
15-0700	Harry Stanley, Jr.	Virginia Beach	08/03/2015
15-0983	Henry Gonner	Essex	08/03/2015
15-0996	Henley Boathouse, LLC	Virginia Beach	08/03/2015
15-1011	William Barr	Lancaster	08/03/2015
15-1017	Warner & Stephanie Ferguson	Lancaster	08/03/2015
15-1051	Pedro Becerra	Virginia Beach	08/03/2015
15-1086	Catherine Parker	Lancaster	08/03/2015
15-0994	Michael & Cheryl Henig	Mathews	08/04/2015
15-1027	Donald Roane	Mathews	08/04/2015
14-1559	Front Street Flats, LLC	Norfolk	08/17/2015
15-0874	Cobb's Marina	Norfolk	08/17/2015
15-1121	Agamemnon Mourges	Mathews	08/17/2015
15-1134	David Nelson	Northumberland	08/20/2015
15-1142	Jackie Delozier	Northumberland	08/20/2015
15-1182	Bonner Benton	Northumberland	08/20/2015
15-1183	Clarence Bowen	Northumberland	08/20/2015
15-1058	Charles Piscopo	Northumberland	08/21/2015
15-1165	Earnest Duncan Preece Trustee	Northumberland	08/21/2015
15-1003	Mary Lou Maddox	Middlesex	08/25/2015
15-1040	Thomas Hudgins	Gloucester	08/25/2015
15-1126	McKans View LLC	Middlesex	08/25/2015
15-1050	Rick Bauer	York	08/27/2015
15-1089	Dan Ray	Gloucester	08/27/2015
15-1100	Edward Knight	Gloucester	08/27/2015
15-0322	Calcagni Waterfront LLC	Chesapeake	08/28/2015
15-1019	Robert Lloyd	King and Queen	08/28/2015
15-1067	Norman Ward	Northampton	08/28/2015
15-1133	Alton Jones, Jr.	Lancaster	08/31/2015
15-1221	Gate & Grace Lew	Lancaster	08/31/2015
15-1239	Iva Lucas	Lancaster	08/31/2015
15-1028	Benjamin Speckhart	Virginia Beach	09/04/2015
15-1111	2798 Dean LLC	Virginia Beach	09/04/2015
15-1150	Michael Green	Virginia Beach	09/04/2015
15-0646	Walter & Rosalind Gompers	Westmoreland	09/08/2015

15-1016	James Moore & Davis Frederick	Stafford	09/08/2015
15-1109	Joseph & Natalie Kelly	Westmoreland	09/08/2015
15-1224	Dean & Kate McGaughey	Virginia Beach	09/08/2015
15-0967	Smuggler's Cove Owners Association	Accomack	09/10/2015
15-1219	Richard Adamo	Accomack	09/10/2015
15-1286	Nancy Quinn	Mathews	09/18/2015
15-1347	James Pine	Mathews	09/18/2015
15-1057	Tim White	Virginia Beach	09/21/2015
15-1091	Marc Filut	Middlesex	09/22/2015
15-1097	Barbara Vest	Middlesex	09/22/2015
15-1148	Remlik Marine Construction	Middlesex	09/22/2015
15-1275	John Miller	Mathews	09/22/2015
15-1208	Todd Gehr	Middlesex	09/25/2015
15-1238	Phyllis Bristow & N. Decker	Middlesex	09/25/2015
15-1283	Jett Family LP, LLP	Middlesex	09/25/2015
15-1305	Fletcher & Katherine Beale	Middlesex	09/25/2015
15-1203	Quang Thuan Nguyen	Northumberland	09/26/2015
15-1240	Benjamin Stultz	Northumberland	09/26/2015
15-1277	Shirley Smith	Northumberland	09/26/2015
15-1333	Edward Kussy	Northumberland	09/26/2015
15-1362	James & Georgia Crassas	Northumberland	09/26/2015
15-1376	Theodore Van Kirk	Northumberland	09/26/2015
15-1146	Kimball Terrace LLC	Norfolk	09/29/2015
15-1184	Mark Essert	Norfolk	09/29/2015
15-1220	Martha & Warren Mattox, Jr.	Fairfax	09/29/2015
15-1296	William & Ruth Matheson	Gloucester	09/29/2015

## VIMS Tidal Shoreline Management Recommendation

(VMRC #15-1174)

**Applicant:** Peter Kardok

**Address:** 2829 Timber Neck Trail, Virginia Beach, VA

**Waterbody:** Pinetree Branch

**Date:** October 1, 2015

### *Preferred Options for Shoreline Management*

The shoreline best management practice(s) recommended in this report reflect(s) the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is (are) based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Portal (CCRMP). The VIMS shoreline inventory includes data such as: bank condition, nearshore depth, fetch, bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendations. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://ccrm.vims.edu/ccrmp/index.html>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, narrow lot size, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCRM Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://ccrm.vims.edu/decisiontree/>.

## Coastal Ecosystem Based Recommendation Details (15-1174)



If active erosion is occurring along this shoreline, ***the preferred approach for erosion control to preserve and maintain tidal wetland ecosystems is to:***

-  Grade Bank
-  Enhance Riparian/Marsh Buffer
-  Widen Marsh/Enhance Buffer
-  Widen Marsh

### **Remove bulkhead and replace with integrated vegetation buffers, grade bank as necessary**

It would be beneficial to the tidal wetland ecosystem to remove the existing bulkhead and restore the connection between the upland and the intertidal area. Bulkheads and revetments sever the connection between the upland and the intertidal area interrupting the natural water/land continuum to the detriment of natural shoreline ecosystems.

Provide stabilization and wave attenuation along this shoreline by planting riparian and marsh vegetation; the target area for an integrated vegetated buffer should extend from mid-tide to the upland area (100 feet inland from top of bank), with vegetation planted at appropriate elevations.

It may be appropriate to grade the bank to reduce the steepness of the slope to allow wave run-up and to improve the growing conditions in order to sustain vegetation on the bank. Grading should only be conducted where essential and done as minimally as possible to achieve the necessary slope.

Banks that are graded should be stabilized with a variety of native, deep-rooted plants placed at appropriate elevations.

#### **Riparian Buffer**

- Preserve the existing vegetation in the riparian buffer.
- Enhance the riparian area by planting a variety of native deep-rooted grasses, shrubs, and small trees within 100 feet (minimum) from the top of bank;
- Selectively remove and/or prune dead, dying, and severely leaning trees as necessary;
- Reduce the amount of waterfront lawns;
- Remove invasive species, if present, and replace with native vegetation.

#### **Marsh Buffer**

- Provide or enhance wave attenuation along this shoreline by maintain or widening marsh vegetation. The target area for marsh vegetation should extend from mid-tide to an elevation 1.5 times the tide range above mean low water (the upper limit of which may be observed by the presence of upland vegetation).
  - Planting new marsh may require the placement of sand fill to achieve the appropriate elevation and/or the use of fiber logs to hold the sand in place.
  - Encourage both low and high marsh.
  - Periodically monitor marsh for signs of damage and dead plants, especially after installation and after a storm.
  - Tree limbs may need to be periodically trimmed to allow sunlight to reach the marsh grass and allow it to grow.
  - Marsh that is designed to allow for landward migration is preferred in order to accommodate sea level rise.

## VIMS Tidal Shoreline Management Recommendation

(VMRC #15-1221)

**Applicant:** Gate & Grace Lew

**Address:** 368 Hale Drive, Lancaster, VA

**Waterbody:** Lancaster Creek

**Date:** August 31, 2015

### *Preferred Options for Shoreline Management*

The shoreline best management practice(s) recommended in this report reflect(s) the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is (are) based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise.

The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Since a Comprehensive Coastal Resources Management Portal (CCRMP) has not yet been developed for your locality at this time, the Decision Tree Coastal Management Decision Tools have been used to determine the environmentally preferable approach for management of this shoreline. The Decision Trees are a tree-like graph of questions and answers about shoreline characteristics that lead to the environmentally preferable approach. To access the Coastal Management Decision Tools go to: <http://ccrm.vims.edu/decisontree/>.

In the future, the preferred shoreline management recommendation for your locality will be determined using a geo-spatial model, a component of the CCRMP, that accounts for the observed shoreline conditions such as bank condition, nearshore depth, exposure to waves, and location of primary structures (e.g. homes) collected during a VIMS inventory of your locality's shoreline. The model is based on the comprehensive coastal resources management guidance developed by VIMS.

## Coastal Ecosystem Based Recommendation Details (15-1221)



If active erosion is occurring along this shoreline,  
***the preferred approach for erosion control to  
preserve and maintain tidal wetland ecosystems is to:***

- **Provide stabilization through riparian vegetation.** It may be beneficial to the tidal ecosystem to grade the bank to reduce the steepness of the slope to allow wave run-up, and to improve growing conditions in order to sustain a properly vegetated bank. Grading should only be conducted where essential and done as minimally as possible to achieve the necessary slope. Banks that are graded should be stabilized with a variety of native, deep rooted plants placed at appropriate elevations.
- **Plant tidal marsh;** provide wave attenuation along this shoreline by planting marsh vegetation appropriate elevations. The target area for marsh vegetation should extend from mid-tide to an elevation 1.5 times the tide range above mean low water (the upper limit of which may be observed by the presence of upland vegetation). Placement of sand fill may be necessary. Sand fill is used to raise the elevation of the shoreline, as necessary, to achieve the proper elevation for marsh grass to grow. The raise in elevation also helps to provide additional protection to the bank.
- **Construct a rock sill placed offshore from the marsh.** The site-specific suitability for a sill must be determined, including bottom hardness, navigation conflicts, construction access limitations, orientation and available sunlight for marsh plants.
- **Restore the riparian area** by planting a variety of native, deep rooted trees, shrubs, groundcover and grasses to enhance the erosion control and water quality benefits of this shoreline.

# Product 2: Education / Outreach

## Tidal Wetlands Workshop

### Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

The Center for Coastal Resources Management hosted our annual Tidal Wetlands Workshop on June 5, 2015 at VIMS keeping with the theme of VIMS 75<sup>th</sup> Anniversary. This workshop was attended by 72 people made up of local government staff, advisory board members, marine contractors, permitting agents, environmental consultants, and others interested in adaptive shoreline management. The program included presentations by VIMS CCRM scientists, a breakout session for participants to share their ideas on the next steps in adaptive shoreline management, as well as indoor and outdoor information and activity stations for all participants to experience examples of adaptive shoreline management.

Listed below, all presentations and other workshop materials are available online:

[http://ccrm.vims.edu/education/workshops\\_events/spring2015/Spring2015.html](http://ccrm.vims.edu/education/workshops_events/spring2015/Spring2015.html)

#### Presentations

- Tidal Wetlands Advisory Service in Virginia: Adaptive Management
- Evolution of VIMS Tools
- Evolution of VIMS Advice
- VMRC Update

#### Facilitated Breakout Groups

- Summary of Breakout Group Discussions

#### Other Workshop Information

- Final Agenda
- Workshop Handouts

**Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines**  
**Friday, June 5, 2015**  
**Virginia Institute of Marine Science**  
**Gloucester Point, VA**

**AGENDA**

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**8:00 – 9:00**    *Check-in & Coffee*    *Watermen's Hall Lobby*

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**9:00 – 10:30**    **Adaptive Shoreline Management at Different Scales**    *Auditorium Presentations*

**History of Shoreline Management in Virginia**    *Carl Hershner, CCRM*

Reflections on the past 50 years of shoreline management in the Chesapeake Bay region, plus forecasts for why adaptive management continues to be needed for the future

**Evolution of VIMS Guidance**    *Pamela Mason, CCRM*

How VIMS guidance has changed over time in response to national & regional scientific understanding and policy

**Evolution of VIMS Tools**    *Marcia Berman, CCRM*

History and future of VIMS shoreline management tools for decision makers that translate scientific information & guidance into applications while keeping up with emerging technology

**Evolution of VIMS Advice**    *Christine Tombleson, CCRM*

A review of how VIMS advice has been delivered at the Joint Permit Application scale over time & the adaptive management feedback gained from tracking final permit decisions

**Adaptive Shoreline Management Summary & Next Steps**    *Carl Hershner, CCRM*

A review of changes made in response to on-going scientific understanding, plus suggestions for identifying barriers & challenges to continuing adaptive shoreline management

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**10:30 – 10:45**    **Break**    *Go to assigned breakout room*

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**10:45 – Noon**    **Breakout Session 1 – Next Steps in Adaptive Shoreline Management**

Group 1: Local-State-Federal Staff    Classroom A/B

Group 2: Board Members    Director's Conference Room (*to the right of elevator*)

Group 3: Private Sector    Marine Advisory Classroom (*to the left of elevator*)

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**Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines**  
**Friday, June 5, 2015**  
**Virginia Institute of Marine Science**  
**Gloucester Point, VA**

**AGENDA (continued)**

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**12:00 – 12:30**      **Lunch Break** Lunches will be served in the lobby. Seating is available in the classrooms & outside (weather permitting).  
*Then go to breakout station(s)*

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**12:45 – 2:15**      **Breakout Session 2 – Getting a Closer Look at Adaptive Management**  
*See Station Activities Handout for more information & map*

**Outdoors at Boat Basin Field Stations**

The VIMS Boat Basin is located at the end of Franklin Road under the Coleman Bridge. You can walk down the hill or drive your own vehicle to these stations (limited parking). VIMS Courtesy Shuttles will be available to assist with transportation between the Watermen's Hall circle & the field stations. These field station activities are open house style. Come and go as you choose. Feel free to explore the beach & riparian forest boardwalk also.

1. **VIMS Beach & Offshore Breakwaters**    *Donna Bilkovic, Molly Mitchell, Robert Isdell, Alex Renaud, CCRM*
2. **VIMS Teaching Marsh**    *Julie Bradshaw, Christine Tombleson, CCRM*

**Indoors at Watermen's Hall**

Due to limited space at Station 4, the activities at these 2 indoor stations will be repeated three times during these time blocks:      **12:45 – 1:10**      **1:15 - 1:40**      **1:45 – 2:10**

3. **Putting Social Media to Work**    *Pamela Mason, CCRM*      *In the Auditorium*

Examples of how web sites, webinars, YouTube, Twitter, Facebook, and other social media applications are being used effectively to promote coastal management will be shown.

4. **VIMS GIS Tools**    *Marcia Berman, Tamia Rudnicki, CCRM*      *In the Technology Classroom*

Limited space available. The Technology Classroom is located down the hall to the left of the Receptionist Desk, on the left just before the exit door. **Please no food or drinks.**

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**2:15 – 2:30**      **Break**    *Return to the auditorium*

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**2:30 – 3:00**      **VMRC Updates**    *Chip Neikirk, VA Marine Resources Commission*

**Breakout Session 1 Results Summary**    *Karen Duhring, CCRM*

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The workshop presentations, handouts, & Breakout Session 1 results summary will be posted to the workshop web site soon after the event. Participants will be notified when they are available.

*ccrm.vims.edu/Spring2015*

## Participants List

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Keith Abernathy	Portsmouth Wetlands Board & Master Gardeners	<i>ncshagger@gmail.com</i>
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Charles McKenna	City of Virginia Beach	<i>cmckenna@vbgov.com</i>

## Participants List

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Clyde Williams	Concerned Citizen	<i>bubbasue1@cox.net</i>
Michael Woolson	James City County	<i>michael.woolson@jamescitycountyva.gov</i>

# Tidal Wetlands Advisory Service in Virginia: Adaptive Management

Past, Present, Future

Pamela Mason



# VIMS wetlands advisory mandate

- State owned bottomlands
- Encroachment on subaqueous beds
- Erosion control within Baylor survey
- Dredging in navigable waters
- Submerged aquatic vegetation
- **Tidal wetlands**
- Coastal primary sand dunes
- Nontidal wetlands
- Underwater historic property

# Tidal Wetlands Act

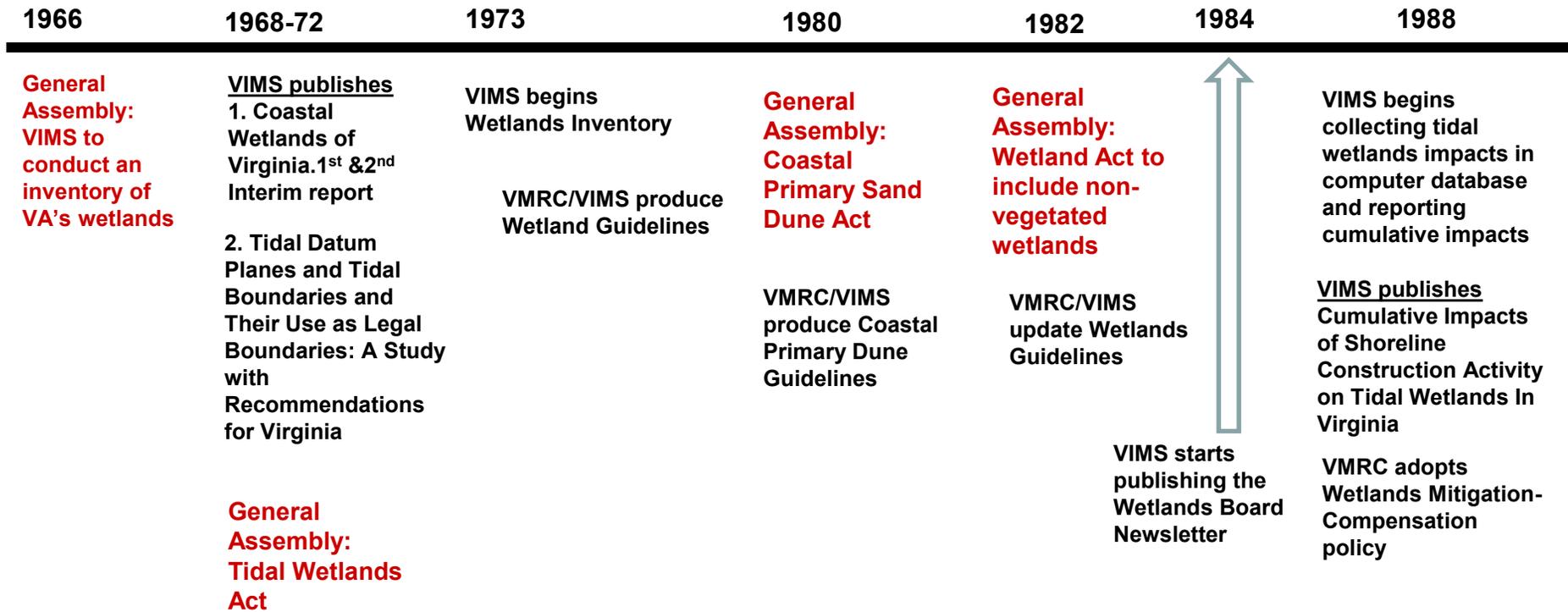
- ....the Commission shall promulgate and periodically update guidelines which scientifically evaluate vegetated and nonvegetated wetlands....
- The **Virginia Institute of Marine Science shall provide advice and assistance** to the Commission in developing these guidelines by evaluating wetlands by type and continuously maintaining and updating an inventory of vegetated wetlands.

# VIMS

## tidal wetlands advisory program

- Based on science
- Evolving with our understanding
- Focused on management outcomes
- Driven to be efficient

# Inventory and Policy Development



# Learning the limits of Mitigation Building On-line Capacity

1990

1991

1992

1993

1994

1995

1996

1997

1998

1999

VIMS publishes:  
“Virginia Wetlands  
Management  
Handbook

VIMS publishes:  
“Application of  
automated knowledge  
discovery and classifier  
generator systems to a  
permit tracking  
database”

VIMS begins  
developing online  
database  
capabilities

VIMS updates “Virginia  
Wetlands Management  
Handbook”

VIMS work on VA  
Mitigation Banking  
Policy

VIMS continues  
work on online  
database

VIMS publishes: “An  
Assessment of Ecological  
Conditions between a  
Constructed Marsh and  
Two Natural Reference  
Marshes”

VIMS publishes:  
“Investigation of  
Phragmites australis  
within VA’s  
constructed  
wetland”.

VIMS/VMRC publish  
Development of Tidal  
Wetlands Mitigation  
Banking Guidelines  
for the  
Commonwealth of  
Virginia

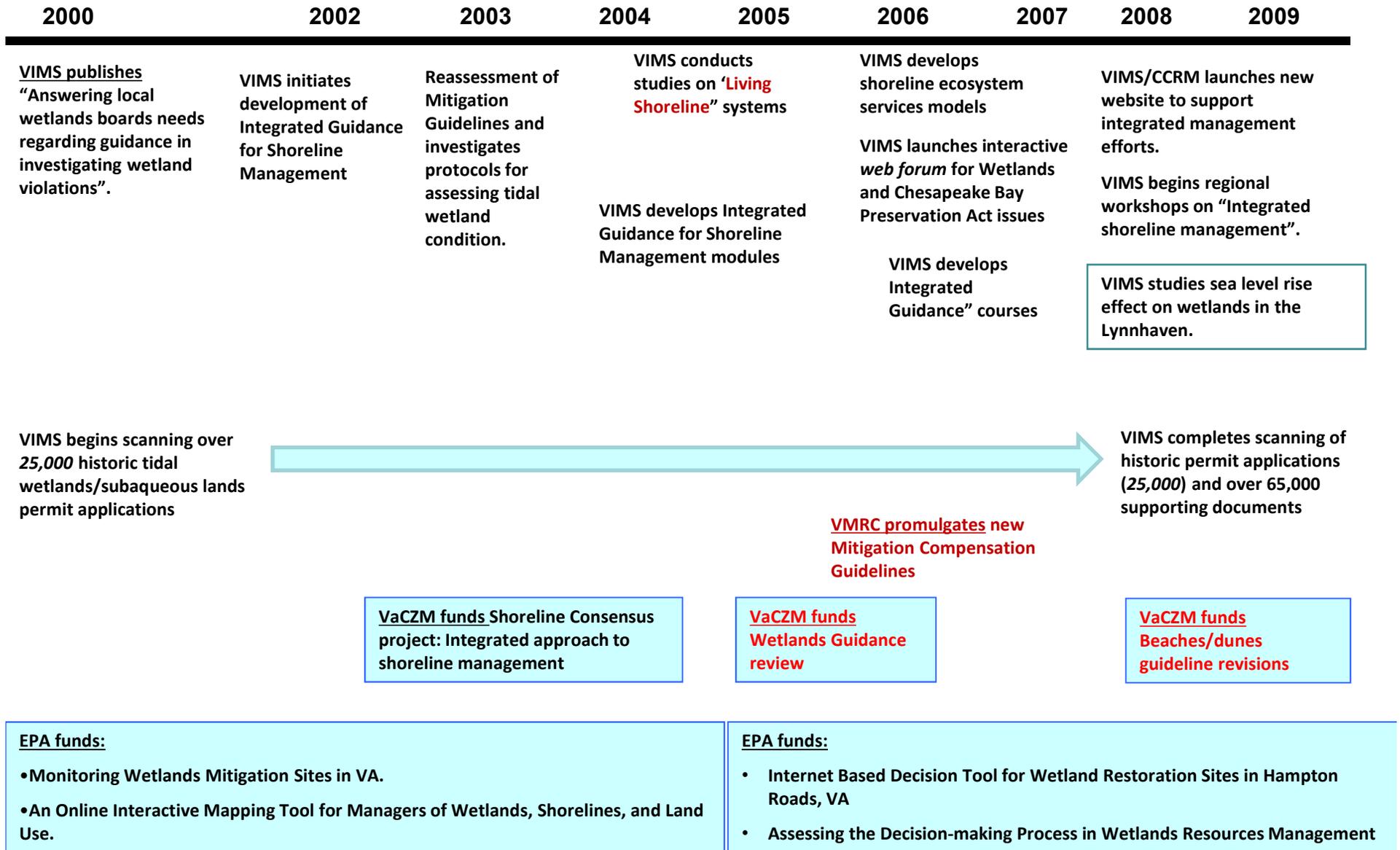
## VIMS

Initiates Grant and Contract work focused on:

1. Guidance regarding Wetlands Mitigation
2. Training and outreach for Local Wetland Boards
3. Early development of web data services and tools.

EPA and VCZMP funded

# Integrated Guidance and Living Shorelines



# Shoreline Best Practices and Wetland Resilience

2010

2011

2012

2015

**General Assembly mandates VIMS shoreline management study SJR35**

VIMS Living Shorelines Course and Manual

VIMS Decision Tree

VIMS Report: Study of Tidal Shoreline Management in Virginia: Recommendations for Living Shorelines and Tidal Resources Sustainability

**VaCZM Shoreline Management Strategy: Shoreline Inventory Funding 5 year timeframe**

**General Assembly enacts Living Shoreline Integrated Guidance legislation**

VIMS Study: Evaluating Ecological & Erosion Protection Functions of Chesapeake Bay Living Shorelines

VIMS: Prototype Comprehensive Resource Management Portal. First 5 Portals launched

VIMS: Tidal Marsh Inventories initiated to re-inventory Virginia's tidal wetlands

VIMS: Shoreline Best Management Practices Model

**General Assembly amends Living Shoreline Integrated Guidance legislation**



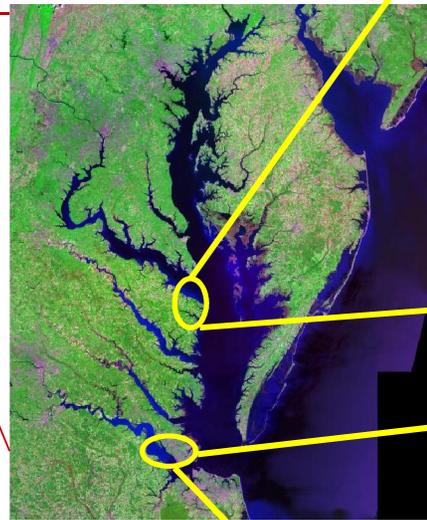
VIMS CCRMPS

# Integrated Shoreline Management

- Considers all parts of the shoreline system at multiple scales
- Is based on sustaining ecosystem services
- Recognizes unavoidable impact tradeoffs
- Provides project design guidance
- Addresses cumulative impacts



# Tidal Wetlands: Ecosystem Scales



# Wetlands Ecosystem Services: Varying Scales

Smaller Scale	Larger Scale
Site specific erosion control	Sediment budgets
Sediment trapping	Sediment availability
Primary production	Estuarine foodweb
Nutrient removal	Coastal eutrophication: Water quality improvement/ Bay TMDL
Wetland creation	Watershed restoration
Carbon sequestration	Greenhouse gasses
Storm risk reduction	Coastal resilience/ wetland sustainability

# Wetlands Ecosystem Services at Larger Scales

- Assess and validate models – VIMS shoreline BMP
- Wetlands status and trends
  - Virginia commitment to No Net Loss- Net gain
- Wetland sustainability
  - Sea level rise
- Sediment budget/ Littoral cells
  - Wetland and Beach
- Assess and validate risk reduction
  - Flood/ storm abatement
- Water quality services within the watershed
- Cumulative benefits of Wetland Creation, Restoration and Living Shorelines
  - Habitat – corridors, secondary production, trophic effects
  - Water Quality: Nutrient Reduction TMDLs

# Larger Scale Initiatives

North Atlantic Comprehensive Coastal Study  
(Sandy): Nature and Nature-Based features

Corps, NFWF, Department of the Interior, Housing  
and Urban Development

SAGE: Systems Approach to Geomorphic  
Engineering: Grey-Green

TMDL: Sediment and Nutrient Load Reductions  
Model  
Credits

Green/ Blue ways: Corridors State Wildlife  
Plans

CRS: Community Rating System

# VIMS

## tidal wetlands advisory program

- Based on science
- Evolving with our understanding
- Focused on management outcomes
- Driven to be efficient

# Evolution of VIMS Tools

Marcia Berman  
Center for Coastal Resources Management  
Virginia Institute of Marine Science

June 5, 2015  
Tidal Wetlands Workshop



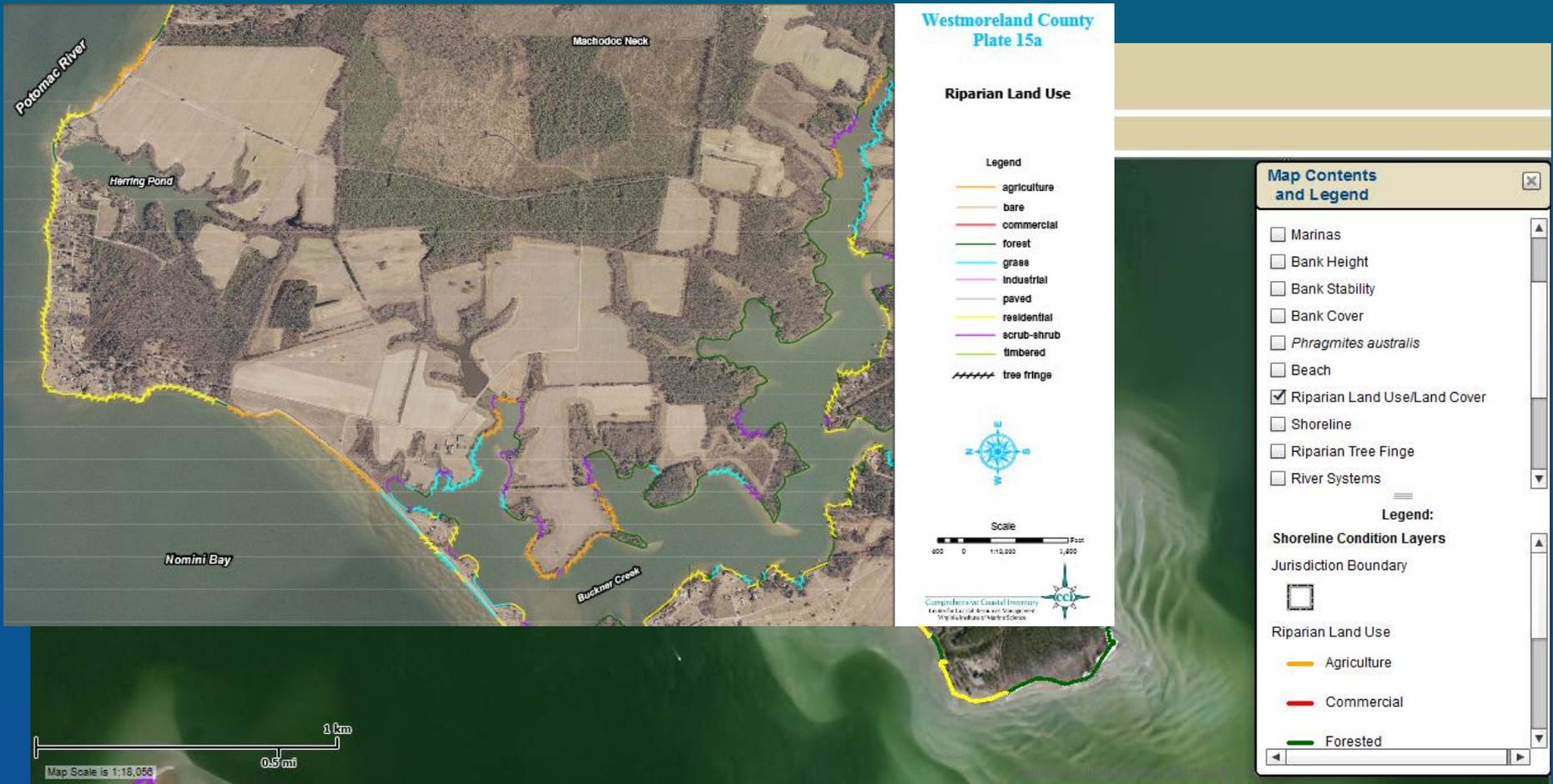
# 1989-2000

## Developing Maps and Digital Data

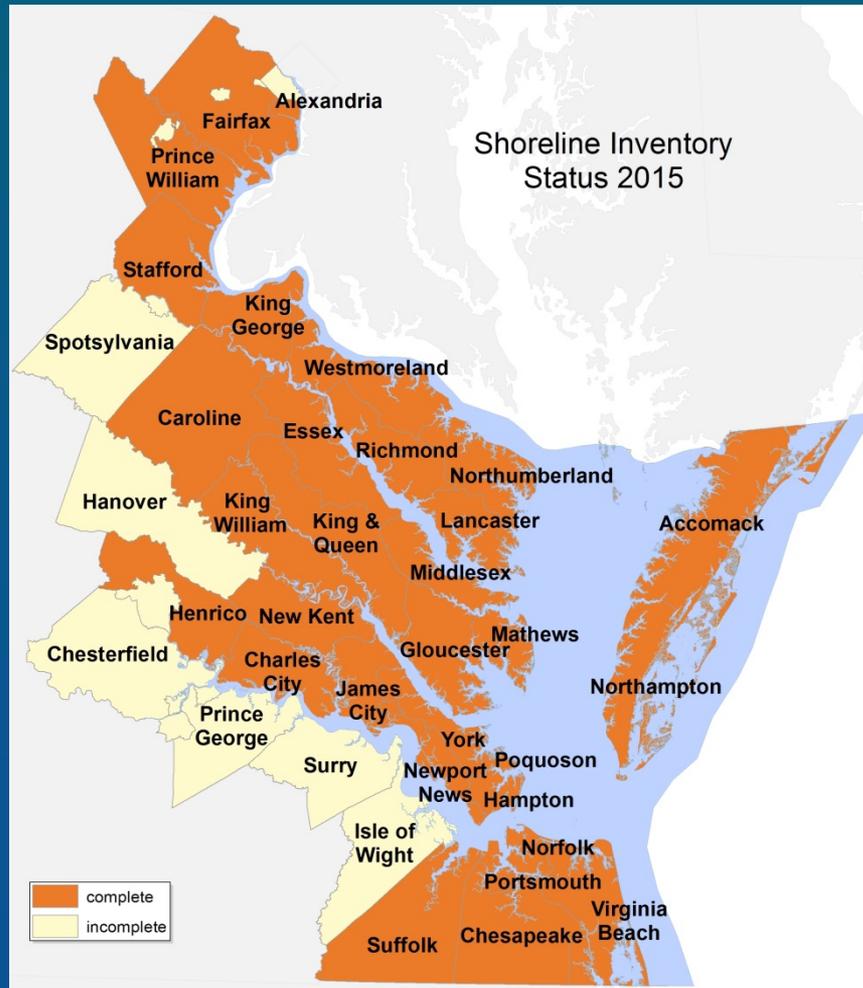
- 1989 – Digital Tidal Marsh Inventory – Series 1 (completed)
- 1990 - Digital Shoreline Inventory (ongoing)

# 1989-2015

## Shoreline Inventories - Ongoing



# Shoreline Inventory Status



# Tidal Marsh Inventory

## **CITY OF PORTSMOUTH TIDAL MARSH INVENTORY**

**Special Report No. 299 in Applied Marine Science and Ocean Engineering**

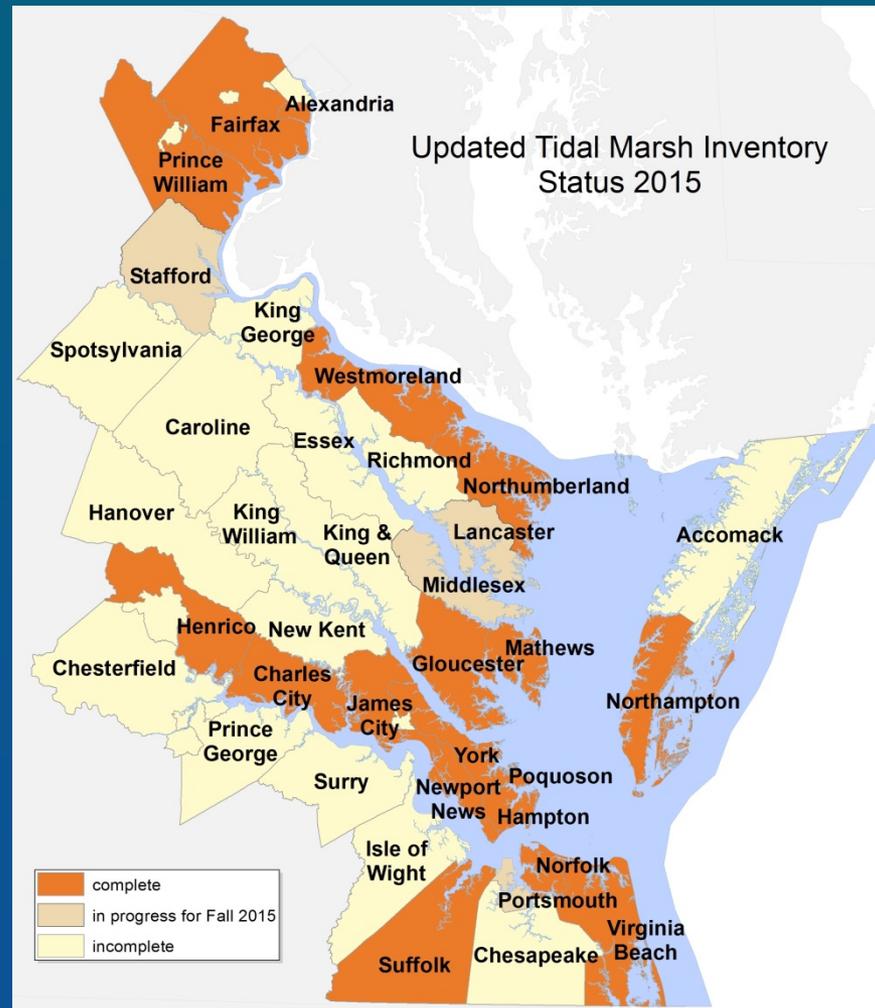
**Gene M. Silberhorn and Sharon Dewing**



**VIRGINIA INSTITUTE OF MARINE SCIENCE  
SCHOOL OF MARINE SCIENCE  
THE COLLEGE OF WILLIAM AND MARY  
Gloucester Point, Virginia 23062**

**JULY 1989**

# Tidal Marsh Inventory Updates



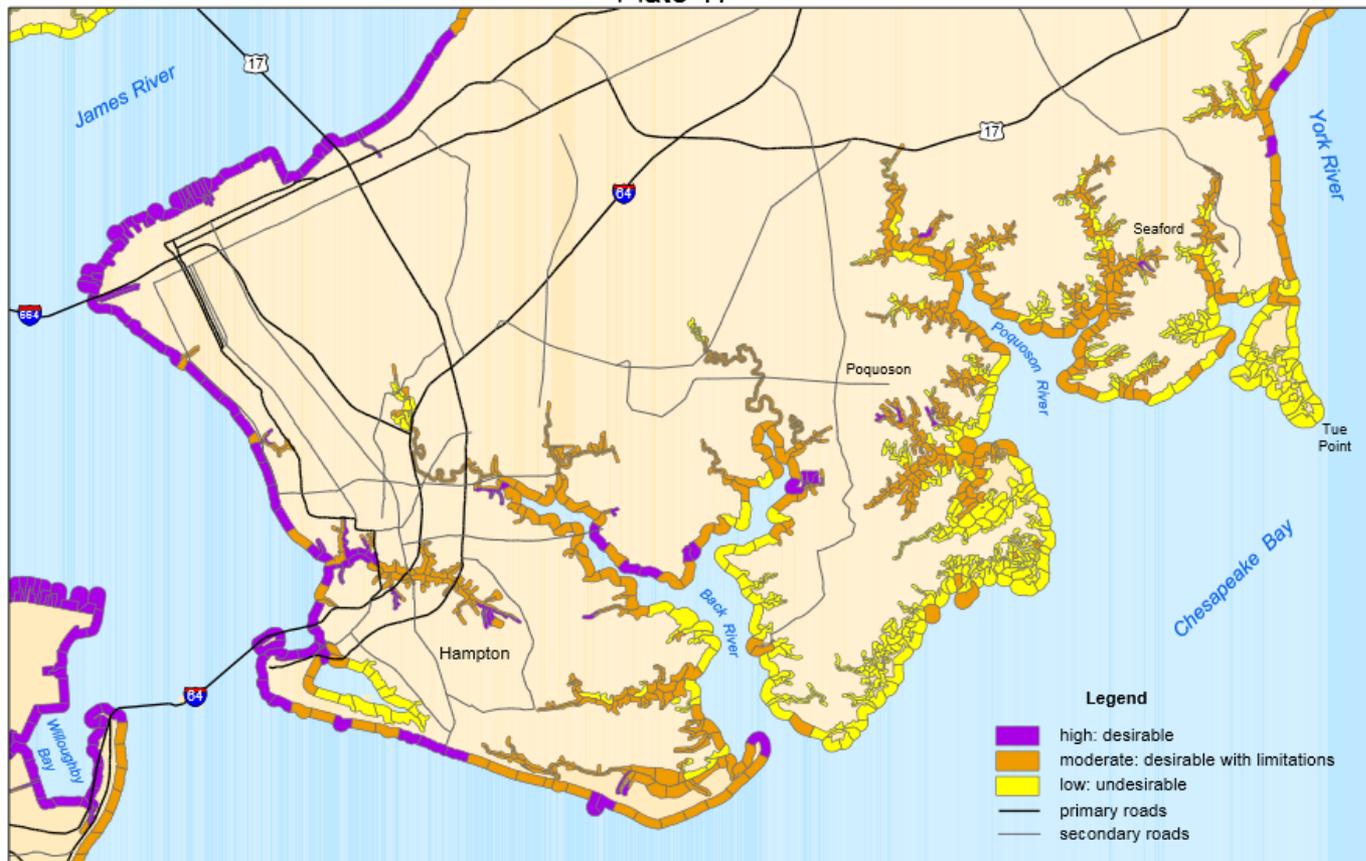
# 2000-2009

## Developing Interactive Tools

- 2002 – Marina Site Suitability
- 2003 – Wetland Mitigation Targeting Tool
- 2006 – Blue Infrastructure
- 2006 – Shoreline Managers Assessment Kit (SMAK)
- 2007 - Aquaculture Vulnerability Tool
- 2009 - Shoreline Assessment Mapper (SAM)
- 2009 – Climate Change Database Clearinghouse

# Marina Site Suitability Tool

Marina Suitability Evaluation Based on Water Quality Parameters  
Plate 17



# Wetland Mitigation Targeting Tool

**Query/Selection Results - Netscape**

Restoration ranking										
Rec	PERIMETER	ID_NUMBER	ATTRIBUTE	WETLAND	HYDRIC	TRINSIDE	LU	STR_CONN	COINC_A	COINC_B
1	1919.7526797763	1451	U	U	Y	0	forest	Y		Y
2	1684.2901731114	2052	U	U	Y	0	forest	Y		Y
3	1762.5630108407	6121	U	U	Y	0	forest	Y		Y
4	1746.2273443429	7803	U	U	Y	0	forest	Y		Y
5	2207.5968034499	9375	U	U	Y	0	forest	Y		Y
6	1986.5393503338	9776	U	U	Y	0	forest	Y		Y
7	1431.9036872804	9915	U	U	Y	0	forest	Y		Y
8	2056.5272720655	11267	U	U	Y	0	forest	Y		Y
9	1724.7760054513	13244	U	U	Y	0	forest	Y		Y

**Layers**

- Study area
- Locality names
- Localities
- Hydrology
- Hydrologic unit codes
- Hydrologic units
- Restoration ranking
- USGS quads

**Legend**

- Selected Feature
- Study area
- Locality name
- Hydrologic unit
- Hydrologic unit
- Restoration ranking
- potential
- moderate
- good
- high
- excellent
- Other
- USGS quads

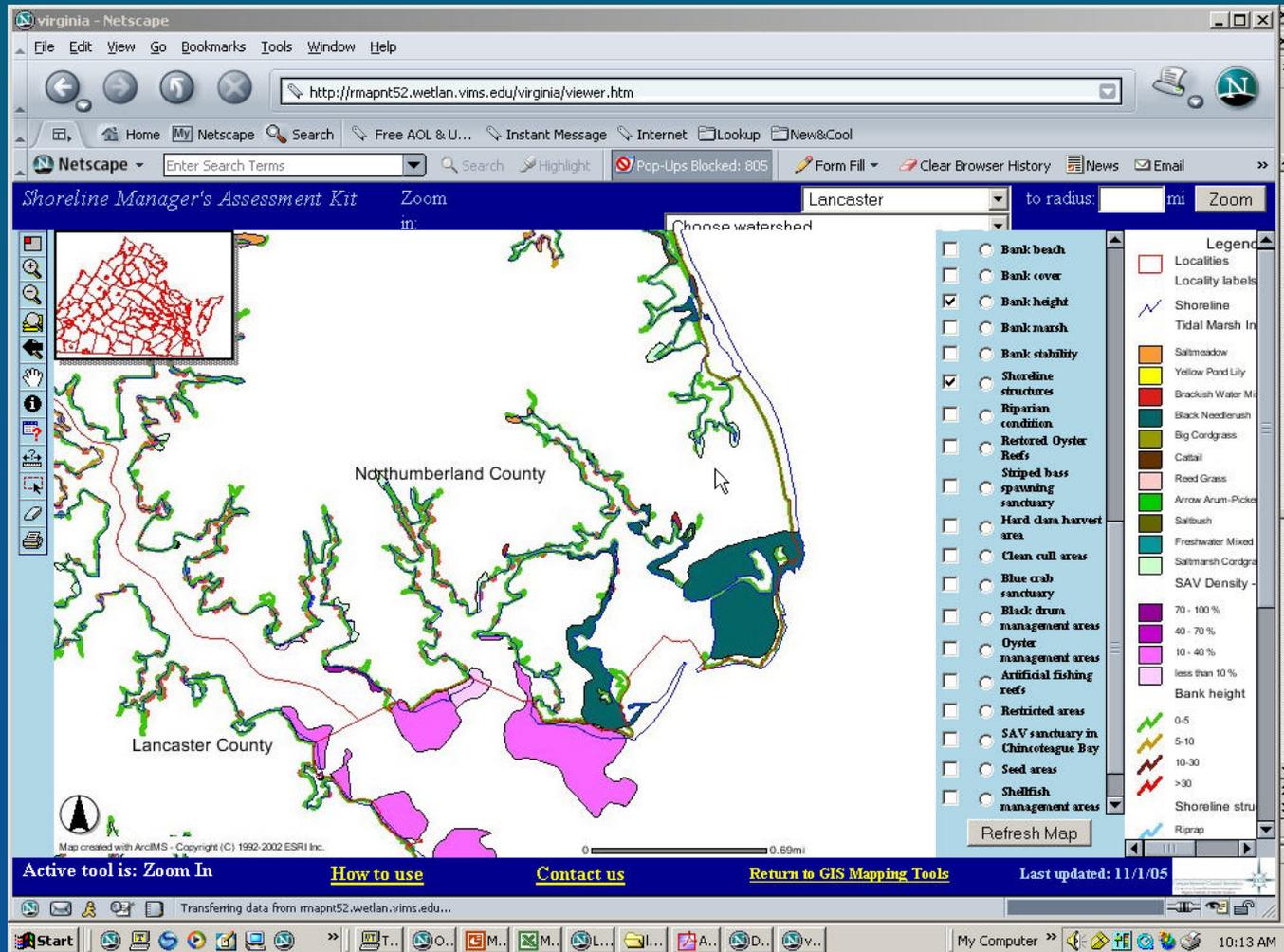
Map created with ArcViewS - Copyright(C) 1992-2002 ESRI Inc.

Zoom In 10 - 20 Isle of Wight County K34 Good Submit

[How to use](#) [Hydrologic unit code descriptions](#) [Contact us](#) Last updated: 12/04/03

Map: 348987.3, 4093455.48 -- Image: 551, 293 -- ScaleFactor: 31.134874759151685

# Shoreline Managers Assessment Kit



# Shoreline Assessment Mapper



# 2010-2015

## Interactive Models and Decision Support

- 2010 – VIMS Online Historic Permit Record Search
- 2010 – Decision Trees for undefended and defended Shoreline
- 2012 – Shoreline Best Management Practices Online Course
- 2012 - Comprehensive Coastal Resource Management Portal
  - Shoreline BMPs (Shoreline Management Model)
  - Comprehensive Map Viewer
  - Sea Level Rise Risk and Vulnerability Tool

# VIMS Online Historic Permit Record Search

## VIMS Shoreline Permit Application Records

Permit Number:

Applicant Name:

Start Date:  End Date:

Locality:   Include permits with unknown localities?

Watershed:

Immediate Waterway:

### NOTICE:

The Center for Coastal Resources Management, VIMS has stopped populating the on-line digital permit records as of January 2015. We will maintain and serve the historical records for years prior to 2010, including any additional information that may still be generated for those permit records.

The Virginia Marine Resource Commission (VMRC) is now serving permit records at this website <https://webapps.mrc.virginia.gov/public/habitat/>. Use the VMRC website to access information regarding applications starting with the year 2010 to the current date.

We continue to track shoreline management decisions to support advisory service, research and outreach activities.

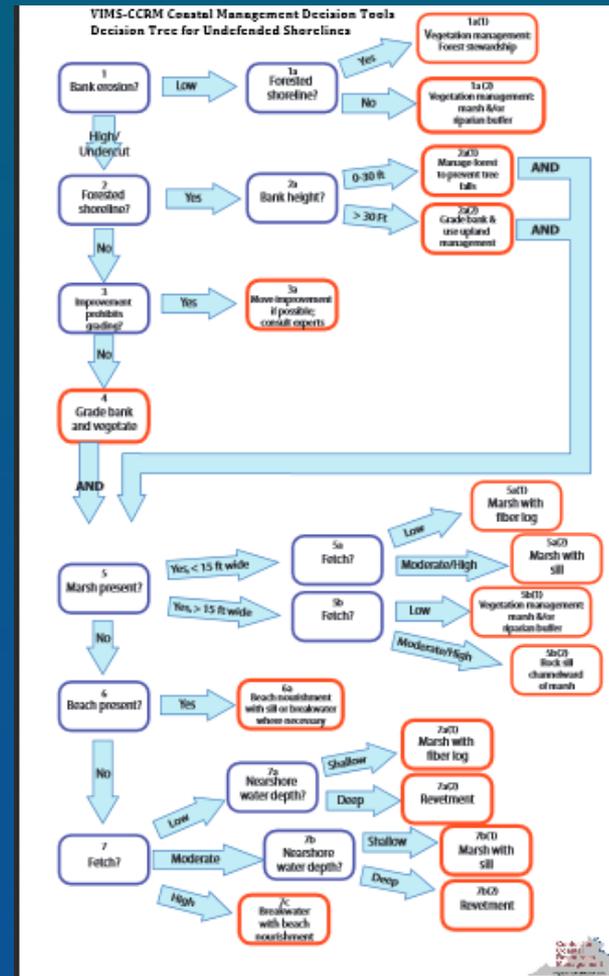
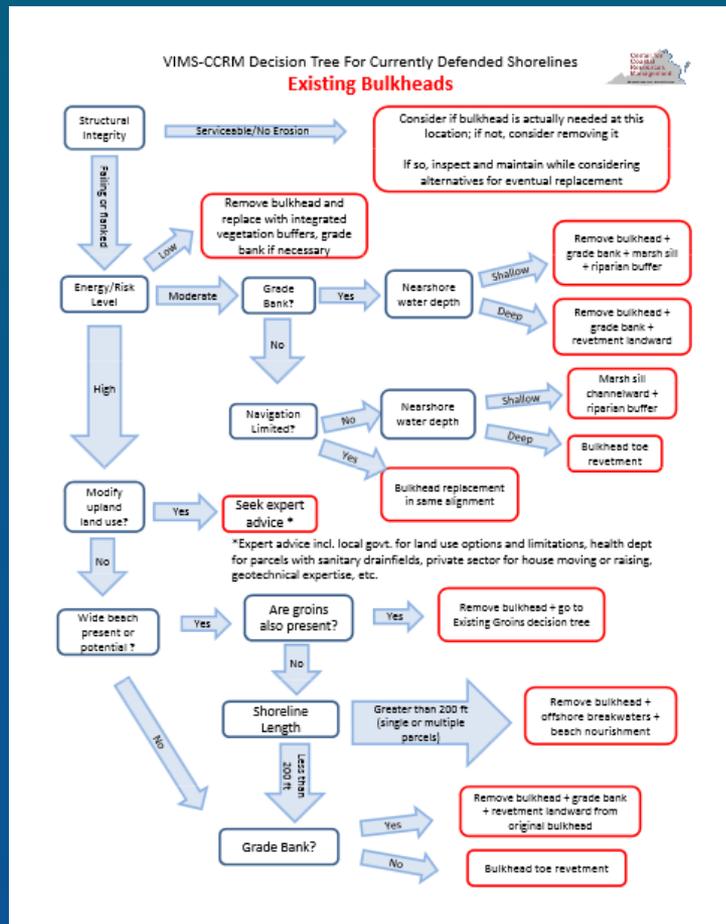
Please type a permit number or other information above to search for permit application files.



VIMS Web Site Established: September, 1994

Any comments, questions or concerns please contact - [wetlands@vims.edu](mailto:wetlands@vims.edu)

# Decision Trees



# VIMS Online Course

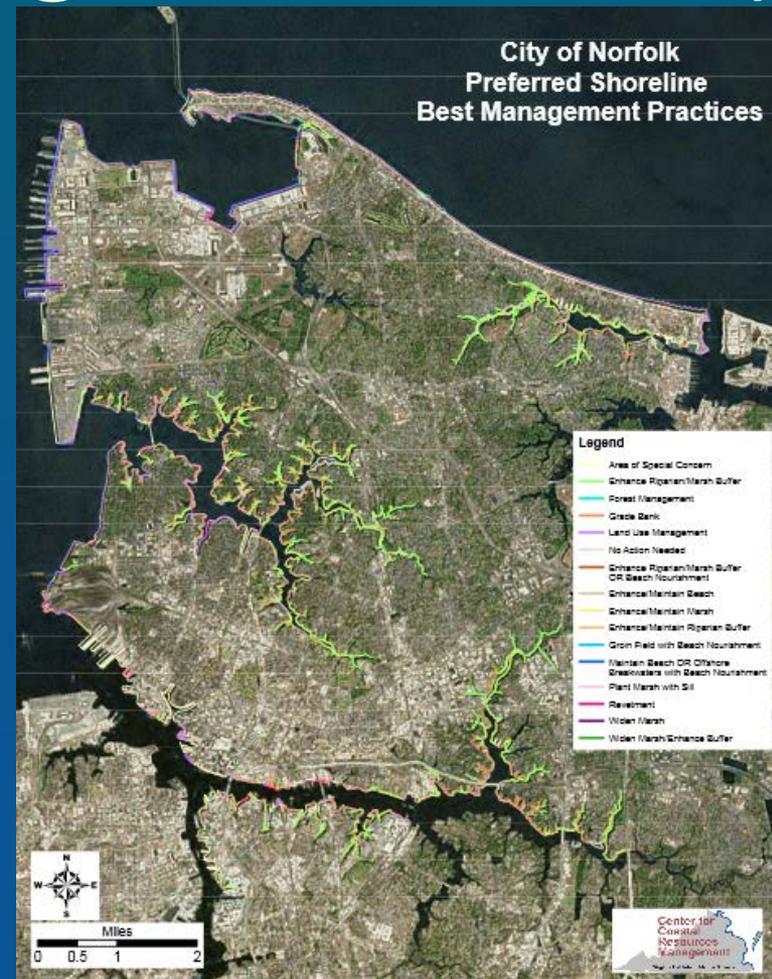
## Shoreline Best Management Practices

The screenshot shows the VIMS online course interface. At the top, it features the logo for the Center for Coastal Resources Management and CCRM TRAINING for coastal studies. The breadcrumb trail indicates the user is in the 'BMP Course'. The left sidebar contains a 'Navigation' menu with options like 'Home', 'My home', 'Site pages', 'My profile', and 'My courses'. Under 'My courses', the 'BMP Course' is expanded to show 'Participants' and 'Topic 1' through 'Topic 12'. Below the navigation is a 'Settings' section with 'Course administration', 'Grades', and 'My profile settings'. The main content area is titled 'Topic outline' and displays a video player for 'Shoreline Best Management Practices BMP 101'. The outline lists three modules: 1. Course Introduction (with lecture materials and a 4-minute video), 2. Module 1: Introduction to Integrated Shoreline Management (with lecture materials, an 8-minute video, and a quiz), and 3. Module 2: Ecosystem Services 1 - Water Quality (with lecture materials and a 10-minute video).

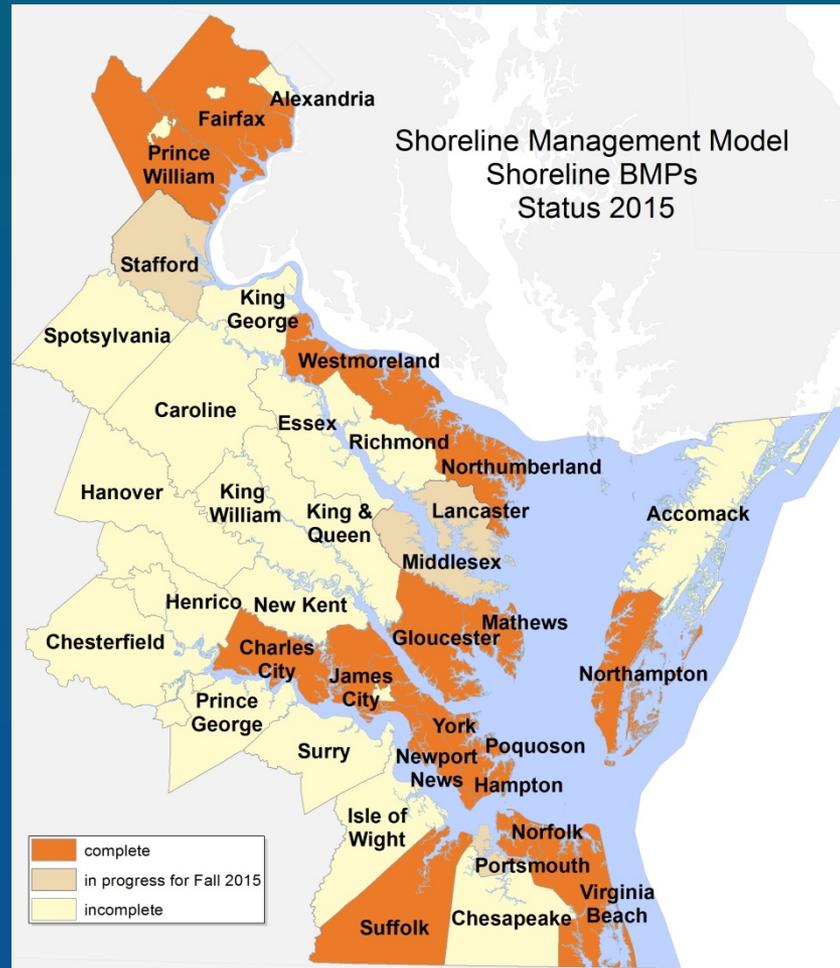
### Shoreline Best Management Practices Course Modules:

1. Introduction to Integrated Shoreline Management
2. Ecosystem Services 1: Water Quality Improvement
3. Ecosystem Services 2: Stabilization/Erosion Control
4. Ecosystem Services 3: Habitat
5. Impacts of Shoreline Management Approaches
6. Assessment and Risks
7. Decision Tree 1: Undefended Shorelines
8. Decision Tree 2: Currently Defended Shorelines
9. Shoreline Management Model
10. Shoreline Best Management Practices: Non-structural approaches
11. Shoreline Best Management Practices: Structural and Hybrid Approaches

# Shoreline Best Management Practices (Shoreline Management Model)



# Shoreline BMPs Status



# Comprehensive Coastal Resource Management Portal

<http://ccrm.vims.edu/ccrmp/index.html>

# Questions?

Center for  
Coastal  
Resources  
Management

Virginia Institute of Marine Science

**VIMS** | WILLIAM  
& MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE



# Evolution of VIMS Advice

SEP 6 1977

COMMONWEALTH of VIRGINIA  
Marine Resources Commission  
200 West Avenue  
Norfolk, Virginia 23502  
Telephone: 683-2600  
Facsimile: 683-2600

September 7, 1977

Re: VIMS # 219-2583-2  
APPLICANT: [redacted]

Dear Sir:

Attached is an application for your review and comment. We request not later than September 20, 1977.

Sincerely,  
Robert P. Flynn  
Departmental Registrar

APPLICANT: [redacted]  
ADDRESS: [redacted]  
CITY: [redacted]  
STATE: [redacted]  
ZIP: [redacted]

APPROVED: [redacted]  
DATE: [redacted]

**VIMS**  
THE COLLEGE of WILLIAM and MARY  
VIRGINIA INSTITUTE of MARINE SCIENCE  
SCHOOL of MARINE SCIENCE  
SHORELINE PERMIT APPLICATION REPORT

NOV 15, 1980

APPLICANT: [redacted]      PROJECT NO.: [redacted]      PROJECT NAME: [redacted]

CHARACTER OF ACTIVITY: [redacted]

TYPE OF ACTIVITY: [redacted]

DATE OF ACTIVITY: [redacted]

APPLICANT: [redacted]

ADDRESS: [redacted]

CITY: [redacted]

STATE: [redacted]

ZIP: [redacted]

APPROVED: [redacted]

DATE: [redacted]

WILLIAM and MARY  
**VIMS**  
Virginia Institute of Marine Science  
School of Marine Science

Wetlands Program

SHORELINE PERMIT APPLICATION REPORT

REPORT DATE: 04/14/2009

VIMS # 07-0426

APPLICANT: [redacted]

ADDRESS: [redacted]

CITY: [redacted]

STATE: [redacted]

ZIP: [redacted]

APPROVED: [redacted]

DATE: [redacted]

**VIMS Shoreline Permit Application Report # 07-0425**

APPLICANT: JAY E. LIGHTFOOT  
LOCALITY: CURTIS ISLAND COUNTY  
COUNTY: WASHINGTON  
WATERWAY: NORTHEN NECK BAYSHORE  
PURPOSE: [redacted]  
APPROXIMATE TYPE: [redacted]  
DATE OF ACTIVITY: [redacted]

NOV 15, 1980

APPLICANT: [redacted]      PROJECT NO.: [redacted]      PROJECT NAME: [redacted]

CHARACTER OF ACTIVITY: [redacted]

TYPE OF ACTIVITY: [redacted]

DATE OF ACTIVITY: [redacted]

APPLICANT: [redacted]

ADDRESS: [redacted]

CITY: [redacted]

STATE: [redacted]

ZIP: [redacted]

APPROVED: [redacted]

DATE: [redacted]

**VIMS** WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE

Center for Coastal Resource Management

**VIMS Tidal Shoreline Management Recommendation**  
(VMCR #15-0440)

Applicant: Roger, Jr. & Tonya Flynn  
Address: 55 Point Lane, Kinsale, VA  
Waterbody: N.W. Yoccoconco River  
Date: May 13, 2015

*Preferred Options for Shoreline Management*

The shoreline best management practices recommended in this report reflect the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. The goal of the recommended approach is to lower the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments wherever adequate sediment control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Plan (CCMRP). The VIMS shoreline inventory includes data such as bank condition, marshness depth, high bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendations. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://www.vims.edu/education/ccmrp/>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, narrow lot size, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCMR Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://www.vims.edu/education/ccmrp/>.

Page 1 of 4

Christine Tomblason  
CCRM  
June 5, 2015



# Evolution of the VIMS Report

Is a history of how VIMS guidance has been delivered at the individual Joint Permit Application (JPA) (or shoreline project) scale over time.



Since the passage of the Tidal Wetlands Act in 1972

- The **VIMS Report** has been the **primary source of environmental input to the tidal** wetlands decision-making process
  - Implemented by local wetland boards, VMRC, DEQ & others permitting agencies

# Evolution of the VIMS Report

SEP 6 1977

COMMONWEALTH OF VIRGINIA  
Marine Resources Commission  
P. O. Box 204  
300 West Avenue  
Norfolk, Virginia 23502  
Telephone: 683-2662

September 1, 1977

RE: VIMC NO. 228-058-2-A  
APP13A07992@vims.edu

Dear Sir:

Attached is an application for your review and comments. We are requested not later than September 29, 1977.

Very truly,  
Robert P. Adams  
Environmental Engineer

KRM:dv  
Enclosure

cc: Virginia Marine Resources Commission

We have no objection to the proposed project.

See attached.

**VIMS**  
THE COLLEGE OF WILLIAM AND MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE  
SCHOOL OF MARINE SCIENCE  
SHORELINE PERMIT APPLICATION REPORT

March 29, 1986

APPLICANT	WETLANDS ZONE	ZONE NO.	DEFINITION DATE
Chesapeake Beach, Inc.	Shoreline	SH-02B	None
TYPE OF WORK	NATURE	TYPE OF USE	TYPE APPLICATION
Recreation	Hill Creek	Recreation	Wetlands/Subsistence
ACTIVITY	TYPE AND EXTENT	PURPOSE	
Construction	Shoring piles	Commercial	
TYPE OF WETLANDS INVOLVED	EXTENT OF WETLANDS INVOLVED		
None			

THIS ASSIGNMENT IS BASED ON BIOLOGICAL, CHEMICAL, GEOLOGICAL AND PHYSICAL FACTORS AFFECTING THE MARINE ENVIRONMENT OF AND TO THE BENEFIT OF THE PROPOSED ACTIVITY. PARAMETERS OF THE MARINE ENVIRONMENT WHICH MAY INCLUDE RECREATIONAL, COMMERCIAL OR INDUSTRIAL ACTIVITIES WHICH ARE DEPENDENT ON THE MARINE ENVIRONMENT ARE ALSO CONSIDERED WHERE APPLICABLE.

THE VIRGINIA INSTITUTE OF MARINE SCIENCE FINDS IN MAKE THE DETERMINATION ON ADMINISTRATIVE RECORDS AND WITH THE GENERAL INTERESTS OF THE PUBLIC AND PRIVATE BENEFITS AND INTERESTS OF ACTIVITIES OF THE MARINE ENVIRONMENT WHICH MAY INCLUDE RECREATIONAL, COMMERCIAL OR INDUSTRIAL ACTIVITIES WHICH ARE DEPENDENT ON THE MARINE ENVIRONMENT ARE ALSO CONSIDERED WHERE APPLICABLE.

WE HAVE THOROUGHLY REVIEWED THIS PROPOSAL FROM A MARINE ENVIRONMENTAL VIEWPOINT AND IT IS OUR OPINION THAT THE PROPOSED AND CONTINGENT ALTERNATIVE IMPACTS RESULTING FROM THIS ACTIVITY WILL BE MINIMAL AND THAT THERE ARE NO ALTERNATIVE OR MODIFICATIONS AVAILABLE WHICH WOULD SIGNIFICANTLY REDUCE THE PROJECT'S EFFECTS ON MARINE RESOURCES.

WE SUGGEST THE FOLLOWING MODIFICATIONS HOWEVER, IN ORDER TO REDUCE THE DIRECT AND/OR CUMULATIVE EFFECTS ON MARINE RESOURCES. PLEASE SEE ATTACHED REPORT.

IT IS OUR OPINION THAT THIS PROPOSAL HAS THE POTENTIAL TO SIGNIFICANTLY AFFECT THE MARINE ENVIRONMENT. PLEASE SEE THE ATTACHED REPORT.

Consent Form, Virginia 23063 (004) 642-7000

**VIMS**  
Virginia Institute of Marine Science  
School of Marine Science

**Wetlands Program**

SHORELINE PERMIT APPLICATION REPORT

REPORT DATE: 01/15/2003

VIMC # 07-0425  
APPLICANT: Clyde W. Walker  
CITY OR COUNTY: Stafford County  
LINE DESCRIPTION: Hill Creek  
TYPE APPLICATION: Wetlands

WALKER UNIVERSITY, 1400 BROADWAY DRIVE  
STAFFORD COUNTY, VIRGINIA 22450

PROJECT: Recreation Control

THE VIRGINIA INSTITUTE OF MARINE SCIENCE FINDS IN MAKE THE DETERMINATION ON ADMINISTRATIVE RECORDS AND WITH THE GENERAL INTERESTS OF THE PUBLIC AND PRIVATE BENEFITS AND INTERESTS OF ACTIVITIES OF THE MARINE ENVIRONMENT WHICH MAY INCLUDE RECREATIONAL, COMMERCIAL OR INDUSTRIAL ACTIVITIES WHICH ARE DEPENDENT ON THE MARINE ENVIRONMENT ARE ALSO CONSIDERED WHERE APPLICABLE.

WE HAVE THOROUGHLY REVIEWED THIS PROPOSAL FROM A MARINE ENVIRONMENTAL VIEWPOINT AND IT IS OUR OPINION THAT THE PROPOSED AND CONTINGENT ALTERNATIVE IMPACTS RESULTING FROM THIS ACTIVITY WILL BE MINIMAL AND THAT THERE ARE NO ALTERNATIVE OR MODIFICATIONS AVAILABLE WHICH WOULD SIGNIFICANTLY REDUCE THE PROJECT'S EFFECTS ON MARINE RESOURCES.

IT IS OUR OPINION THAT THIS PROPOSAL HAS THE POTENTIAL TO SIGNIFICANTLY AFFECT THE MARINE ENVIRONMENT. PLEASE SEE THE ATTACHED REPORT.

Consent Form, Virginia 23063 (004) 642-7000

**VIMS Shoreline Permit Application Report # 07-0425**

APPLICANT: JAY E. EIGHTFOOT  
Locality: Northerly Waterway  
Watershed: NORFOLK SICKL BAYSHIRE  
Purpose: Shoreline Stabilization  
Application Type: 3.24-07  
Site Inspection: 6.24-07  
Report Date: 6.25-07



**VIMS Tidal Shoreline Management Recommendation**  
(VMRC #15-0440)

Applicant: Roger, Jr. & Tonya Flynn  
Address: 55 Point Lane, Kimsale, VA  
Waterbody: N.W. Yorkcomco River  
Date: May 13, 2015

**Preferred Options for Shoreline Management**

The shoreline best management practices recommended in this report reflect the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is [text] based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Plan (CCRMP). The VIMS shoreline inventory includes data such as bank condition, nearshore depth, fetch, bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendations. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://vims.vims.edu/shoreline/>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, narrow lot size, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCRMP Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://vims.vims.edu/decisiontree/>.

Page 1 of 3

1970's

2015

# Evolution of the VIMS Report

SEP 6 1977



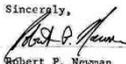
**COMMONWEALTH of VIRGINIA**  
**Marine Resources Commission**  
 P. O. Box 736  
 2401 West Avenue  
 Newport News, Virginia 23607  
 Telephone: 245-2811

September 1, 1977

RE: VMRC NO. 77B-408-3-5  
 APPLICANT Rappahannock River Estab

Dear Sir:

Attached is an application for your review and comments. Your comments are requested not later than September 22, 1977.

Sincerely,  
  
 Robert P. Newman  
 Environmental Engineer

RPN:dw  
 EN  
 Enclosure

TO: Virginia Marine Resources Commission

We have no objection to the proposed project.  
 See attached.

From: *Virginia Trust Bank of Marine*  
 By: *James L. Mercer*  
 Title: *Research Assistant*  
 Date: *6 September 1977*

**VIMS**

THE COLLEGE OF WILLIAM AND MARY  
 VIRGINIA INSTITUTE OF MARINE SCIENCE  
 SCHOOL OF MARINE SCIENCE  
 SHORELINE PERMIT APPLICATION REPORT

March 10, 1986

<b>APPLICANT</b>	<b>WETLANDS BOARD</b>	<b>VMRC NO.</b>	<b>INSPECTION D</b>
Chamberlin Hotel, Inc.	Hampton	86-0102	None
<b>CITY OR COUNTY</b>	<b>WATERWAY</b>	<b>TOPO SHEET</b>	<b>TYPE APPLIC</b>
Hampton	Mill Creek	Hampton	Wetlands/suba
<b>ACTIVITY</b>	<b>TYPE AND EXTENT</b>	<b>PURPOSE</b>	
Construct	Moorings piles	Commercial	
<b>TYPE OF WETLANDS INVOLVED</b>	<b>EXTENT OF WETLANDS INVOLVED</b>		
None			

THIS ASSESSMENT IS BASED ON BIOLOGICAL, CHEMICAL, GEOLOGICAL AND PHYSICAL FACTOR AFFECTING THE MARINE ENVIRONMENT AT AND IN THE VICINITY OF THE PROPOSED ACTIVITY. PARAMETERS OF THE MARINE ENVIRONMENT WHICH MAY INFLUENCE RECREATIONAL, COMMERCIAL OR INDUSTRIAL ACTIVITIES WHICH ARE DEPENDENT ON THE MARINE ENVIRONMENT ARE ALSO CONSIDERED WHERE APPLICABLE.

THE VIRGINIA INSTITUTE OF MARINE SCIENCE (VIMS) IS AWARE THAT REGULATORY OR ADMINISTRATIVE BODIES WHO WEIGH THE OVERALL POTENTIAL PUBLIC AND PRIVATE BENEFITS AND DETRIMENTS IN ARRIVING AT DECISIONS MUST ALSO CONSIDER OTHER FACTORS SUCH AS ECONOMIC AESTHETICS, ZONING OR COMMUNITY DESIRES. INFORMATION PROVIDED IN THIS REPORT IS, THEREFORE, ONLY THE ENVIRONMENTAL AND MARINE RESOURCES INPUT INTO THE DECISION MAKING PROCESS.

We have thoroughly reviewed this proposal from a marine environmental viewpoint find it to be acceptable. It is our opinion that the individual and cumulative adverse impacts resulting from this activity will be minimal and that there are alternatives of modifications available which would significantly reduce the project's effects on marine resources.  
*Walter I. Priest, III*  
 Walter I. Priest, III, Assistant Marine Scientist

The adverse environmental impacts of this proposal are relatively minor. We suggest the following modifications however, in order to reduce the direct and/or cumulative effects on marine resources. Please see attached report.

It is our opinion that this proposal has the potential to significantly affect the marine environment. Please see the attached report.

Gloucester Point, Virginia 23062 (804) 642-7000

**WILLIAM & MARY VIMS**  
 Virginia Institute of Marine Science  
 School of Marine Science



SHORELINE PERMIT APPLICATION REPORT  
 REPORT DATE: 05/15/2000

VMRC #: 00-0745  
 APPLICANT: Clyde W. Warner  
 CITY OR COUNTY: Lancaster County  
 SITE INSPECTION: 05/11/2000  
 TYPE APPLICATION: Wetlands

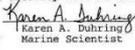
MAJOR WATERSHED: Rappahannock River  
 PRIMARY WATERWAY: East Branch Carters Creek  
 IMMEDIATE WATERWAY: Jack's Cove

PURPOSE: Erosion Control

TYPE OF ACTIVITY/WETLANDS	EXTENT OF ACTIVITY
Riprap (ft.)	47
Impact Type XV Sand/Mud Flat (ft2)	94
Total Fill Wetlands	0
Total Fill Subaqueous	0
Total Impact Wetlands	94
Total Impact Subaqueous	0

THIS ASSESSMENT IS BASED ON BIOLOGICAL, CHEMICAL, GEOLOGICAL AND PHYSICAL FACTORS AFFECTING THE MARINE ENVIRONMENT AT AND IN THE VICINITY OF THE PROPOSED ACTIVITY. PARAMETERS OF THE MARINE ENVIRONMENT WHICH MAY INFLUENCE RECREATIONAL, COMMERCIAL, OR INDUSTRIAL ACTIVITIES WHICH ARE DEPENDENT ON THE MARINE ENVIRONMENT ARE ALSO CONSIDERED WHERE APPLICABLE.

THE VIRGINIA INSTITUTE OF MARINE SCIENCE (VIMS) IS AWARE THAT REGULATORY OR ADMINISTRATIVE BODIES WHO WEIGH THE OVERALL POTENTIAL PUBLIC AND PRIVATE BENEFITS AND DETRIMENTS IN ARRIVING AT DECISIONS MUST ALSO CONSIDER OTHER FACTORS SUCH AS ECONOMIC, AESTHETICS, ZONING OR COMMUNITY DESIRES. INFORMATION PROVIDED IN THIS REPORT IS, THEREFORE, ONLY THE ENVIRONMENTAL AND MARINE RESOURCES INPUT INTO THE DECISION MAKING PROCESS.

Comments:  
 We have reviewed this proposal from a marine environmental viewpoint and it is our opinion that the individual and cumulative adverse impacts resulting from this activity will be minimal.  
  
 Karen A. Dohring  
 Marine Scientist

Applicant/agent  
 Wetlands Board, Corps, F&WS, Fife

PO Box 1346 • Route 1208 Great Road • Gloucester Point, Virginia 23062-1346 USA  
 804/684-7330 • FAX 804/684-7170

1970's

1980's

1990's

# 2001

## VIMS Shoreline Permit Application Report #01-0048

**APPLICANT:** ABBOTT, THOMAS F. & ROBERTA S.  
**Immediate Waterway:** Moran Creek  
**Locality:** LANCASTER COUNTY  
**Purpose:** Erosion Control  
**Application Type:** Wetlands  
**Site Inspection:** 1/30/01  
**Report Date:** 2/7/01



Type of Activity	Proposed Eminent	Project Location
Bulkhead (ft)	64	
Impact Sand/Mud Mixed Flat Community (Type XV) (ft2)	30	
Fill Sand/Mud Mixed Flat Community (Type XV) (ft2)	30	
Bulkhead Replacement (ft)	22	
Impact Sand/Mud Mixed Flat Community (Type XV) (ft2)	44	
Fill Sand/Mud Mixed Flat Community (Type XV) (ft2)	44	
Riprap (ft)	202	
Impact Sand/Mud Mixed Flat Community (Type XV) (ft2)	1212	
Fill Sand/Mud Mixed Flat Community (Type XV) (ft2)	606	
<b>Total Impacts (ft2)</b>	<b>1286</b>	
Total Impacts (Wetlands)	1286	
Total Impacts (Subaqueous)	0	
Total Impacts (Beach/Dune)	0	
Total Fill (ft2)	680	

Virginia Institute of Marine Science  
 School of Marine Science  
 P.O. Box 1346, Route 2209 Gloucester Road  
 Gloucester Point, Virginia 23062-1346  
 phone: (804)684-7300, fax: (804)684-7170, or e-mail: wetland@vims.edu



## Shoreline Permit Application Report # 01-0048

ological, chemical, geological, and physical factors affecting the marine  
 sity of the proposed activity. Parameters of the marine environment which may  
 real, or industrial activities which are dependent on the marine environment  
 scable.

e Science (VIMS) is aware that regulatory or administrative bodies who weigh  
 private benefits and detriments in arriving at decisions must also consider  
 s, aesthetics, zoning, or community desires. **INFORMATION PROVIDED IN  
 ONLY THE ENVIRONMENTAL AND MARINE RESOURCES INPUT INTO  
 CENS.**

adverse impacts resulting from this activity will be minimal if the bulkheads  
 exposed. Erosion and sediment control measures may be needed until the  
 to prevent siltation into the adjacent waterway.

*Thomas F. & Roberta S. Abbott*  
 Project Owner

## VIMS Shoreline Permit Application Report # 01-0048

### APPAHANNOCK RIVER Watershed



**Total Permitted Wetland Loss by Type for RAPPAHANNOCK RIVER - 1996-1999**

Community Type	Extent
Virginia Wetland	60208.02
New Virginia Wetland	28342.82
Subaqueous Wetland	6326.02

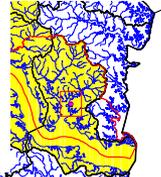
**Total Permitted Wetland Loss by Type for LANCASTER COUNTY - 1996-1999**

Community Type	Extent
Virginia Wetland	26208.02
New Virginia Wetland	16408.82
Subaqueous Wetland	21264.02

**Total Proposed Shoreline Structures and Activities for Lancaster County - 1996-1999**

Structure Type	Extent
Beach Ridge	3144.02
Beach Ridge	13066.02
Beach Ridge	0
Bulkhead	3039.02
Combed Structure	1772.02
General Fill	28285.82
Gravel	60
Gravel	3483.02
Bulkhead Toe Protection	1068.02
Bulkhead Replacement	1495.02
Beach Nourishment	7226.02
Beach Nourishment	225.02
New Dredging	10461.043
Maintenance dredging	20126.043
Rebar	3723.04
Subaqueous Channeling	1313.04

### Lancaster County



- Points the study area shown on next page
- Wetlands
- Wetlands in use
- Lancaster County
- Point site

Hydrologic stress (erosion, salinization, nutrient enrichment, hypoxia) and flow alteration. These stressors can be thought of as localized symptoms of landscape trends which themselves can be managed at a larger scale. The cumulative impact of a project on wetlands within a hydrologic unit may be significantly greater than the impact to the larger watershed device.

## MS Shoreline Permit Application Report # 01-0048

### Permit Site Study Area



ard action on this sheet and return to VIMS

a.S.

osed \_\_\_\_\_

### ACTIVITIES PROPOSED PERMITTED

ACTIVITIES PROPOSED	PERMITTED
64	_____
30	_____
30	_____
22	_____
44	_____
44	_____
202	_____
1212	_____
606	_____

- Color GIS Maps
- Digital Photographs
- Wetland Impact Areas
- Advisory Comments
- Watershed Information
- Cumulative Impacts
- Electronic Distribution

# Electronic & Web Based

**Wetlands Permit Applications**

Sort by Permit Number, Applicant, Date, Locality, or Watershed:

Sort by:

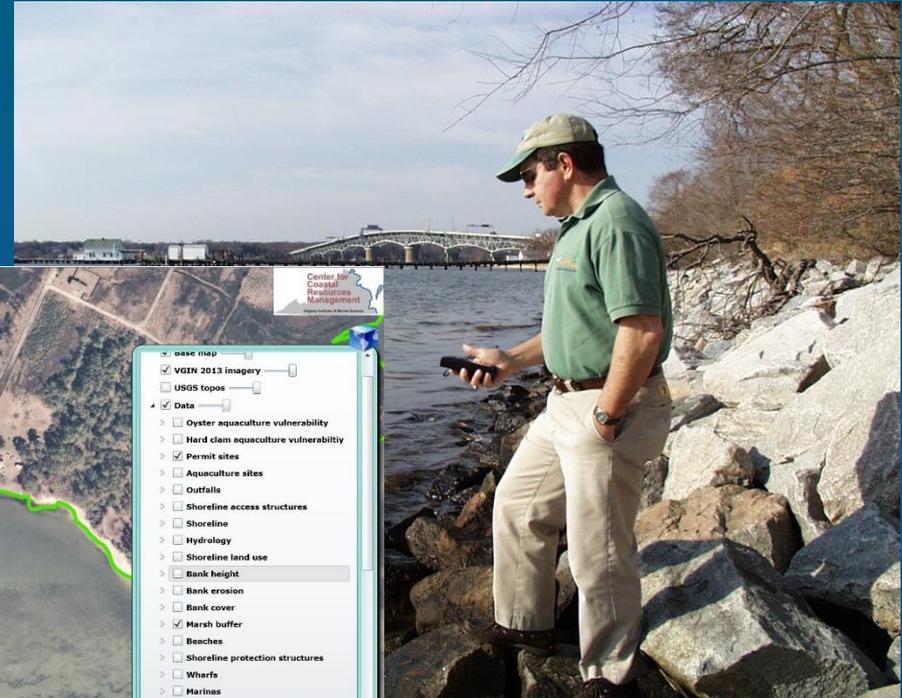
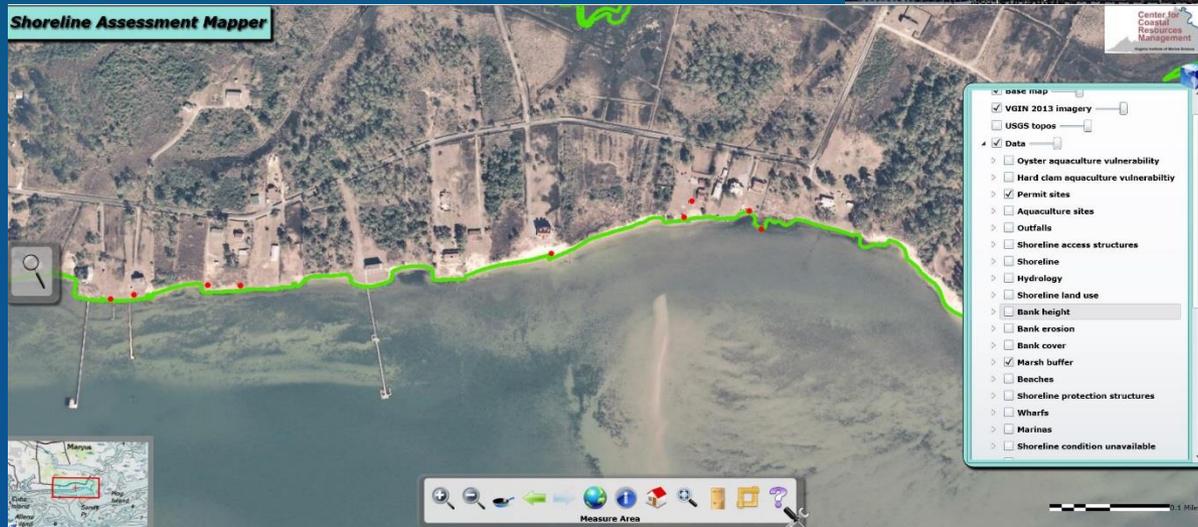
Number  Applicant  Date  Locality  Watershed

Only show records containing  in field

Number	Applicant	Date	Locality	Watershed	Immediate Waterway
<a href="#">00-0222</a>	Ronald M. Kramer	Feb 22 2000	City of Virginia Beach	Southern Bayshore	Lynnhaven Bay
<a href="#">00-0562</a>	David Richards	Apr 11 2000	City of Norfolk	Lower James River (Tidal)	Crab Creek
<a href="#">00-1152</a>	Frank T. Williams Farms, Inc.	Jun 26 2000	City of Virginia Beach	Chowan River	North Landing River
<a href="#">00-1902</a>	David E. Raynor	Oct 20 2000	City of Chesapeake	Lower James River (Tidal)	Old Deep Creek canal
<a href="#">00-1937</a>	New Rappahannock Oyster Company	Jan 31 2001	Northumberland County	Northern Neck Bayshore	Bells Creek
<a href="#">00-1997</a>	Dr. James Miner	Nov 7 2000	City of Norfolk	Lower James River (Tidal)	Lafayette River

# GPS Coordinates

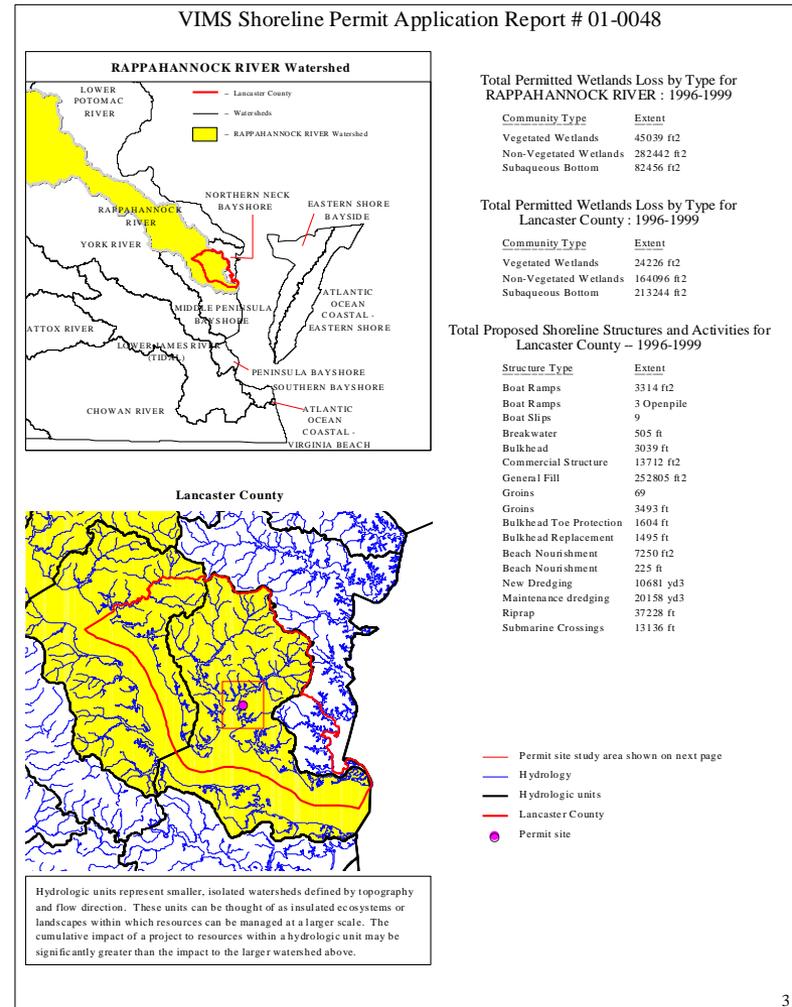
- **GPS** – Each project location linked to resource and shoreline inventories in a GIS database



# Watershed Perspective

Tidal wetland information was presented on a watershed level

- to encourage consideration of the **watershed perspective** in the tidal wetland permitting process.



# Cumulative Impacts

Total permitted wetland losses listed by:

- Locality
- Watershed
- To encourage consideration of **cumulative impacts** in the decision making process

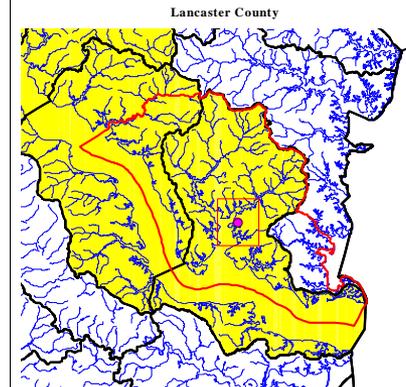
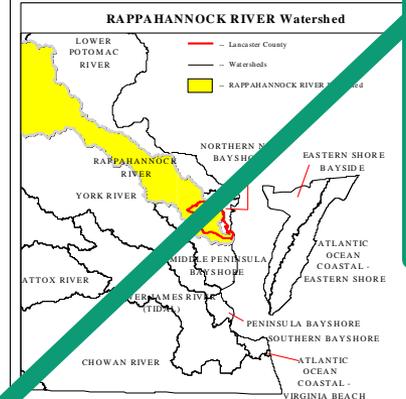
## Total Permitted Wetlands Loss by Type for YORK RIVER : 1996-1999

<u>Community Type</u>	<u>Extent</u>
Vegetated Wetlands	32846 ft <sup>2</sup>
Non-Vegetated Wetlands	69511 ft <sup>2</sup>
Subaqueous Bottom	19157 ft <sup>2</sup>

## Total Permitted Wetlands Loss by Type for King William County : 1996-1999

<u>Community Type</u>	<u>Extent</u>
Vegetated Wetlands	309 ft <sup>2</sup>
Non-Vegetated Wetlands	5854 ft <sup>2</sup>
Subaqueous Bottom	180 ft <sup>2</sup>

## VIMS Shoreline Permit Application Report # 01-0048



Hydrologic units represent smaller, isolated watersheds defined by topography and flow direction. These units can be thought of as insulated ecosystems or landscapes within which resources can be managed at a larger scale. The cumulative impact of a project to resources within a hydrologic unit may be significantly greater than the impact to the larger watershed above.

### Total Permitted Wetlands Loss by Type for RAPPAHANNOCK RIVER : 1996-1999

<u>Community Type</u>	<u>Extent</u>
Vegetated Wetlands	45039 ft <sup>2</sup>
Non-Vegetated Wetlands	282442 ft <sup>2</sup>
Subaqueous Bottom	82456 ft <sup>2</sup>

### Total Permitted Wetlands Loss by Type for Lancaster County : 1996-1999

<u>Community Type</u>	<u>Extent</u>
Vegetated Wetlands	24226 ft <sup>2</sup>
Non-Vegetated Wetlands	164096 ft <sup>2</sup>
Subaqueous Bottom	213214 ft <sup>2</sup>

### Total Proposed Shoreline Structures and Activities for Lancaster County -- 1996-1999

<u>Structure Type</u>	<u>Extent</u>
Boat Ramps	3314 ft <sup>2</sup>
Boat Ramps	3 Openpile
Boat Slips	9
Breakwater	505 ft
Bulkhead	3039 ft
Commercial Structure	13712 ft <sup>2</sup>
General Fill	252805 ft <sup>2</sup>
Groins	69
Groins	3493 ft
Bulkhead Toe Protection	1604 ft
Bulkhead Replacement	1495 ft
Beach Nourishment	7250 ft <sup>2</sup>
Beach Nourishment	225 ft
New Dredging	10681 yd <sup>3</sup>
Maintenance dredging	20158 yd <sup>3</sup>
Riprap	37228 ft
Submarine Crossings	13136 ft

- Permit site study area shown on next page
- Hydrology
- Hydrologic units
- Lancaster County
- Permit site

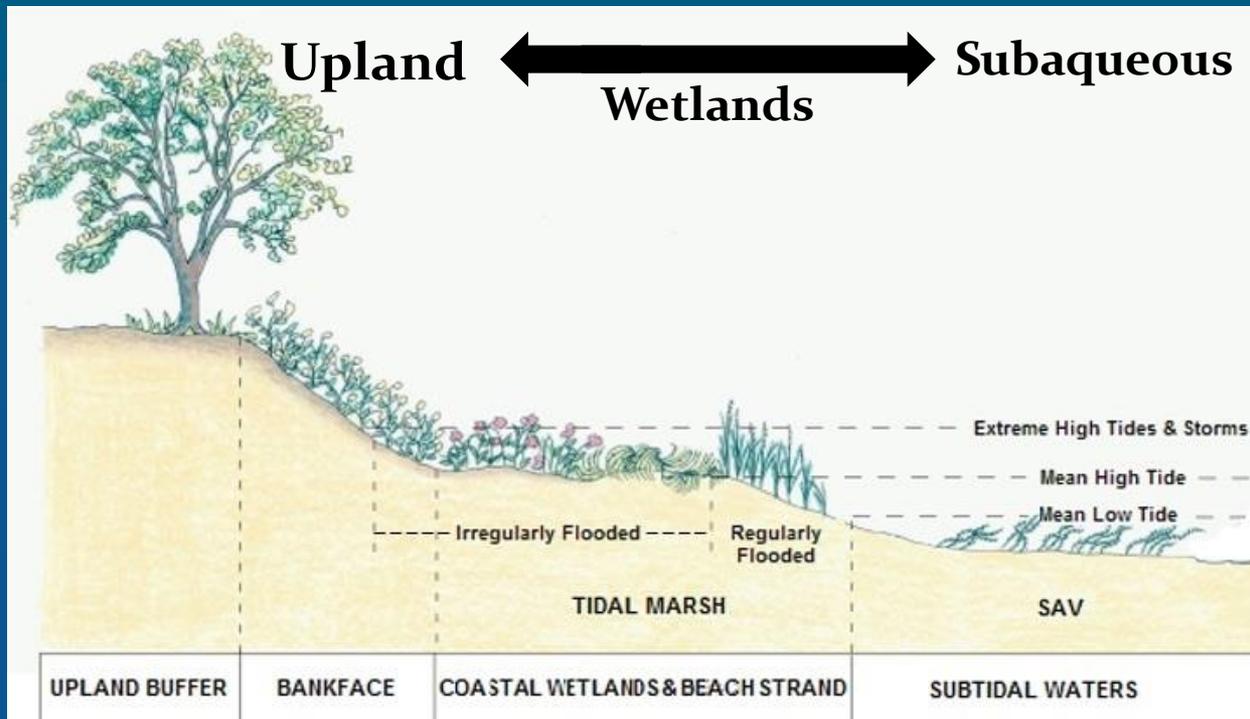
# Adaptations of the New VIMS Report

- **Modernized** shoreline assessment methods
- **Updated tidal wetlands database** impacts
- Encouraged consideration of
  - **watershed perspective**
  - **cumulative impacts**
- **Reduced** administrative time and paperwork
- Provided a **foundation** for future **online permit review process**

# 2008-2010

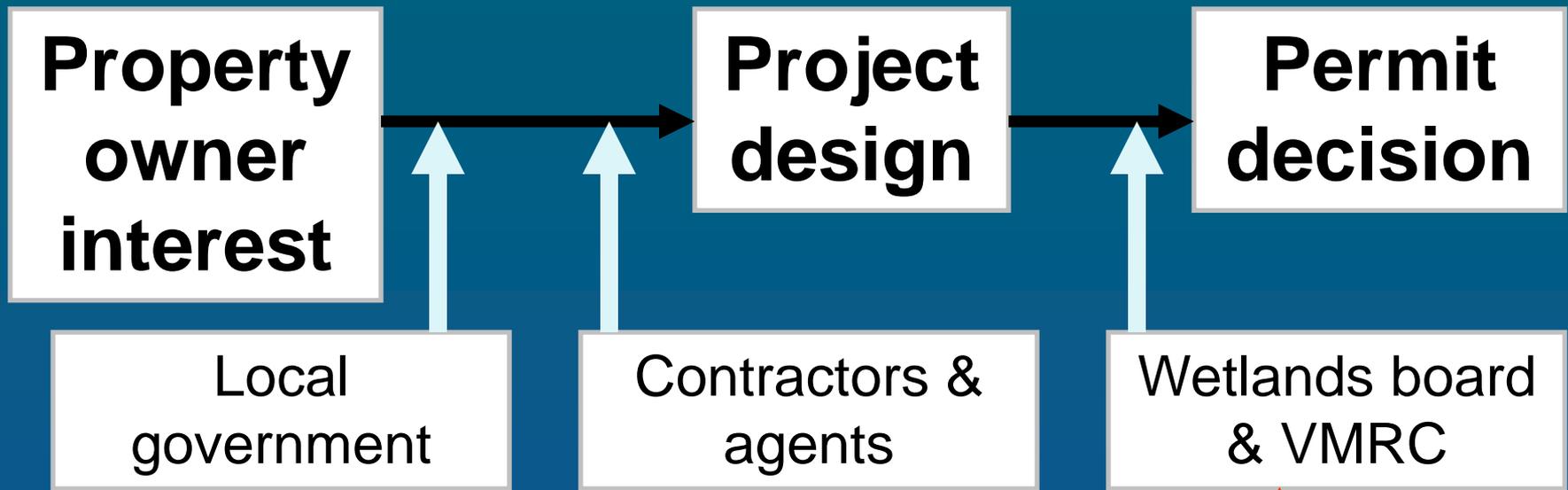
- **Integrated guidance**

- Advice now reflected decision making criteria based on ecosystem services provided across the shoreline and along the shore.





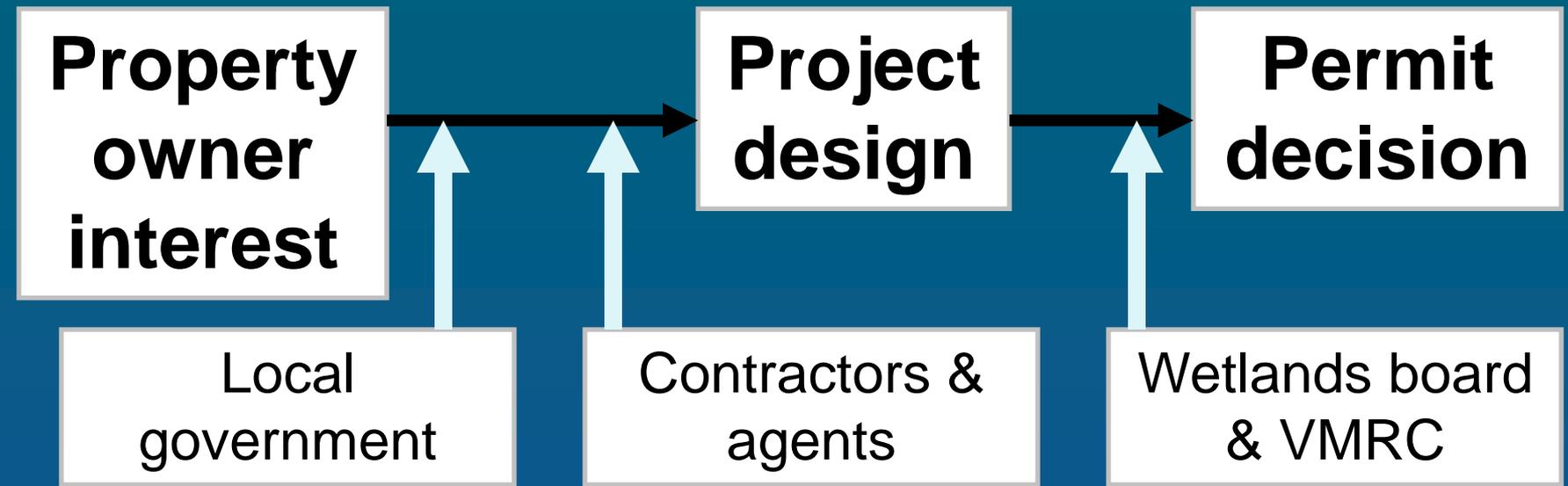
# Shoreline Joint Permit Application Process



Years: 1970s-2010

**VIMS advisory program**

# Shoreline Joint Permit Application Process

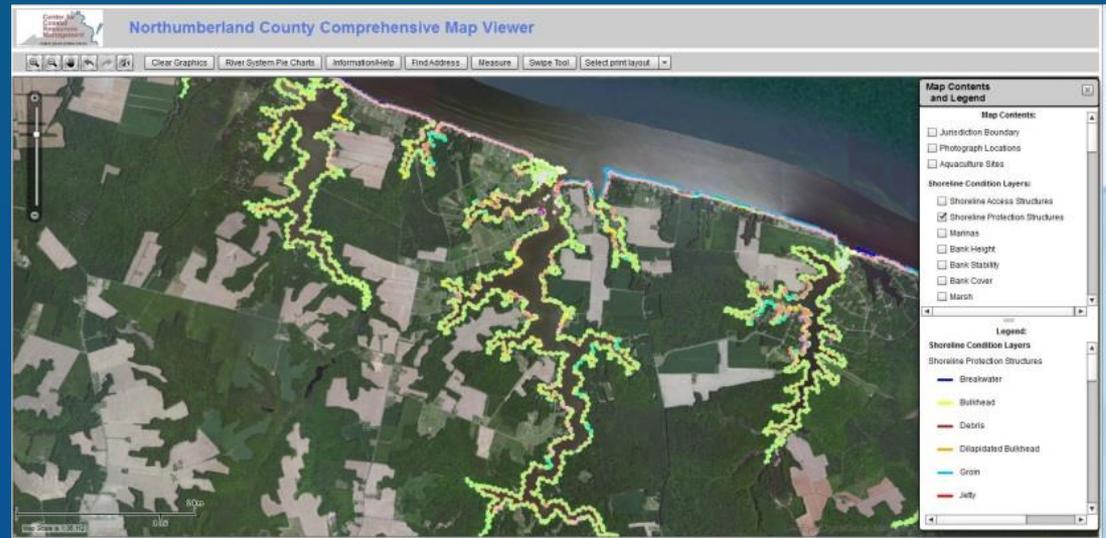


Years: 1970s-2010

**VIMS advisory program**

# Comprehensive Shoreline Management Planning & Tools

- The VIMS advice adapts to a new approach
  - Development of **comprehensive shoreline management guidance**
  - Established **preferred shoreline management strategies** using our extensive shoreline condition database and shoreline management models.



# Goals of

- **VIMS Comprehensive Coastal Resource Management Guidance**
- **Preferred shoreline management strategies**

## Are to:

- **Facilitate**
  - **integrated shoreline management**
    - to maintain & preserve **ecosystem services**
- **Promote resource sustainability**
  - using living shoreline designs where appropriate
    - to provide **erosion control**
  - applying traditional shoreline hardening only in areas where they are necessary



# 2015 - The "NEW" VIMS REPORT

**VIMS** WILLIAM & MARY 75 VIRGINIA INSTITUTE OF MARIINE SCIENCE Center for Coastal Resources Management

### VIMS Tidal Shoreline Management Recommendation (VMRC #15-0469)

**Applicant:** Bryan Flagg  
**Address:** 420 Dutchman Road, Port Haywood, VA  
**Waterbody:** Mobjack Bay  
**Date:** May 19, 2015

**Preferred Options for Shoreline Management**

The shoreline best management practices recommended in this report reflect(s) the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Plan (CCRM). The VIMS shoreline inventory includes data such as: bank condition, meadow depth, fetch, bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendation. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://ccrm.vims.edu/ccrm/index.html>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, narrow lot size, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCRM Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://ccrm.vims.edu/decisiontree/>.

Page 1 of 4

**VIMS** WILLIAM & MARY 75 VIRGINIA INSTITUTE OF MARIINE SCIENCE Center for Coastal Resources Management

### Coastal Ecosystem Based Recommendation Details (15-0469)



**Preferred approach(s) for erosion control to preserve and maintain tidal wetland ecosystems:**

- Upland and Bank Area
  - Enhance Riparian/Marsh Buffer
- Tidal Wetland, Beach & Shoreline Areas
  - Plant Marsh with Sill

Page 2 of 4

**VIMS** WILLIAM & MARY 75 VIRGINIA INSTITUTE OF MARIINE SCIENCE Center for Coastal Resources Management

### Upland and Bank Area

**Enhance Riparian/Marsh Buffer**

Provide stabilization and wave attenuation through riparian and marsh vegetation; target area for integrated vegetated buffer should extend from mid-tide to upland area, with vegetation planted at appropriate elevations.

Preferred approaches for vegetation management may include one or a combination of the following:

- Provide stabilization through marsh vegetation planted at appropriate elevations. The target area for marsh vegetation should extend from mid-tide to an elevation 1.5 times the tide range above mean low water (the upper limit of which may be observed by the presence of upland vegetation).
  - Maintain or widen existing marsh;
  - Plant new marsh which may require the placement of sand fill and/or fiber logs;
- Preserve existing riparian vegetation located within 300 feet (minimum) from the top of bank.
- Selectively remove and/or prune dead, dying, and severely leaning trees as necessary.
- Restore the riparian area by planting appropriate vegetation or allowing for natural regeneration of small native trees and shrubs.
- Replace waterfront lawns with a variety of native deep-rooted grasses, shrubs, and small trees and;
- Remove invasive species, if present, and replace with native vegetation.

Along some shorelines, it may be appropriate to reduce the steepness of the bank slope to allow wave run-up and to improve growing conditions in order to sustain vegetation. Grading should only be conducted where essential and done as minimally as possible to achieve the necessary slope. Banks that are graded should be stabilized with a variety of native plants placed at appropriate elevations. The feasibility to grade a bank may be limited by upland structures, existing shoreline defense structures, and/or adjacent property conditions. In certain cases, it may be beneficial to the tidal wetland ecosystem to remove existing structures, if possible, to achieve a properly graded and vegetated bank.

**Tidal Wetland, Beach & Shoreline Areas**

- Plant Marsh with Sill

Construct a rock sill placed offshore from the existing or created marsh. The site-specific suitability for a sill must be determined, including bottom hardness, navigation conflicts, construction access limitations, orientation and available sunlight for marsh plants.

If marsh is absent or less than 15 ft. wide, consider planting/widening marsh by grading bank landward to accommodate sea level rise and/or providing sand fill channelward to increase marsh width and/or elevation and placing sill channelward of new marsh edge. If existing marsh is greater than 15 ft. wide, consider placing sill just offshore from marsh edge.

Page 3 of 4

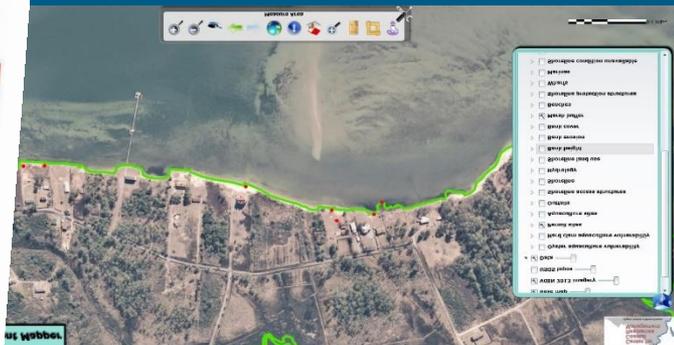
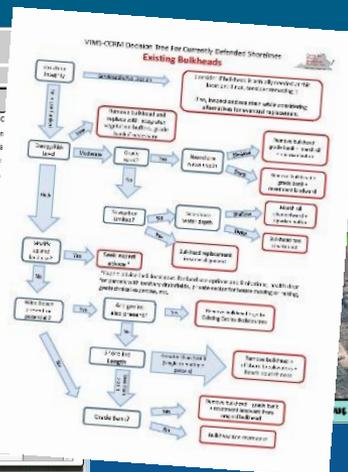
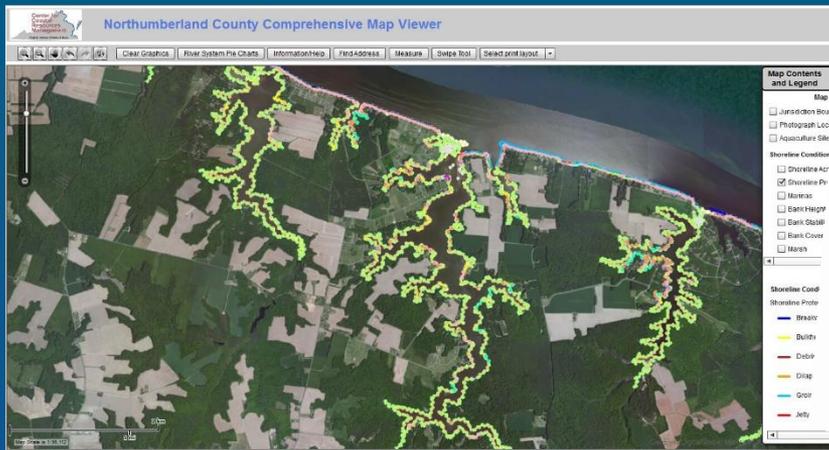
- Preferred shoreline management strategies recommendations
  - based on broad ecosystem viewpoint
  - Not necessarily specifically detailed to individual parcels



# 2015 – The “NEW” VIMS REPORT

Preferred shoreline management strategies are determined:

Using new generation of shoreline and tidal marsh inventory updates, GIS tools, geo-spatial models, decision trees, and other tools



But the VIMS Report is still delivered at the end of the process?

These tools are available to anyone involved in the process

- Property Owner, Contractor, Staff, Wetlands Board Members

# CCRMP Map Viewer

Center for Coastal Resources Management  
Northumberland County Comprehensive Map Viewer

Clear Graphics River System Pie Charts Information/Help Find Address Measure Swipe Tool Select print layout



Map Contents and Legend

**Map Contents:**

- Jurisdiction Boundary
- Photograph Locations
- Aquaculture Sites

**Shoreline Condition Layers:**

- Shoreline Access Structures
- Shoreline Protection Structures
- Marinas
- Bank Height
- Bank Stability
- Bank Cover
- Marsh

**Legend:**

**Shoreline Condition Layers**

**Shoreline Protection Structures**

- Breakwater
- Bulkhead
- Debris
- Dilapidated Bulkhead
- Groin
- Jetty

Map Scale is 1:35,112

2 km  
1 mi

GeoEye DigitalGlobe, Microsoft

# Shoreline Assessment Mapper

**Shoreline Assessment Mapper**

Center for Coastal Resources Management  
Virginia Institute of Marine Science

base map

- VGIN 2013 imagery
- USGS topos

Data

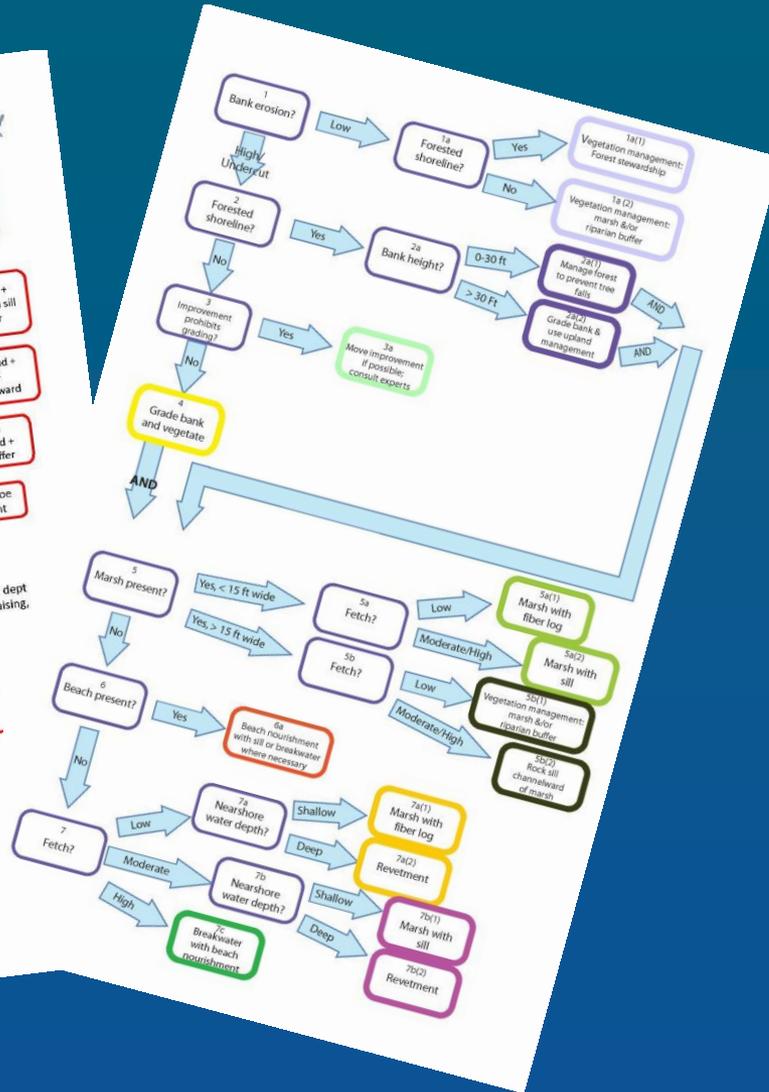
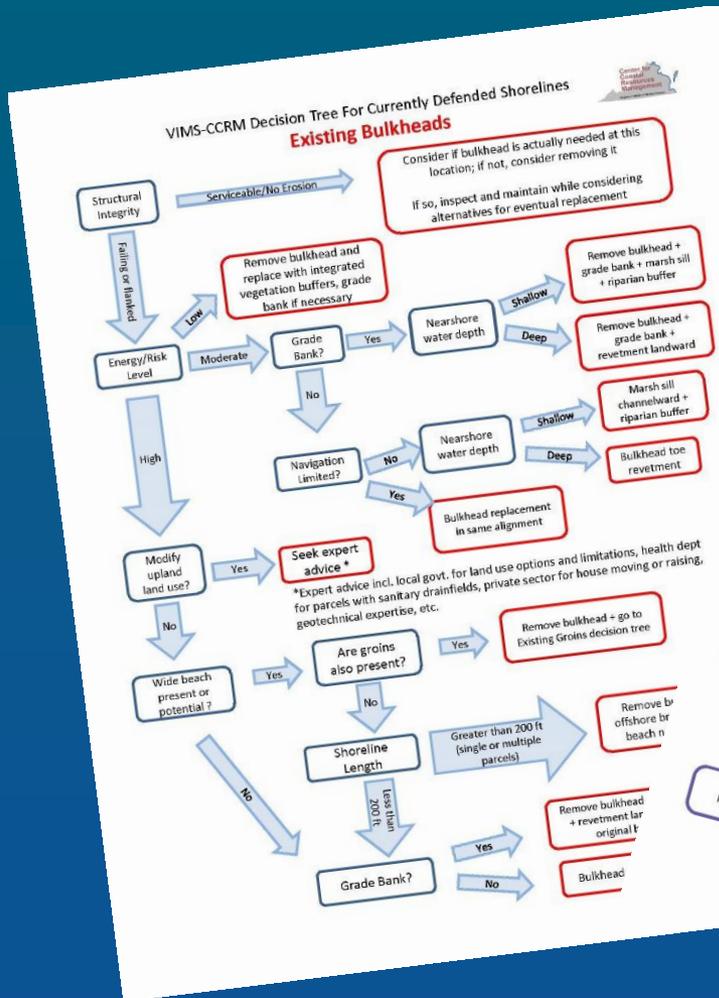
- Oyster aquaculture vulnerability
- Hard clam aquaculture vulnerability
- Permit sites
- Aquaculture sites
- Outfalls
- Shoreline access structures
- Shoreline
- Hydrology
- Shoreline land use
- Bank height
- Bank erosion
- Bank cover
- Marsh buffer
- Beaches
- Shoreline protection structures
- Wharfs
- Marinas
- Shoreline condition unavailable

Measure Area

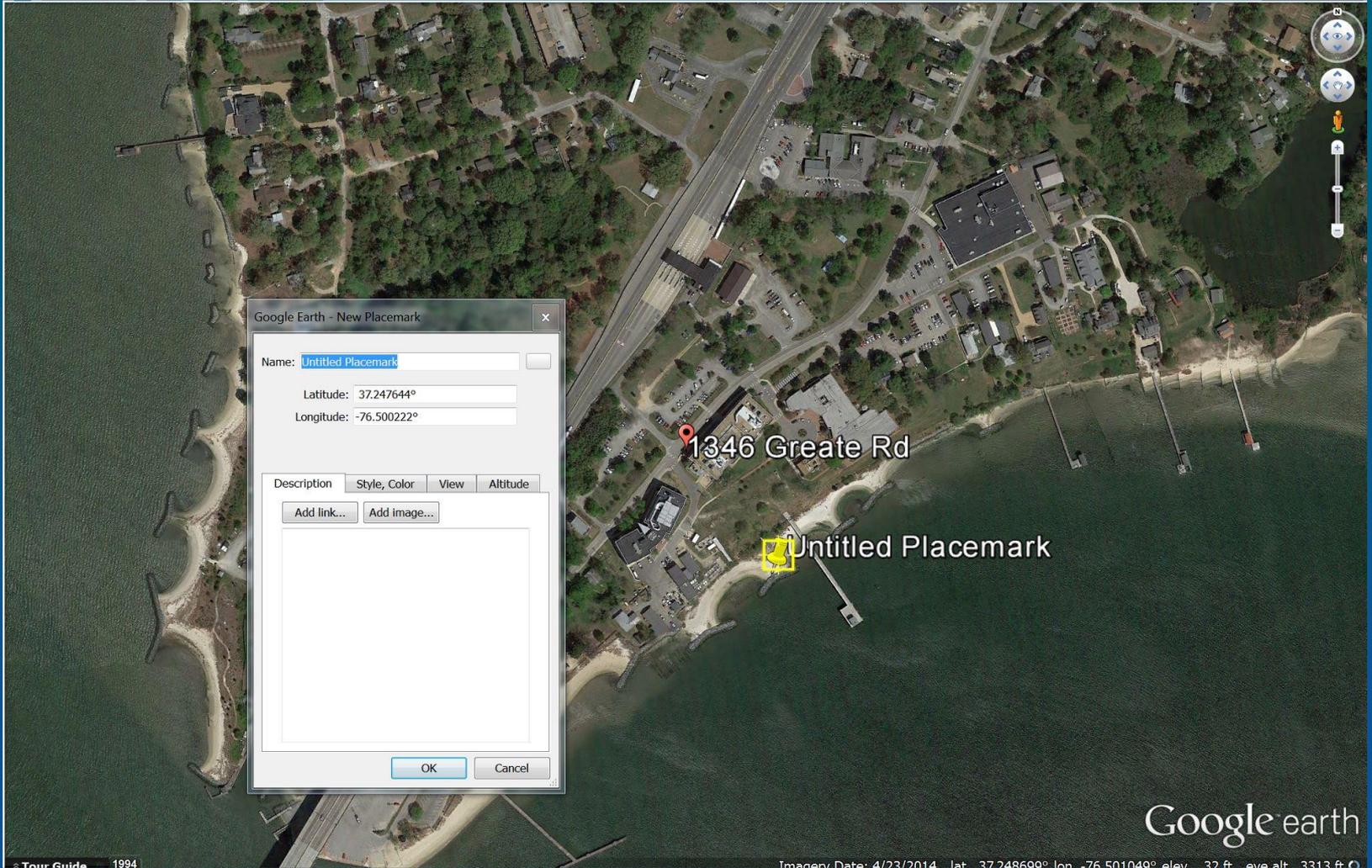
0.1 Miles

The screenshot displays a web-based mapping application. The main map is an aerial photograph of a coastal area with a green buffer line along the shoreline. A legend panel on the right side of the map is open, showing a list of data layers with checkboxes. The 'base map' section includes 'VGIN 2013 imagery' (checked) and 'USGS topos'. The 'Data' section includes 'Oyster aquaculture vulnerability', 'Hard clam aquaculture vulnerability', 'Permit sites' (checked), 'Aquaculture sites', 'Outfalls', 'Shoreline access structures', 'Shoreline', 'Hydrology', 'Shoreline land use', 'Bank height' (checked), 'Bank erosion', 'Bank cover', 'Marsh buffer' (checked), 'Beaches', 'Shoreline protection structures', 'Wharfs', 'Marinas', and 'Shoreline condition unavailable'. At the bottom of the map, there is a toolbar with various navigation and measurement tools, including a 'Measure Area' button. A scale bar in the bottom right corner indicates 0.1 Miles. An inset map in the bottom left corner shows the location of the study area within a larger regional context.

# Decision Trees



# Google Earth



# 2015

**VIMS** WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE 75  
Center for Coastal Resource Management

### VIMS Tidal Shoreline Management Recommendation

[VMRC #15-0469]

**Applicant:** Bryan Flagg  
**Address:** 420 Dutchman Road, Port Haywood, VA  
**Waterbody:** Mobjack Bay  
**Date:** May 19, 2015

*Preferred Options for Shoreline Management*

The shoreline best management practice(s) recommended in this report reflects the preferred approach for shoreline stabilization from a broad coastal ecosystem viewpoint, and is based on VIMS comprehensive coastal resource management guidance to preserve and maintain tidal wetland ecosystems in the face of coastal development and sea level rise. The goal of the recommended approach is to foster the sustainability of shoreline resources using living shoreline designs where appropriate and applying traditional shoreline hardening only in areas where site conditions make them necessary. These recommendations reflect the Commonwealth's preferred approach for shoreline stabilization using living shoreline treatments whenever adequate erosion control can be achieved.

The comprehensive coastal resource management guidance recommendation is based on the natural resources and physical characteristics of the shoreline and is not dependent upon the project being proposed.

Information on the natural resources and physical characteristics of a shoreline is collected during the VIMS shoreline inventory conducted as part of the development of each locality's Coastal Comprehensive Resource Management Plan (CCMRP). The VIMS shoreline inventory includes data such as: bank condition, nearshore depth, fetch, bank height, presence of beach and/or wetlands, location of primary structures, existing shoreline structures, and bank cover. The data is collected via observations made from a small vessel on the water or remotely at the desktop using high resolution imagery. Every attempt has been made to ensure that these data are reliable and accurate. However limitations such as inability to access a shoreline, tide stage, image quality, as well as changes to shorelines occurring post inventory, affect the data accuracy.

A geo-spatial model that is based on the comprehensive coastal resource management guidance is used to determine the preferred shoreline management recommendations. An interactive Comprehensive Map Viewer delineating the preferred approaches for your locality can be accessed at <http://com.vims.edu/coma/index.html>.

The ecosystem scale of the model is not specifically detailed to individual parcels. In some instances, conditions of a parcel such as the presence of existing erosion control structures, removal for site, and proximity of primary buildings to the shoreline may cause the larger scale ecosystem based approach to be difficult to achieve. In these cases, the shoreline management recommendation derived from the CCMR Decision Tree Tools may be an alternative option and if so will be provided at the end of the report. To access the Coastal Management Decision Tree Tools go to: <http://com.vims.edu/decisortree/>.

Page 1 of 4

**VIMS** WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE 75  
Center for Coastal Resource Management

### Coastal Ecosystem Based Recommendation Details (15-0469)



*Preferred approach(s) for erosion control to preserve and maintain tidal wetland ecosystems:*

- Upland and Bank Area
- Enhance Riparian/Marsh Buffer
- Tidal Wetland, Beach & Shoreline Areas
- Plant Marsh with Sill

Page 2 of 4

**VIMS** WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE 75  
Center for Coastal Resource Management

### Upland and Bank Area

#### Enhance Riparian/Marsh Buffer

Provide stabilization and wave attenuation through riparian and marsh vegetation; target area for integrated vegetated buffer should extend from mid-tide to upland area, with vegetation planted at appropriate elevations.

Preferred approaches for vegetation management may include one or a combination of the following:

- Provide stabilization through marsh vegetation planted at appropriate elevations. The target area for marsh vegetation should extend from mid-tide to an elevation 1.5 times the tide range above mean low water (the upper limit of which may be observed by the presence of upland vegetation).
  - Maintain or widen existing marsh;
  - Plant new marsh which may require the placement of sand fill and/or fiber logs;
- Preserve existing riparian vegetation located within 100 feet (minimum) from the top of bank;
- Selectively remove and/or prune dead, dying, and severely leaning trees as necessary;
- Restore the riparian area by planting appropriate vegetation or allowing for natural regeneration of small native trees and shrubs;
- Replace waterfront lawns with a variety of native deep-rooted grasses, shrubs, and small trees and;
- Remove invasive species, if present, and replace with native vegetation.

Along some shorelines, it may be appropriate to reduce the steepness of the bank slope to allow wave run-up and to improve growing conditions in order to sustain vegetation. Grading should only be conducted where essential and done as minimally as possible to achieve the necessary slope. Banks that are graded should be stabilized with a variety of native plants placed at appropriate elevations. The feasibility to grade a bank may be limited by upland structures, existing shoreline defense structures, and/or adjacent property conditions. In certain cases, it may be beneficial to the tidal wetland ecosystem to remove existing structures, if possible, to achieve a properly graded and vegetated bank.

### Tidal Wetland, Beach & Shoreline Areas

#### Plant Marsh with Sill

Construct a rock sill placed offshore from the existing or created marsh. The site-specific suitability for a sill must be determined, including bottom hardness, navigation conflicts, construction access limitations, orientation and available sunlight for marsh plants.

If marsh is absent or less than 15 ft. wide, consider planting/widening marsh by grading bank landward to accommodate sea level rise and/or providing sand fill channelward to increase marsh width and/or elevation and placing sill channelward of new marsh edge. If existing marsh is greater than 15 ft. wide, consider placing sill just offshore from marsh edge.

Page 3 of 4

Advice provided in new reports is based on:

- The **natural resources and physical characteristics of the shoreline**
  - obtained from the data tools
- **VIMS Comprehensive Coastal Resource Management Guidance**

Advice is not dependent upon the project being proposed

# Objectives of the VIMS report/advice today...

- Help decision makers steer in a different direction...
- Not to get caught up with what is proposed!
- Consider and evaluate sustainable shoreline alternatives
- Focus on what is good for the resource

...why is this important?

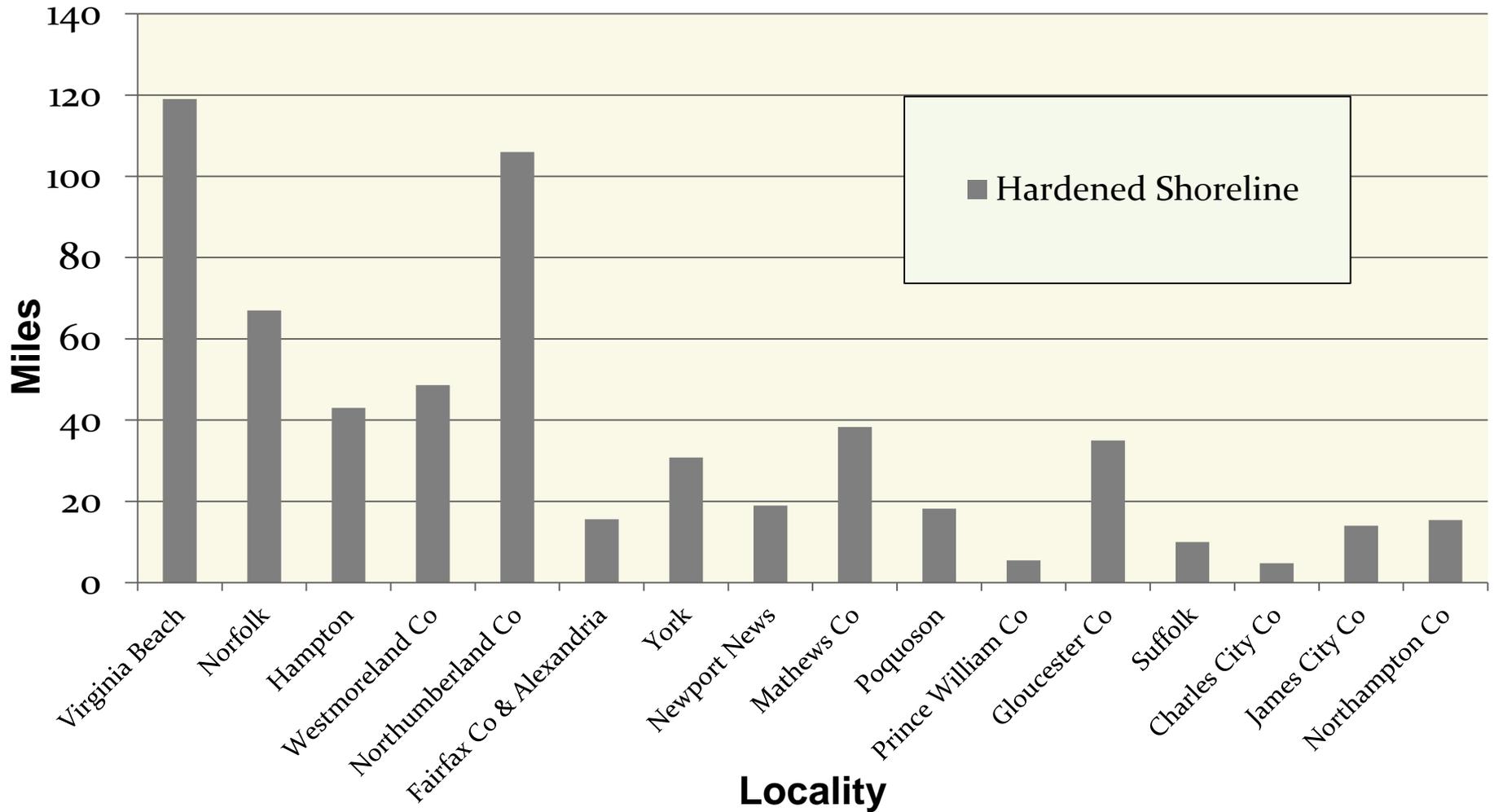


# **In spite of over 40 years of advisory reports at the project (JPA) level:**

- **Feedback gained from tracking final wetland board permit decisions has shown...**

**The majority of past and present  
decisions have resulted in  
shoreline hardening...**

# Miles of Shoreline Hardening: Shoreline Inventory



# Shoreline hardening is necessary

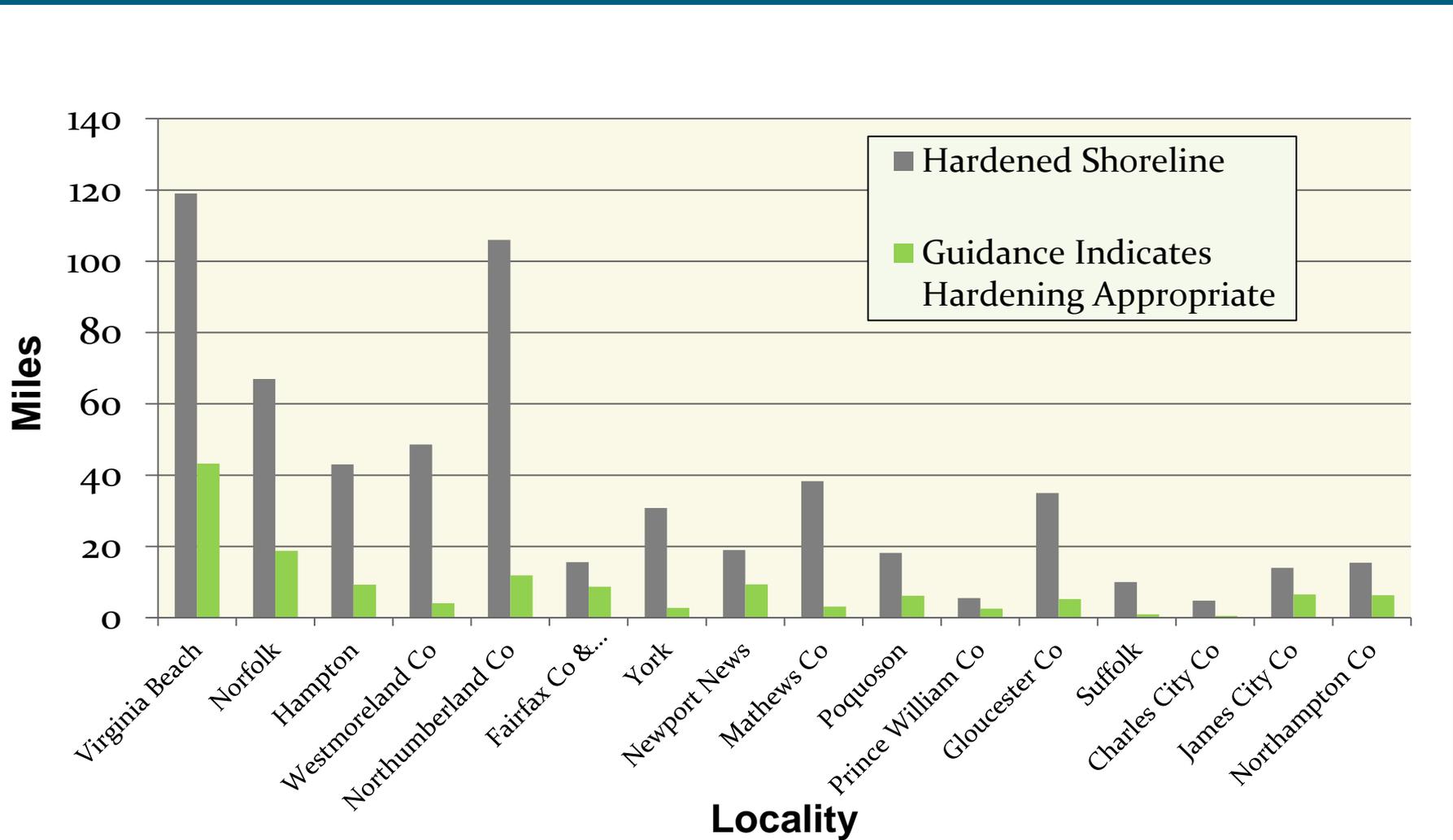
Shoreline Conditions

Existing Upland Land Uses

Living shorelines are not always the answer.

**The guidance recommendations account for shorelines where hardening is appropriate**

# Miles of Shoreline Hardening: Shoreline Inventory vs. Guidance



# If shorelines continue to be hardened ...

What will be the future of Virginia's:

- Natural resources, habitats, and other ecosystem services along our tidal shorelines?

AND

- The ability of communities to sustain in the face of sea level rise?



# Current VIMS advice promotes...

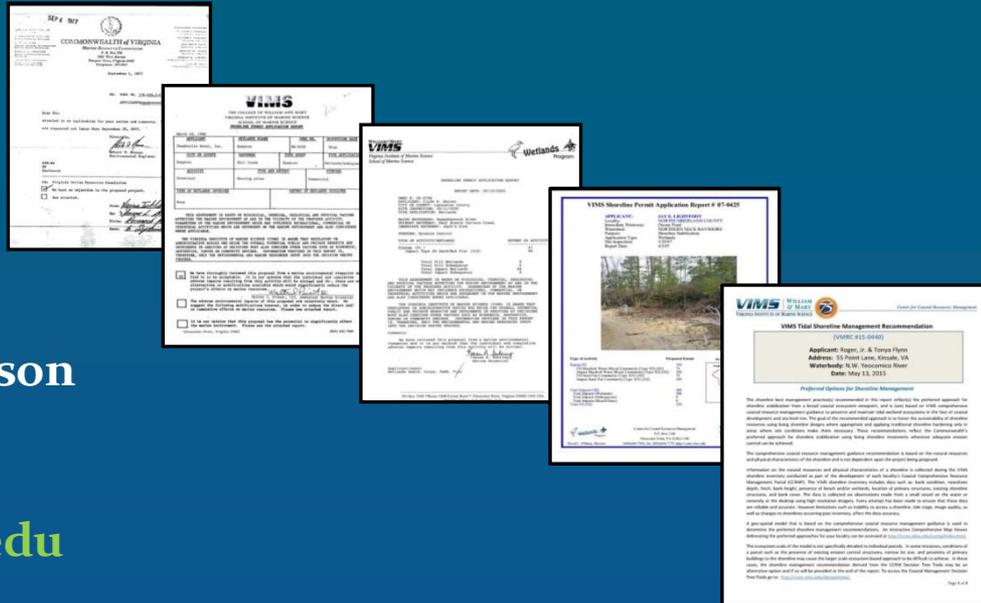
Shoreline decision making focused on outcomes that protect and preserve the public trust (our natural resources)...

- Shoreline management choices that apply **preferred management strategies** will achieve:
  - Erosion control
  - Preservation of ecosystem services &
  - Resilient shorelines in the face of sea level rise

What choices will you make?



# Questions?



Christine Tombleson  
CCRM  
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## Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

Friday, June 5, 2015

Virginia Institute of Marine Science

Gloucester Point, VA

### Breakout Session 1 – Next Steps in Adaptive Shoreline Management

This morning's presentations described how the scientific understanding of shoreline management has evolved. If the goal is less hardening to reduce shoreline habitat loss, **how can the management program keep adapting to reduce the extent of shoreline hardening while also addressing demands for shoreline protection?** What factors affect attaining this goal & where do gaps exist in the current management program?

This conversation will focus on these questions from 4 perspectives:

**Legal**

**Technical**

**Social-Political**

**&**

**Financial**

After generating a list of barriers & management gaps both before and after permit applications are submitted, the group will vote to identify the Top 2 that, if corrected, would have the greatest influence on outcomes. If time allows, possible management strategies for the Top 2 factors will be discussed.

Use this form to record your own ideas or suggestions to be included in a post-workshop summary.

---

**Q1: What are the main barriers to reducing the amount of shoreline hardening permitted annually?**

**Flip over for more space & Question #2**

**Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines**

Friday, June 5, 2015

Virginia Institute of Marine Science

Gloucester Point, VA

**Q2: What management strategies would help improve the Top 2 barriers ?**



## CHESAPEAKE BAY PROGRAM ADAPTIVE MANAGEMENT FRAMEWORK

Adaptive management is an ongoing, science-based process through which the Chesapeake Bay Program plans, implements and evaluates its restoration efforts. Simply, **adaptive management is “learning by doing”**: taking action with acknowledged uncertainties, carefully monitoring outcomes, transparently assessing progress and redirecting efforts when necessary.

- **Goals:** Articulate explicit, unambiguous goals so it is clear what activities are needed to support them. For instance, calling for protecting ‘healthy’ or ‘natural’ or ‘vital’ aquatic habitats is insufficient. A better goal would be to define important habitats as underwater grass beds, oyster beds, or important anadromous fish spawning reaches.
- **Factors Affecting Outcomes:** Once a goal is set, it is important to understand what factors would affect attaining that goal. Those factors should include both those things directly influenced by management efforts, such as pollution control programs, and those over which there is little direct management control, such as land use or climate change.
- **Identify Current Efforts & Management Gaps:** Once factors are identified that could affect goal achievement, it is important to identify where gaps exist in management programs. For instance, if a goal is a no-net-loss of wetlands, regulatory programs alone may not achieve the goal because wetlands are lost outside regulatory programs. Success would rely on having sufficiently funded nonregulatory programs to restore wetlands to make up for losses.
- **Develop Management Strategies:** Management strategies are the series of actions that address factors that affect goal attainment. They should be measurable and identify what should happen as the results of particular actions.
- **Develop a Monitoring Program:** The monitoring program should be linked directly to the management strategy to ensure both that the actions are being done, and that they are having the expected results.
- **Assess Performance:** Programs need to be assessed to determine if the actions prescribed were actually implemented, and whether those actions accomplished what they were expected to. While the overall goal may not be accomplished, it should be possible to identify whether a system is on a trajectory to meet its goal, based on the level of actions taken.
- **Manage Adaptively:** Apply lessons that are learned, such as prioritizing activities that are producing the best results toward achieving a goal over those that are less effective. In some cases, additional research may be needed, monitoring adjusted, or goals changed based on information learned.



## CHESAPEAKE BAY PROGRAM ADAPTIVE MANAGEMENT FRAMEWORK



June 5, 2015

**Breakout Group Discussion Summary – Next Steps in Adaptive Management**

Workshop participants were pre-assigned to 3 sector groups: Appointed Board Members, Staff, & Private Sector. CCRM-VIMS staff served as discussion moderators & recorders for each breakout group. Each group discussed the questions:

- 1. What are the main barriers to reducing the amount of shoreline hardening permitted annually?
- 2. What management strategies would help improve the top two barriers?

The moderated discussion focused on these questions from 4 perspectives:

**Legal**

**Technical**

**Social-Political &**

**Financial**

After generating a list of barriers & management gaps both before and after permit applications are submitted, the groups used ‘dot voting’ to identify the Top 2 that, if corrected, would have the greatest influence on outcomes. Then possible management strategies for the Top 2 barriers & management gaps were discussed if time allowed. In addition to the group conversations, each individual was asked to record their own ideas anonymously on a color coded form that was collected at the end.

#	Sector Groups
23	<b>Appointed Board Members</b> <i>Local Wetlands, Beach &amp; Chesapeake Bay Boards Representing 10 local governments</i>
28	<b>Staff</b> <i>Representing 11 local governments &amp; 4 state agencies</i>
21	<b>Private</b> <i>Non-profit (5) &amp; for-profit (6) businesses and organizations, private citizens</i>

# Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

## Breakout Group Discussion Results

### Appointed Board Members – Brainstorming List of Barriers & Dot Votes

#### Technical

**18 #1 Need to get to the front of the process, last people to see the project (already formed)**

- 1 Lack of technical information
  - New concept – need examples & technical expertise
  - Location of houses raises concerns about stability
  - Board may not see “repairs”, staff only
  - Unpermitted projects force the boards to allow because of impacts of removal
  - VIMS report comes too far into the process to be helpful

#### Social-Political

**5 #2 Property owners & contractors need to be targeted for educational efforts**

- 2 Staff need to be recommending living shorelines, board is relying on staff
- 1 Shoreline continuity (need for)
- 1 Trying to be fair to neighbors

#### Legal

- 4 Law does not mandate living shorelines
  - Feel burden of proof is on the board, not the applicant
  - 30-day timeframe for board decision

#### Financial

- 4 Cost of project
- 2 Lack of state control of shorelines
- 1 Loss of property

### Appointed Board Members – Individual Comment Forms

The only way to properly save the wetland shoreline is for CCRM to assess the shorelines of VA through the Decision Tree & other tools and have the VA State Gov't to fund all shorelines if you really want to save them. Finances deter homeowner from doing the right shoreline.

The notion that we cannot (are not really allowed) to tell people what they can or cannot do on their property.

Determine and deal with a realistic solution to each issue.

Living shoreline is a relatively new concept and not all contractors are set up /capable/supportive of the living shoreline concept. Hence, educate the contractors (pre-permit) of the options and feasibility of proposing living shorelines. It's hard to overturn a recommendation of a contractor and/or staff on a proposal of any type.

## Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

### Appointed Board Members – Individual Comment Forms (continued)

We had interference from Board of Supervisors member who forced staff to hold a hearing when she thought application was still incomplete. It did not end up leading to hardened shoreline – but nearly ended up WB approving a very badly conceived project.

Sometimes the VIMS guidance is not correct or applicable for the condition that exists at the site. Erosion occurs in the eyes of the beholder. It is a judgement call whether erosion exists. The Board does not have the authority to mandate a particular management option. If the guidance is to be strictly followed, there is no need for wetlands boards. The fact that no one signs or writes the reports and no site visit is made significantly undermines the credibility of the (VIMS) report.

#### Main Barriers

1. Financial consideration
2. Information – homeowners, contractors don't consider living shorelines. They see & know about riprap, groins

#### Management Strategies

1. Give financial incentives to using living shorelines – tax credit?
2. Supply information to contractors, homeowners

People not knowing what living shorelines really consist of that is why teaching living shorelines in all the localities is important. Another problem is that it's not required. There was a case wetlands (board) turned down applicant, came back & threatened legal recourse because the hardening was (not) allowed. City said we legally could not turn down & I believe they were right.

1. Reluctance by the Board to require major changes on a detail proposal requiring hardening. Solution – involve the Board & staff earlier in the process stressing the need to consider living shoreline approaches
2. Providing more info to the Board on possible living shoreline approaches during deliberations.

VIMS should develop a standard application form that forces consideration of all alternatives & preference for living shorelines.

Need to get in front of the process. Staff need to be recommending living shorelines, Board relying on Staff.

# Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

## Staff – Brainstorming List of Barriers & Dot Votes

### Social-Political & Financial

- Property owners don't like/want living shorelines – not pretty enough, uncertainty & want armor, often requires even more (property) loss with grading back, can also argue that you can gain back shoreline with living shoreline
- More incentive to property owner for living shoreline e.g. low interest loan, general permit
- Can we make 1<sup>st</sup> step be that you must look at living shoreline
- Wetlands Not in contractor licensing/certification – how to do it, costs, adapt or die
- Contractors using dis-information to reduce competition
- Culture of shoreline consultants lack of acceptance of living shorelines; lack of consultant buy-in
- Legacy bulkhead projects, time to replace
- Need more public demonstration sites
- Local government (bid documents) contract review, how to work with contractors

### Legal-Technical

- Original laws/regulations haven't changed, kept up with times, outdated, need to take out old language that allows hardening
- Change the law in addition to regulations
- "Necessary" is not defined in tidal wetland act; Can we define "necessary" as erosion rate? Add link to shoreline evolution reports on CCRMP
- Add to Bay Act regulations
- Wetlands board needs stronger way to require living shoreline
- Are there legal impediments?
- General Assembly lack of understanding
- Multiple overlapping agencies – conflicts in regulations, it's not my agency's problem/pass the buck
- Train/educate the contractors to proper design, etc.
- Need monitoring component & success criteria to ensure success

### Staff List for Dot Voting

- 17 #1 Education – contractors & staff, property owners**
- 13 #2 Laws/regulations – outdated, incomplete regulations**
- 7 Incentives
- 4 Public demonstration sites – 'how to' & targeting
- 3 Overlapping jurisdiction (pass the buck) & conflicting criteria
- 1 Lack of political will
- 1 Monitoring/success criteria/(bid documents) contract review
- Legacy shoreline hardening
- Technical assistance – design, project review, how to

# Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

## Private Sector – Brainstorming List of Barriers & Dot Votes

### Technical

#### 13 #1 Contractor knowledge/ability

Lack of experience

Can't get it past the board: lack of incentive board allows traditional hardening, no incentive to change

Contractor prefers rock, or a certain material

Contractor is often 1<sup>st</sup> contact for homeowner

Contractor is in a position to change: they already have necessary equipment

### Social-Political

#### 11 #2 Education – challenge to reach public

7 Keeping up with the Jones/neighbor; Perception of what works

Outreach-maybe through real estate

### Legal

4 Policy without teeth, no requirements

4 Conflict of policy, e.g. Baylor Grounds, SAV, private lease, CBPA

No recourse if protection does not work

### Financial

Risk of investment

Money already spent, don't want to change plans

3 Cost/benefit analysis should be up front

## Private Sector – Management Strategies for Top 2 Barriers

### #1 Contractor knowledge/ability

Learning about living shoreline should be part of contractor licensing; add incentives

Training for contractors

### #2 Education – challenge to reach public

Wetlands Boards be more proactive (demonstration projects)

Use mainstream media – pictures, video

Need to reach “non-environmental” people (go beyond preaching to choir)

Mass mailings to target audience through the county/city

Change public perception

Target school systems – teach the future generations

Local staff or master gardeners educate the homeowners

Educate local groups, they pass on training ‘train the trainers’ e.g. Northern Neck Master Gardeners

Shoreline Evaluation Program

Educate county government (thereby policy)

Public Service Announcements provided to counties/cities

## Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

### Private Sector – Individual Comment Forms

#### **Main barriers – contractors training/knowledge/qualifications**

**Management strategy** – incentivize contractors to learn or be more knowledgeable on living shorelines, e.g. list of contractors who have received training from 'approved' sources (VIMS, DEQ, Master Gardeners, local NGOs? Not a preferential list, just an informational training list, not an endorsement, similar to what some localities do for stormwater BMP maintenance, have to take courses every 3-5 years to count & stay on list, contractors get 'free' advertising if they take courses (by being on list), other "incentives" to take courses, e.g. offer during low construction periods?

#### **Main barriers- General public knowledge**

**Management strategy** – Use of PSAs (Public Service Announcements) prepare one and offer to localities as part of their 'public education & outreach' required for stormwater general permit (MS4)

# Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

June 5, 2015

## Summary of Breakout Group Discussion Top 2 Barriers & Recommended Management Strategies

	# 1	# 2
<b>Board Members</b>	<b>Need to get to the front of the process, last people to see the project (already formed)</b> <i>See individual comments</i>	<b>Property owners &amp; contractors need to be targeted for educational efforts</b> <i>See individual comments</i>
<b>Staff</b>	<b>Education – contractors &amp; staff, property owners</b>	<b>Laws/regulations – outdated, incomplete regulations</b>
<b>Private</b>	<b>Contractor knowledge/ability</b>  Learning about living shoreline should be part of contractor licensing; add incentives  Training for contractors	<b>Education – challenge to reach public</b>  Wetlands Boards be more proactive (demonstration projects)  Use mainstream media – pictures, video  Need to reach “non-environmental” people (go beyond preaching to choir)  Mass mailings to target audience through the county/city  Change public perception  Target school systems – teach the future generations  Local staff or master gardeners educate the homeowners  Educate local groups, they pass on training ‘train the trainers’ e.g. Northern Neck Master Gardeners Shoreline Evaluation Program  Educate county government (thereby policy)  Public Service Announcements provided to counties/cities

# Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

Friday, June 5, 2015

Virginia Institute of Marine Science

Gloucester Point, VA

## Breakout Session 2 – Getting a Closer Look at Adaptive Management

### Station Activities

#### 1. VIMS Beach & Offshore Breakwaters

*Donna Bilkovic, Molly Mitchell, Robert Isdell, Alex Renaud*

In addition to their shoreline protection benefits, living shorelines may play a vital role in conserving estuarine habitats (marshes, beaches, shallows, submerged aquatic vegetation) along eroding shorelines. CCRM has ongoing research quantifying the range of ecosystem services provided by living shorelines habitats. Results from recent living shorelines research conducted at the VIMS created beach & offshore breakwaters and other study sites will be shared by the investigators.

This station will have close-up examination of benthic animals that live on and around the breakwater rocks. Fish and other aquatic animals that inhabit the lagoon areas between the breakwaters will be on display. The created beach & planted dune can be explored to see how it has matured since it was constructed 5 years ago. Visit these web sites for more information about related research studies.

##### ***Ecology of Living Shorelines***

[ccrm.vims.edu/education/workshops\\_events/spring2014/2\\_Bilkovic\\_May22.pdf](http://ccrm.vims.edu/education/workshops_events/spring2014/2_Bilkovic_May22.pdf)

##### ***Ecological benefits & impacts of planted marshes with containment sills***

[ccrm.vims.edu/livingshorelines/eco-erosion-function/index.html](http://ccrm.vims.edu/livingshorelines/eco-erosion-function/index.html)

#### 2. VIMS Teaching Marsh *Julie Bradshaw, Christine Tombleson*

The history of the VIMS Boat Basin includes one of the earliest living shoreline projects in Virginia. The VIMS marsh sill was installed in 1984 along the canal shoreline instead of a replacement bulkhead. This planted tidal marsh continues to provide both effective erosion protection & significant habitat. The adjacent Teaching Marsh was constructed in 1999 to demonstrate how tidal wetlands can be created for living shorelines and wetland compensation. This wetland area that is surrounded by roads and development also provides local flood protection, stormwater treatment, and wildlife habitat.

This station will feature salt marsh plant identification, vegetation indicators of sea level rise, and the construction sequence for marsh sills. These web sites have more related information.

***VIMS Teaching Marsh*** [ccrm.vims.edu/wetlands/teaching\\_marsh](http://ccrm.vims.edu/wetlands/teaching_marsh)

***VIMS Living Shorelines*** [ccrm.vims.edu/livingshorelines](http://ccrm.vims.edu/livingshorelines)

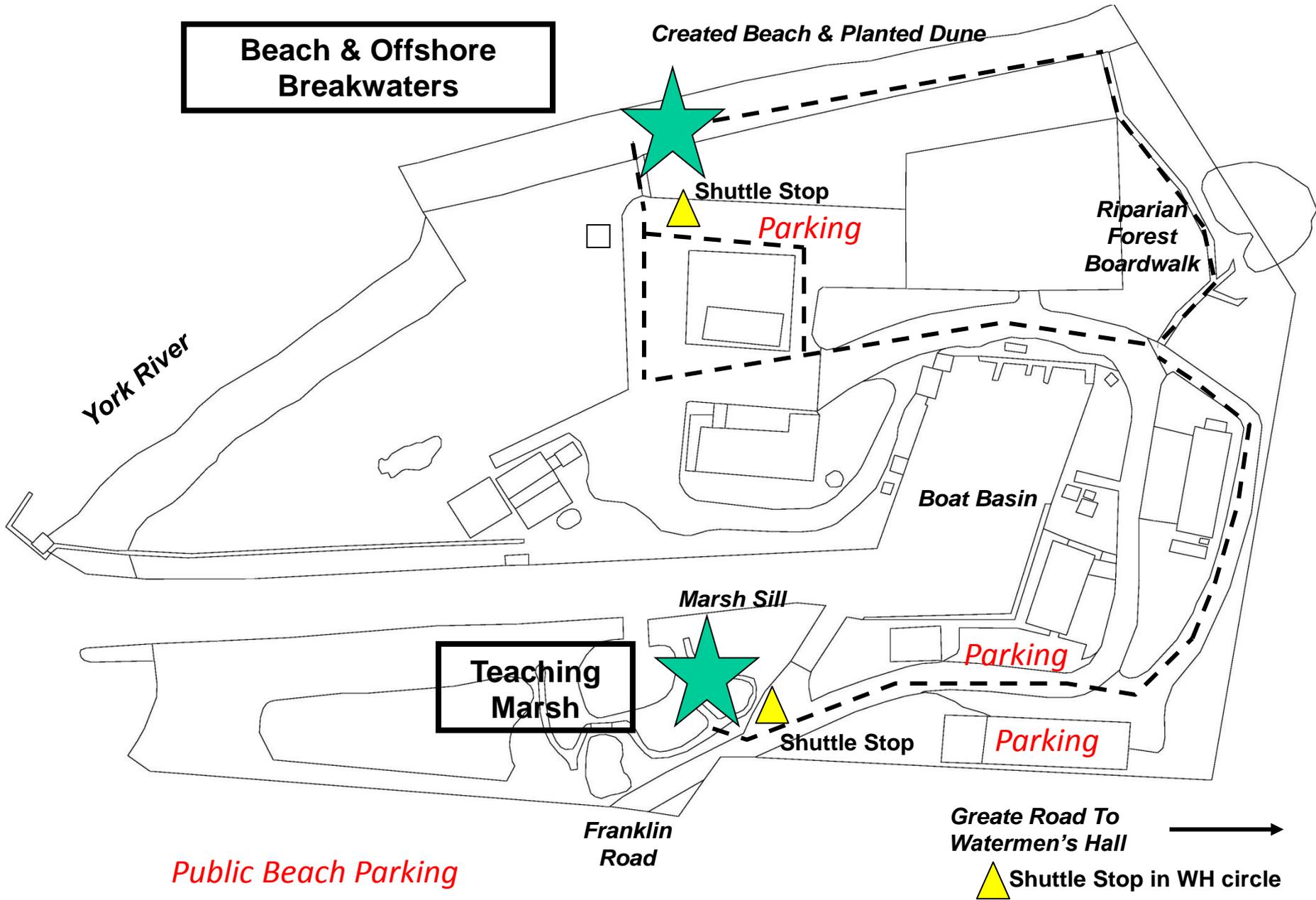
#### 3. Putting Social Media to Work *Pamela Mason*

Examples of how webinars, YouTube, Twitter, Facebook, and other social media applications are being used effectively to promote coastal management will be shown.

#### 4. VIMS GIS Tools *Marcia Berman, Tamia Rudnicky*

This station provides a hands-on opportunity to practice using GIS and other on-line tools with staff present to provide guidance and answer questions. These tools include locality-based CCRMP's, shoreline & tidal marsh inventories, Shoreline Assessment Mapper, Decision Trees, and electronic permit records. The classroom has desktop stations for each user to access & try out the tools. Please don't bring food or drinks in this computer classroom.

# Breakout Session 2 - Boat Basin Field Stations



# VMRC Update

Tony Watkinson

June 5, 2015

# LIVING SHORELINE GROUP 1 GENERAL PERMIT FOR CERTAIN LIVING SHORELINE TREATMENTS INVOLVING TIDAL WETLANDS

Request for Public Hearing at the June 23, 2015  
Commission Meeting

Public Notice

Proposed Public Hearing at the July 28, 2015  
Commission Meeting

## Some Highlights

- A streamlined permitting process as an incentive to encourage property owners to utilize a living shoreline approach as appropriate, to manage shoreline erosion and promote the planting and growth of tidal wetland vegetation to restore or enhance ecosystem services.
- Approval under this general permit constitutes the Commission and or local wetlands board authorization required in accordance with §28.2-1306 of the Code of Virginia.
- The general permit shall not conflict with or obviate the need to comply with any other federal, state, or local permitting requirements or authorizations governing the proposed activity.
- The general permit shall authorize the placement of certain specified sand fill, fiber logs shell bags, and temporary grazing protection in tidal wetlands, landward of mean low water, to improve the growing conditions for wetland vegetation.
- VMRC will forward the application to the Norfolk District of the Corps of Engineers, the appropriate local wetlands board, and the Department of Environmental Quality.
- If both the wetlands board chairman and the VMRC Commissioner determine the proposal affirmatively satisfies all three above-listed requirements, the Commissioner shall issue the general permit.

# Permit Records Web Site

Virginia Marine Resources Commission

Habitat Management Division > Habitat Permits

Search Virginia.Gov

Contact Us | Search this Site GO

### Habitat Management Permits and Applications

Applications and reports provided on this site may not be represented in their entirety. Revisions and additional information submitted for each application can be obtained by contacting the Habitat Management Division of VMRC directly at 757-247-2252.

Requires Google Chrome, Mozilla Firefox, Safari, or IE 10.0 or greater.

Application Date Range: 2015-01-01 to 2015-06-03

Application Number:

Company or Last Name:

Locality of Project: SELECT LOCALITY

Waterway:

Permit Status:

Local Wetlands Board Action:

Structure Types

Beach Nourishment: <input type="checkbox"/>	Culvert: <input type="checkbox"/>
Boatramp: <input type="checkbox"/>	Dredging New: <input type="checkbox"/>
Boat Slips: <input type="checkbox"/>	Dredging Maintenance: <input type="checkbox"/>
Boat House: <input type="checkbox"/>	Groin: <input type="checkbox"/>
Bridge: <input type="checkbox"/>	Jetty: <input type="checkbox"/>
Breakwater: <input type="checkbox"/>	Mooring: <input type="checkbox"/>
Bulkhead: <input type="checkbox"/>	Pier: <input type="checkbox"/>
Crab Pound: <input type="checkbox"/>	Railway: <input type="checkbox"/>
Channel Modif: <input type="checkbox"/>	Riprap: <input type="checkbox"/>
Overhead Crossing: <input type="checkbox"/>	Roofed Structure: <input type="checkbox"/>
Subaqueous Crossing: <input type="checkbox"/>	Sill: <input type="checkbox"/>
Shellfish Aquaculture: <input type="checkbox"/>	Living Shoreline: <input type="checkbox"/>
Marsh Toe Structure: <input type="checkbox"/>	Bio Structure: <input type="checkbox"/>
Groin Fill Structure: <input type="checkbox"/>	Breakwater Structure: <input type="checkbox"/>
Gabion Structure: <input type="checkbox"/>	Core Structure: <input type="checkbox"/>
Sill Fill Structure: <input type="checkbox"/>	Fill Plant Structure: <input type="checkbox"/>

Search >>

# Legislative Update 2015 Session

## CHAPTER 474 Acts of Assembly

*An Act to amend the Code of Virginia by adding a section numbered [62.1-229.5](#), relating to loans for the creation of living shorelines.[HB 1734]*

**Loans for creation of living shorelines.** Authorizes the State Water Control Board to provide loans from the Virginia Water Facilities Revolving Fund to (i) a local government for the purpose of establishing living shorelines that protect or improve water quality and prevent water pollution or (ii) a local government that has developed a funding program to provide low-interest loans or other incentives to individuals to assist in establishing living shorelines.

## CHAPTER 186 Acts of Assembly

*An Act to amend the Code of Virginia by adding a section numbered [15.2-2223.3](#), relating to comprehensive plan; sea-level rise.[SB 1443]*

**Comprehensive plan; sea-level rise.** Provides that any locality included in the Hampton Roads Planning District Commission shall incorporate into the next scheduled and all subsequent reviews of its comprehensive plan strategies to combat projected relative sea-level rise and recurrent flooding. The bill requires such review to be coordinated with the other localities in the Hampton Roads Planning District Commission. The bill requires the Department of Conservation and Recreation, the Department of Emergency Management, the Marine Resources Commission, Old Dominion University, and the Virginia Institute of Marine Science to provide technical assistance to any such locality upon request.

**Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines**  
**Friday, June 5, 2015**  
**Virginia Institute of Marine Science**  
**Gloucester Point, VA**

**Workshop Evaluation**

**What is your affiliation?**

- |   |  |
|---|--|
| <input type="checkbox"/> Wetland Board Member     | <input type="checkbox"/> Federal Agency Staff                |
| <input type="checkbox"/> Other Local Board Member | <input type="checkbox"/> Consultant / Contractor / Agent     |
| <input type="checkbox"/> Elected Official         | <input type="checkbox"/> Non-Profit / Community Organization |
| <input type="checkbox"/> Local Government Staff   | <input type="checkbox"/> Other (please specify) _____        |
| <input type="checkbox"/> State Agency Staff       |  |

**What was the best part of this workshop to you?**

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**How could the workshop be improved?**

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**What topic(s) would you like to see future workshops cover?**

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**What applied research topic(s) or question(s) would you like VIMS to address?**

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**Other Comments (use back of page also):**

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Please return evaluation to the registration table or mail to:  
Center for Coastal Resources Management  
Virginia Institute of Marine Science  
PO Box 1346, Gloucester Point, VA 23062

## **Additional Training Summary**

Although not a final product deliverable, CCRM continues to provide other training related to tidal wetlands and shoreline management.

### **Regional Training – CCRMP & Shoreline Best Management Practices**

CCRM continues to raise awareness and provide orientation to new CCRM tools and guidance provided through the Comprehensive Coastal Resources Management Portal (CCRMP). Beginning in 2012, CCRM started developing portals for each Tidewater locality. There are now 18 portals serving as gateways to resources that address data gaps, shoreline best management practices, and sea level rise issues at the local level. Each portal links to comprehensive shoreline data, maps displaying management recommendations, and decision support tools. Each year, CCRM will release more local portals. Three different groups are targeted for training – coastal planners, shoreline managers, and groups engaged with public outreach in each locality. The localities targeted for CCRMP training were those with recently completed shoreline and tidal marsh inventories and shoreline management model results. Seven training sessions were held at VIMS and also off-campus at local government facilities during the grant period for a combined total of 99 participants.

- 2/24/2015 - Gloucester County Staff (5)
- 3/06/2015 – Newport News, Gloucester, James City Co, VMRC Staff (8)
- 3/12/2015 – James City Co Staff (15)
- 3/30/2015 – Northern Neck Shoreline Evaluation Program (11)
- 4/01/2015 – Newport News Master Gardeners (35)
- 5/08/2015 – Newport News Staff (15)
- 7/21/2015 – Mathews Planning Commission (10)

In addition, five trainings and six Teaching Marsh tours for general audiences of engaged citizens were presented.

- 11/11/2014 Bay-Friendly Landscapes & Gardens, Mathews-Middlesex Master Gardeners (18)
- 1/12/2015 Living Shorelines, Hampton Yacht Club (50)
- 3/28/2015 Chesapeake Bay Coastal Ecosystems & Coastal Management, Peninsula Master Naturalists (25)
- 4/07/2015 Chesapeake Bay Coastal Ecosystems & Coastal Management, Historic Southside Master Naturalists (25)
- 8/07/2015 Living shoreline habitat restoration & volunteer opportunities, Mid-Atlantic Volunteer Monitoring Conference (15)
- Teaching Marsh Tours (85 combined)

### **On-Line Course for Shoreline Best Management Practices**

The Center continues to make available an on-line course dedicated to shoreline best management practices. This dynamic course launched in April 2013, is free and available to anyone that is interested. It has eleven modules, each covering a different topic made up of a video and follow-up quiz. Participants can work through the course at their convenience. The Wetlands Program continues to monitor course registration and participation, answer questions about content, troubleshoot technical difficulties, and issue certificates of completion. [http://ccrm.vims.edu/education/shoreline\\_BMP/index.html](http://ccrm.vims.edu/education/shoreline_BMP/index.html)

- 9 certificates of completion were issued this grant period.

## Publications

Center staff produces two newsletters – the *Virginia Wetlands Report* and *Rivers & Coast*. The *Virginia Wetlands Report* informs readers of near-shore environmental science and related issues to influence better tidal shoreline decisions, and serves to announce upcoming workshops and educational opportunities. The *Rivers & Coast* newsletter covers one relevant topic in more detail through the use of charts, graphs, maps and photos in an 8-page color publication. Both newsletters are mailed to all local wetlands board members and their staff. Additionally, they are available online and announced through CCRM’s quarterly e-newsletter to approximately 2000 email addresses which include local and state agency personnel, General Assembly members, and interested private citizens. CCRM e-News provides the reader with reminders, and quick links, by summarizing a variety of issues that support integrated management of coastal zone resources, and by pointing the reader to more detailed information on our website.

### *Virginia Wetlands Report*

- Spring 2015, Vol. 30, Issue 1  
Celebrating VIMS 75<sup>th</sup> Anniversary: A Look Back at Tidal Shoreline Management & Upcoming Workshop  
[http://ccrm.vims.edu/publications/publications\\_topics/vwr/VAWetRepSpring2015.pdf](http://ccrm.vims.edu/publications/publications_topics/vwr/VAWetRepSpring2015.pdf)

### *Rivers and Coast*

- Summer 2015, Vol. 10  
Marine Debris & Microplastics: Sources & Solutions for Coastal Virginia  
<http://ccrm.vims.edu/publications/pubs/rivers&coast/RC915.pdf>

### *CCRM e-Newsletter*

- October 2014 (New VIMS Report, Shoreline Evaluation Assistance)
- January 2015 (New CCRMP’s, Workshop Save-the-date, Adaptive Planning for Flooding Conference)
- April 2015 (VA Wetlands Report, Workshop Registration, Garden Club of America Scholarship)
- July 2015 (Living Shoreline General Permit, Workshop Presentations, Tidal Marsh Inventory)
- September 2015 (Rivers & Coast, New SAGE website, CCRM Sponsors Virginia Master Naturalist Program, Living Shoreline General Permit Results)



# Virginia Wetlands Report



Volume 30, Issue 1

An Annual Publication Focused on Virginia Wetland Issues and Training

Spring 2015

## Celebrating VIMS 75th Anniversary: A Look Back at Tidal Shoreline Management

The Virginia Institute of Marine Science (VIMS) was founded in 1940 as the Virginia Fisheries Laboratory. The past 75 years at VIMS included many milestones. This issue of the Virginia Wetlands Report provides an opportunity to reflect back on the history of Virginia's tidal shoreline management program over the past decades, particularly the number of times adaptations were made based on VIMS scientific investigations.

The history of Virginia's tidal shoreline management program illustrates that changing guidance is not uncommon. This process continues to be as important now and for the future of the Commonwealth's coastal resources as it was over the past 75 years. That is why VIMS continues to track shoreline management decisions to support advisory service, research, and outreach activities for the resource management community.

*Adaptive management is a process of setting clear goals, closely monitoring progress, then making corrections as needed.*

### **1960's & 1970's • Recognizing & preserving wetland services**

VIMS scientists developed background information used by the legislature to justify passage of the Tidal Wetlands Act in 1972. Wetland services were documented through guidance for regulators. Tidal wetland inventories were completed.

### **1980's • Filling in gaps & confronting cumulative impacts**

VIMS monitoring provided evidence to support new protection for coastal sand dunes and non-vegetated wetlands. The regulatory program was also alerted to cumulative impacts from multiple permit decisions, which led to new guidance and the Wetlands Mitigation-Compensation policy that was adopted by the Virginia Marine Resources Commission.

### **1990's • Learning the limits of compensation**

Ongoing wetlands research and regulatory monitoring revealed mixed success with created wetlands as compensation for permitted losses. This led to the development of wetland mitigation banks and guidance that suggested even tougher scrutiny of permitted activities.

### **2000's • Moving to integrated shoreline management**

New scientific evidence was collected that tidal wetland ecological services depend on natural linkages between riparian lands, wetlands, and shallow water resources. This led to the next generation of guidance, which highlights the need for integration between local and state regulatory programs across jurisdictions.

### **2010's • Facilitating comprehensive resource management**

A new generation of shoreline and tidal marsh inventory updates by VIMS support the development of locality-specific maps, models, and other GIS tools. The associated guidance aims to facilitate collaborative, integrated shoreline management and promote resource sustainability.

Source: Rivers & Coast, Fall 2008, Vol. 3, No. 1

In This Issue

**WORKSHOP ANNOUNCEMENT**

**Friday, June 5, 2015 at VIMS**

Look inside for more information

Visit the VIMS 75th Anniversary web site to learn more about all the milestones of the past and special events scheduled throughout 2015 to celebrate where we've been, where we are, and where we're going.

<http://75th.vims.edu/#milestones>





## New Chesapeake Bay Watershed Agreement & Draft Management Strategies: *Roles & Responsibilities for Tidal Shoreline Managers*

In March 2015, the Chesapeake Bay Program partners released 25 collaborative plans for implementing the ‘next generation’ Chesapeake Bay Watershed Agreement. These new management strategies explain how watershed partners will strive to reach various outcomes by 2025, plus how progress will be monitored, measured, and reported for transparency and accountability. The new management strategies aim to clarify what past efforts were successful and how to improve the effectiveness of other actions. Improved inter-agency and public-private collaboration are commonly cited as necessary to achieve the Agreement’s vision.

Two of these management strategies are of particular interest for tidal shoreline managers: **Riparian Forest Buffers & Wetlands**. Both have been included in Bay restoration plans since 1994 with mixed degrees of success.



**The Draft Management Strategies begin with these desired outcomes:**

### **Riparian Forest Buffer Outcome:**

- 1. Restore 900 miles per year of riparian forest buffers, and*
- 2. Conserve existing buffers until at least 70 percent of riparian areas throughout the watershed are forested.*

### **Wetlands Outcome:**

- 1. Create or reestablish 85,000 acres of tidal and nontidal wetlands, and*
- 2. Enhance the function of an additional 150,000 acres of degraded wetlands by 2025. These activities may occur in any land use (including urban) but primarily in agricultural or natural landscapes.*

Virginia’s tidal shoreline management community has important roles and responsibilities to help improve the preservation and restoration of these vital habitats. One of these duties is to participate in the review process. **A public comment period will be open until April 30, 2015.** Visit the Management Strategies Dashboard for more information about all of the draft management strategies and to learn how to participate in the public review and implementation process. <http://www.chesapeakebay.net/managementstrategies>

## **VMRC Now Serving Electronic Permit Records**

The Virginia Marine Resources Commission (VMRC) now has a web site (<https://webapps.mrc.virginia.gov/public/habitat>) that displays pending and complete Joint Permit Applications submitted to the Habitat Management Division. For more recent projects you can view permit applications, the project status, a project description including dimensions, site photos and see an aerial photograph. VIMS Reports, agency comments, revisions, and other additional information received by VMRC are also posted. These public records can be searched by locality, waterway, local wetlands board actions, or by different structures and activities, such as living shorelines, shellfish aquaculture, and dredging. Use the VMRC website to access information regarding applications starting with the year 2010 to the current date.

The VIMS Shoreline Permit Application Records website (<http://ccrm.vims.edu/perms/newpermits.html>) will continue to serve historical permit records for years prior to 2010, including any additional information that may still be generated for those permit records.

Contact Christine Tombleson for tidal wetlands advisory information, living shoreline assessments or assistance with retrieving public permit records. [christine@vims.edu](mailto:christine@vims.edu) / 804-684-7912

# WORKSHOP ANNOUNCEMENT

## Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines

Friday, June 5, 2015

Watermen's Hall Lobby & Auditorium  
Virginia Institute of Marine Science,  
Gloucester Point, VA

8:00 am - 9:00 am Check in and Coffee

9:00 am - 3:00 pm Workshop

Workshop Web Site: [ccrm.vims.edu/Spring2015](http://ccrm.vims.edu/Spring2015)

A workshop will be held at VIMS with a focus on how the lessons learned from 50 years of coastal resource management can inform and direct future management initiatives. Presentations and interactive group discussions are planned to share different perspectives and to develop collaborative ideas to promote sustainable shoreline management in the Commonwealth.

This workshop is for local, state, and federal government staff, local wetlands board members, marine contractors, permitting agents, environmental consultants, and anyone else interested in coastal resource management.

### Planned Workshop Topics

- History & Future of Adaptive Management for Tidal Shorelines
- Status of BMP credit approval for shoreline management projects
- Update on proposed living shoreline General Permit
- Field sessions at VIMS Teaching Marsh & VIMS Beach

**Workshop Registration:** Please **register online** at [ccrm.vims.edu/Spring2015](http://ccrm.vims.edu/Spring2015)

**Deadline:** 11pm, Monday, June 1st

**Fee:** \$25.00 includes lunch

#### Payment Options:

**Credit Card** (VISA, MasterCard or Discover) Pay online here [ccrm.vims.edu/CreditCardPayment](http://ccrm.vims.edu/CreditCardPayment)  
(there is a live link on the registration page)

#### Check

Payable to: VIMS Tidal Wetlands Workshop  
Mailing Address: Tidal Wetlands Workshop/CCRM  
P. O. Box 1346  
Gloucester Point, VA 23062



**Questions:** Contact Dawn Fleming at [dawnf@vims.edu](mailto:dawnf@vims.edu) / 804-684-7380



The Virginia Wetlands Report is an annual publication of the Wetlands Program at the Virginia Institute of Marine Science of the College of William and Mary. To subscribe to this newsletter, please contact:

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## Tidal Wetlands News & Events

**VIMS Marine Science Day Open House. May 30, 2015 10am–3pm. Gloucester Point campus.** Fun-filled event for the whole family including a sea level rise exhibit & guided tours of the Teaching Marsh. Free. This year's theme is VIMS 75th anniversary. <http://www.vims.edu/public/msd/index.php>

**2015 Society of Wetland Scientists: Changing Climate, Changing Wetlands. May 31-June 4, 2015. Providence, RI.** This conference will examine the role that wetlands play in the global carbon cycle, how they are affected by our changing climate and how they can provide adaptation services. <http://swsannualmeeting.org>

**7th Mid-Atlantic Stream Restoration Conference September 23-25, 2015. Baltimore, MD.** For individuals involved with streams to share ideas and lessons learned in stream restoration planning, assessment, design, construction, and evaluation and other topical stream issues. <http://midatlanticstream.org>

**American Shore & Beach Preservation Association (ASBPA) 2015 National Coastal Conference: Broadening Coastal Perspectives. October 14-16, 2015. New Orleans, LA.** An opportunity for all coastal stakeholders to learn together and develop collaborative networks and resources to maintain and improve the health of our coasts. <http://www.asbpa.org/conferences/conferences.htm>

## Virginia General Assembly 2015 – Tidal Wetlands Related

**HB 1734: Living shorelines; loans for creation** Authorizes the State Water Control Board to provide loans from the Virginia Water Facilities Revolving Fund to (i) a local government for the purpose of establishing living shorelines that protect or improve water quality and prevent water pollution or (ii) a local government that has developed a funding program to provide low-interest loans or other incentives to individuals to assist in establishing living shorelines. **Passed House & Senate, approved by Governor. Effective July 1, 2015.**

**SB 1443 Comprehensive plan; strategies to combat projected sea-level rise.** Provides that any locality included in the Hampton Roads Planning District Commission shall incorporate into the next scheduled and all subsequent reviews of its comprehensive plan strategies to combat projected sea-level rise and recurrent flooding. Such review shall be coordinated with the other localities in the Hampton Roads Planning District Commission. The Department of Conservation and Recreation, the Marine Resources Commission, and the Virginia Institute of Marine Science shall provide technical assistance to any such locality upon request. **Passed House, House substitute agreed to by Senate, approved by Governor. Effective July 1, 2015.**

**SB 1079/HB1817: Flood protection plan** Directs the Department of Conservation and Recreation to regularly update the flood protection plan for the Commonwealth and to make the plan accessible online. This is a recommendation of the Joint Subcommittee to Formulate Recommendations to Address Recurrent Flooding. **Passed House & Senate, approved by Governor. Effective July 1, 2015.**

## Marine Debris & Microplastics: Sources & Solutions for Coastal Virginia

Everyone familiar with Virginia's tidal shorelines knows that our beaches, wetlands, and shallow waters are trashed with litter and debris. Urban and developed shorelines in particular have large amounts of trash constantly present even after periodic removal by litter control efforts. Remote marsh islands and shorelines far removed from development are also impacted by marine debris. Where does all this trash come from and what can be done about it?

Marine debris has long been recognized as a global concern.

It is an ongoing threat to our environment, navigation safety, the economy, and human health, because trash generated on land far from coastal waters eventually ends up as marine debris (Figure 1). The NOAA Marine Debris Program ([marinedebris.noaa.gov](http://marinedebris.noaa.gov)) was authorized by Congress through the Marine Debris Research, Prevention, and Reduction Act, signed into law in 2006 and amended in 2012. This program's mission is to investigate and prevent the adverse impacts of marine debris. One avenue for implementation is through Coastal Zone Management Programs in each state.

*'Marine debris' is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes. – National Oceanic and Atmospheric Administration (NOAA)*

Marine debris was ranked as a high priority by the Virginia Coastal Zone Management Program during the FY 2011–2015 coastal needs assessment. Several thousand Virginians are involved in litter prevention, education, and cleanup projects. Virginia was the first coastal state to adopt a voluntary Marine Debris Reduction Plan. The Center for Coastal Resources Management at the Virginia Institute of Marine Science (CCRM-VIMS) is a partner with other academic institutions, government agencies, nonprofits, community groups, industry, and students to address this coastal problem and helped develop the Virginia Marine Debris Reduction Plan.



**Figure 1.** Trash dumped on land near wetlands, waterways and shorelines easily finds its way into coastal waters to become marine debris.

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Photo Credits: CCRM - VIMS

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## Marine Debris Sources

A large majority of marine debris comes from **land-based sources**, such as litter tossed along roadsides, overflowing garbage cans, illegal dumping, and improper disposal or management of construction waste. Beverage and food containers, plastic straws, cigarette butts, and other trash are then washed into streams, rivers, estuaries, and the ocean when it rains and when there is tidal flooding. Light items, such as styrofoam, plastic grocery bags and helium-filled balloons, can travel for miles in the air before landing in waterways (Figure 2).

### Consistent Top 5 Items in Virginia's Coastal Cleanups

1. Cigarettes/Cigarette Filters
2. Beverage Bottles (Plastic)
3. Bags
4. Food Wrappers/Containers
5. Beverage Cans



**Figure 2.** Land-based sources of marine debris are washed or transported by air into coastal waters, like this helium-filled balloon.

**Water-based sources** of marine debris include fishing gear, such as nets, crab pots, and fishing line, as well as abandoned vessels (Figure 3). Products used for shellfish aquaculture can become marine debris if they are washed out during storms or discarded, such as clam netting, oyster bags, floats, and cages. Trash is also intentionally or accidentally released by recreational boaters, cruise ships, merchant vessels, and military ships.

At the land-water interface, deteriorating shoreline structures, such as old piers, wharves, and bulkheads, can break apart and become marine debris. Some of these were constructed many years ago with creosote and arsenic treated lumber. Legal at the time, these toxic chemicals may be released as the debris deteriorates.



**Figure 3.** Derelict fishing gear such as these lost crab pots is a water-based source of marine debris.

## Marine Debris Impacts

The most familiar impact from marine debris is wildlife entanglement and ingestion. There are many documented cases of marine animals that died because they ate or became entangled in marine debris, such as a young female sei whale that died near Portsmouth, Virginia in August 2014. A necropsy revealed the animal had ingested a large sharp piece of rigid, black plastic eventually identified to be a piece of a DVD case that damaged the whale's stomach lining. Sea turtles ingest items that look like jellyfish and other natural prey, such as balloons and bags.

“Ghost fishing” by derelict fishing gear is another type of marine debris impact. During a 6-year study, CCRM researchers quantified the capture of over 31,000 blue crabs, fish, birds, and turtles in lost crab pots that continued to catch and kill animals (Figure 4). Wildlife impacts from marine debris are not limited to aquatic animals. Osprey sometimes collect marine debris and bring it back to their nests, which can entangle or be ingested by their nestlings (Figure 5). In 2015, rescuers helped a young osprey entangled in a plastic bag after its predicament was observed on the VIMS Osprey Cam. Other marine debris impacts with examples are listed in Table 1.

Marine Debris Impacts	Examples
<b>Wildlife ingestion</b>	<ul style="list-style-type: none"> <li>• Debris items mistaken for food</li> <li>• Debris attached to natural prey items &amp; ingested</li> </ul>
<b>Wildlife entanglement &amp; ghost fishing</b>	<ul style="list-style-type: none"> <li>• Young osprey entangled in nest debris</li> <li>• Derelict fishing gear, balloon ribbons, wrapped around marine mammals, birds &amp; sea turtles</li> <li>• Lost or abandoned nets &amp; traps that continue to catch and kill animals</li> </ul>
<b>Habitat damage</b>	<ul style="list-style-type: none"> <li>• Smothering of wetland vegetation (Figure 6)</li> <li>• Bottom scour by heavy derelict fishing gear</li> <li>• Entanglement &amp; crushing of deep-sea corals</li> </ul>
<b>Vessel damage &amp; navigation hazards</b>	<ul style="list-style-type: none"> <li>• Direct strikes</li> <li>• Propeller entanglement</li> <li>• Clogged intakes</li> </ul>
<b>Economic loss</b>	<ul style="list-style-type: none"> <li>• Seafood trapped &amp; killed by derelict fishing gear</li> <li>• Littered beaches less attractive for tourism</li> <li>• Litter removal &amp; beach sweeping costs</li> <li>• Litter prevention &amp; recycling coordinators</li> </ul>
<b>Alien species transport</b>	<ul style="list-style-type: none"> <li>• Non-native species attached to debris &amp; moved beyond natural range</li> </ul>

**Table 1.** Different types of marine debris impacts with examples

Source: NOAA Marine Debris Program



**Figure 4.** These croakers and blue crabs were captured and killed in a lost crab pot, which is an economic loss for the seafood industry.



**Figure 5.** This osprey nest has a plastic bag and a piece of rope which can entangle nestlings.



**Figure 6.** Pieces of an improperly designed bulkhead smothering tidal marsh vegetation.

## Plastics In Particular

Reports and scientific studies often mention that a majority of marine debris is made up of plastics. According to the Virginia Marine Debris Reduction Plan, the amount of plastics generated in the United States has risen sharply since 1960 and one-third of this plastic material becomes single-use disposable packaging (Table 2). Not much of this material is recovered and recycled, and a lot of it finds its way to rivers, coastal waters, and the ocean.

Acronym	Full Name	Common Examples of Marine Debris
PET (PETE)	Polyethylene terephthalate	Soda bottles
PS	Polystyrene (solid & foam)	Take-out food containers, disposable cutlery
PE	Polyethylene	Plastic bags
HDPE	High-density polyethylene	Detergent bottles
PVC	Polyvinyl chloride	Plumbing pieces, fishing gear
PP	Polypropylene	Drinking straws
PA	Polyamide (nylon)	Toothbrushes
PES	Polyester	Polyester clothing

**Table 2.** Common plastic types and examples of items commonly found in marine debris  
Source: NOAA Marine Debris Program

Plastic marine debris is a major environmental concern for a number of reasons: the large quantity of plastic debris, the long-lasting nature of plastics, the resemblance of plastics to natural prey items of marine animals, and the toxicity of chemical additives used to give plastics certain properties. VIMS Professor Robert Hale has been researching the fate of persistent, bioaccumulative, and toxic chemicals in plastics, such as antimicrobials, external lubricants, flame retardants, fragrances, pigments, light stabilizers, reinforcements, and others. As large plastic items break apart into smaller pieces and the surface area of each particle increases, Dr. Hale has discovered that these chemicals are then released into the surrounding environment (Marine Debris Summit presentation, 2013).

Adding to this problem is the fact that some chemical pollutants released into the ocean are hydrophobic, meaning they repel water. These chemicals will adhere to plastics floating in seawater making the debris even more toxic. This is why researchers are studying whether the compounds used in manufacturing plastics and the chemicals that adhere to plastic debris have any lethal and sub-lethal impacts (Virginia Marine Debris Reduction Plan, 2014). There is also growing evidence and concern that harmful chemicals may be moving up the food chain into seafood eventually consumed by humans.

Plastic shotgun wads are just one type of plastic marine debris item collected during beach cleanups (Figure 7). “Wad” refers to a component of a shotgun shell that is used to separate the shot (pellets) from the powder. While the shotgun shell or casing is ejected near the shotgun, the wad is fired out of the barrel along with the pellets and is very difficult to recover. Hunters generally recover spent shells or casings but, due to the range of shotguns, there is no practical way to recover the spent, non-degradable plastic shotgun wads. Plastic wads have been found in the stomachs of ocean foraging birds, including albatross, presumably due to their resemblance to squid, a common food item. Over time the spent plastic wads can fragment into smaller and smaller pieces.



**Figure 7.** Plastic shotgun wads collected during beach clean-ups

## Microplastics: A Big Problem in Small Particles

Recent studies of marine debris found that zones of visible plastic accumulation are dominated by small particles. Like shotgun wads, most plastics degrade and fragment over time into smaller and smaller pieces. The quantity of **'microplastics'** may be underestimated because they pass through the large mesh of sampling nets used to collect and quantify marine debris.

***'Microplastics'** are the fragments, pellets, sheets, fibers, microbeads and polystyrene that begin as improperly discarded plastic bottles and trash that get washed into our waterways. At less than five millimeters in length, they are nearly imperceptible.*  
– Chesapeake Bay Program

Microplastics result from either (1) the breakdown of larger plastic debris over a prolonged period of time through biological, chemical, and physical processes; or (2) commercial production as microspheres or microbeads.

Manufactured microbeads are made of non-degradable plastics such as polyethylene, polypropylene, and polystyrene. They are widely used in cosmetics, sunscreen, skincare, and household cleanser products, as well as industrial sand blasting. Some cosmetic formulas can contain as much as 25% microbeads (CCRM Microbead Fact Sheet, 2014).

Plastic microbeads used in cosmetics and cleansers are not always captured by wastewater treatment screens. They do have a hydrophobic characteristic, which means some microbeads likely attach to other sewage particulate material. Yet recent studies have discovered that some microbeads are passing through wastewater treatment systems into estuarine and marine ecosystems. Once they enter the aquatic environment, the buoyancy, size, and longevity of microbeads within the water column affects the aquatic food chain. They can be ingested by small animals like filter-feeders, detritivores, deposit feeders, and planktivores. Laboratory

*"A concern with microplastics is that they're even more widely dispersed, and small enough to be eaten by a much more diverse group of organisms. Once ingested, these compounds and anything they've absorbed can be magnified up the food chain."*  
– Dr. Kirk Havens, VIMS Research Associate Professor in CCRM

studies have shown microbead ingestion by small marine biota that transfer to larger animals that prey on them (Figure 8). Microplastics or their derivatives have been reported in mussels, crabs, fish, and baleen whales (CCRM Microbead Fact Sheet, 2014).



**Figure 8.** A bamboo worm ingested microbeads during a CCRM-VIMS laboratory experiment.

### Marine Debris Research at CCRM

The Center for Coastal Resources Management is engaged in research to better understand the marine debris problem and provide tools for resource managers to retrieve or reduce marine debris.

- **Derelict pier & bulkhead locations** in shoreline inventories & CCRMP Interactive Map Viewers  
<http://ccrm.vims.edu/ccrmp>
- **Derelict crab pot location & retrieval**  
[http://ccrm.vims.edu/marine\\_debris\\_removal/index.html](http://ccrm.vims.edu/marine_debris_removal/index.html)
- **Eastern diamondback terrapin bycatch reduction**  
[http://ccrm.vims.edu/research/mapping\\_surveying/terrapin/index.html](http://ccrm.vims.edu/research/mapping_surveying/terrapin/index.html)
- **Biodegradable solutions:** VIMS researchers have identified one class of polymer that has the requisite characteristics to provide a commercially viable, biodegradable alternative to current generation plastic microbeads and other products\*.  
(\*The College of William & Mary has filed a patent application covering certain types of PHA microbeads in personal care formulations and, in accordance with university policy, researchers share in any net revenues.)

## Virginia Marine Debris Reduction Plan

In order to address the marine debris pollution problem, the Virginia Coastal Zone Management Program sponsored a report titled “Developing a Marine Debris Reduction Plan for Virginia” (2014). This effort was led by Longwood University’s Clean Virginia Waterways program with CCRM scientists on the leadership team and with input from a variety of scientific experts and stakeholders. The over-arching goal of the Virginia Marine Debris Reduction Plan is “to reduce the amount of trash and marine debris from land-based and water-based sources in Virginia waters through prevention, interception, innovation, and removal for ecological, social, and economic benefits.” A list of implementation goals and strategies was then developed based on five broad categories (Table 3). A copy of the report and more information is available at the Virginia Coastal Zone Management program web site.

<http://www.deq.state.va.us/Programs/CoastalZoneManagement/CZMIssuesInitiatives/MarineDebris.aspx>

Virginia Marine Debris Reduction Plan Goals	
<b>Program Leadership</b>	<ul style="list-style-type: none"> <li>• Pursue a collaborative and coordinated approach through a Virginia Marine Debris Advisory Committee of partners.</li> </ul>
<b>Prevention</b>	<ul style="list-style-type: none"> <li>• Reduce marine debris through source reduction, prevention, &amp; by targeting specific groups.</li> </ul>
<b>Intercept</b>	<ul style="list-style-type: none"> <li>• Reduce marine debris by intercepting litter at storm drains.</li> </ul>
<b>Innovate</b>	<ul style="list-style-type: none"> <li>• Reduce marine debris through innovation of materials, designs, practices, equipment and recovery.</li> </ul>
<b>Remove, Clean Up, &amp; Mitigate</b>	<ul style="list-style-type: none"> <li>• Reduce marine debris by removing and cleaning up litter and debris items and mitigate the impacts of marine debris.</li> </ul>

**Table 3.** Implementation Goals of the Virginia Marine Debris Reduction Plan

## What Can You Do to Help?

No matter which watershed you live, work, or play in, there is something that everyone can do to reduce the amount of litter and clean up Virginia’s shorelines, beaches, wetlands, and coastal waters.

1. Review Virginia’s Marine Debris Reduction Plan to see which strategies you can assist with, such as finding alternatives to releasing balloons.
2. Learn about existing programs to track and retrieve debris, such as shoreline cleanups, the CCRM-VIMS derelict crab pot location and retrieval project, monofilament fishing line recycling stations, and marine debris tracker app <http://www.marinedebris.engr.uga.edu/> (Figure 9).
3. Participate in these programs where and when you can and encourage others to do the same.

Successfully solving this problem will depend on voluntary and collaborative actions by all of Virginia’s citizens and visitors (Figure 10). For more ideas on what you can do to help, see Table 4, on page 7.



**Figure 9.** Derelict crab pots are located and removed from the water through collaboration between commercial watermen, CCRM-VIMS scientists, and the Virginia Marine Resources Commission.



**Figure 10.** Individual volunteers are essential to help clean up Virginia’s wetlands & coastal waters. This VIMS volunteer is doing her part in the Teaching Marsh.

Shoreline Managers	Marinas & Boaters	All Citizens
<ul style="list-style-type: none"> <li>• Grant permits only for necessary &amp; properly designed shoreline structures</li> <li>• Encourage the removal of derelict piers, bulkheads, &amp; abandoned vessels</li> <li>• Find out if local stream and shoreline cleanups are happening, if not try to start one</li> <li>• Ask your local government to participate in marine debris reduction strategies, e.g., stormwater litter capture</li> <li>• Require proper handling &amp; disposal of coastal construction debris</li> <li>• Alert local cleanup programs to shorelines with debris problems</li> </ul>	<ul style="list-style-type: none"> <li>• Accept garbage from vessels that normally do business with you</li> <li>• Conduct regular trash pickup within marina and along shoreline</li> <li>• Don't let trash get thrown or blown overboard. If trash blows overboard, retrieve it &amp; dispose of properly on shore</li> <li>• Recycle monofilament fishing line through VMRC &amp; DGIF program</li> <li>• Reduce waste in your daily operations</li> <li>• Don't toss cigarette butts overboard, the filters contain plastic fibers.</li> </ul>	<ul style="list-style-type: none"> <li>• Organize or volunteer for a cleanup in your area, e.g., Virginia Waterways Cleanup, held annually September 1 – October 31</li> <li>• Buy products without plastic or excessive packaging</li> <li>• Encourage the use of cigarette receptacles at your business, school, &amp; church</li> <li>• Purchase refreshments in recyclable containers and recycle them</li> <li>• Use alternatives to balloon releases</li> <li>• Pack food in reusable containers</li> </ul>

**Table 4.** Possible actions by different groups to help reduce marine debris in Virginia

## Marine Debris Web Sites & Additional Information

**Virginia Marine Debris Reduction Plan** VA Coastal Zone Management Program

<http://www.deq.state.va.us/Programs/CoastalZoneManagement/CZMIssuesInitiatives/MarineDebris.aspx>

**Clean Virginia Waterways** Longwood University

<http://www.longwood.edu/cleanva/Index.html>

**Virginia Clean Marina Program** VIMS Marine Advisory Services

<http://www.virginiacleanmarina.com/>

**Cigarette Litter Prevention Program** Keep America Beautiful

<http://preventcigarettelitter.org/>

**Stream to Sea Initiative** American Canoe Association

<http://www.americancanoe.org/StreamtoSea>

**NOAA Marine Debris Program** NOAA National Ocean Service

<http://marinedebris.noaa.gov/>

**Microplastics Photo Essay** Chesapeake Bay Program

[http://www.chesapeakebay.net/blog/post/photo\\_essay\\_microplastics\\_in\\_the\\_chesapeake\\_bay](http://www.chesapeakebay.net/blog/post/photo_essay_microplastics_in_the_chesapeake_bay)

**Fishing Line Recycling Sites in Virginia** VA Department of Game & Inland Fisheries

<http://www.dgif.virginia.gov/fishing/fishing-line-recycling/>

**Trash Free Potomac Watershed Initiative** Alice Ferguson Foundation

<http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/>

**Every Little Bit Counts: Microplastics Plague Chesapeake Waters** Bay Journal, January 19, 2015

[http://www.bayjournal.com/article/every\\_little\\_bit\\_counts\\_microplastics\\_plague\\_chesapeake\\_waters](http://www.bayjournal.com/article/every_little_bit_counts_microplastics_plague_chesapeake_waters)



Source: HR Green Keep America Beautiful

# Legislative Perspective

Some of the desired outcomes of the Virginia Marine Debris Reduction Plan related to policy and regulation include:

1. A review of possible legislation and regulatory options.
2. A joint coordinated request to the General Assembly from multiple localities and citizen groups seeking authority to address litter items of local concern.

## Other Potential Legislative Actions Related to Marine Debris

(Source: VA Marine Debris Reduction Plan)

- Support increased enforcement of Virginia’s current laws regarding littering, illegal dumping, waste management, stormwater runoff, and releasing more than 50 non-biodegradable balloons inflated with a substance lighter than air.
- Identify existing and potential revenue streams to sustain statewide marine debris and litter prevention, such as: Virginia Clean Marina Program, Virginia Department of Game and Inland Fisheries & Virginia Marine Resources Commission’s monofilament fishing line recycling program, local litter control and recycling coordinators, Virginia Department of Conservation and Recreation’s Adopt-A-Stream, and others.
- Discharges from municipal separate storm sewer systems (MS4s) are regulated, and the regulations include “floatables” which include most littered trash items made of plastic. Find ways to assist MS4 permittees in reaching their permit goals by preventing litter from entering storm drains.
- Reduce legal and administrative barriers to adopting alternative materials and practices.
- Review options for updating the Virginia Litter & Recycling Tax which has not been raised since it was passed in 1976.



## Dawn Fleming

**From:** Center for Coastal Resources Management <karen@vims.ccsend.com> on behalf of Center for Coastal Resources Management <dawnf@vims.edu>  
**Sent:** Wednesday, October 29, 2014 2:40 PM  
**To:** Dawn Fleming  
**Subject:** VIMS Shoreline Recommendation Reports



## Center for Coastal Resources Management e-Newsletter



CCRM e-News

October 2014

### Quicklinks

[CCRM Website](#)

[Comprehensive Coastal Resource Management Portal \(CCRMPs\)](#)

[Shoreline Best Management Practices Online Course](#)

[JPA Records Search](#)

[How to Complete a JPA Tutorial](#)

[Wetlands Boards Discussion Forum](#)

[Why a Living Shoreline?](#)

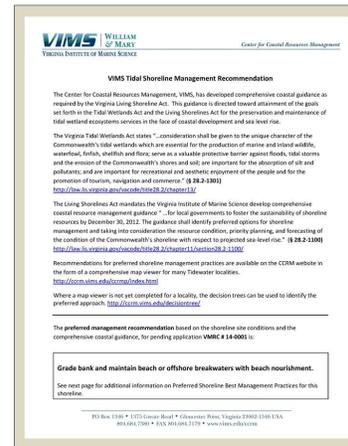
### New VIMS Reports coming soon...

In 1972, the Tidal Wetlands Act was passed "... to preserve and prevent the despoliation and destruction of wetlands while accommodating necessary economic development in a manner consistent with wetlands preservation." (Code of Virginia § 28.2-1301). The importance of natural shoreline habitats in Virginia was re-affirmed with the passage of the Living Shorelines Act in 2011 which adopted living shorelines as the preferred approach to address tidal shoreline erosion. **Together these laws codify a preference for the use of natural features for erosion protection along Virginia's shorelines.**

As required by law, the Center for Coastal Resources Management at VIMS, has developed comprehensive coastal guidance to assist local decision makers and planners in selecting options for tidal shorelines compatible with the preservation and maintenance of tidal wetland ecosystems services.



The Center for Coastal Resources Management (CCRM) has initiated a new process that will provide Tidal Shoreline Management Recommendation reports to the decision makers. These reports will be provided for Joint Permit Applications (JPAs) involving shoreline management actions advertised on current public notices starting December 1, 2014. The reports will be based on the reach conditions of the subject shoreline and Virginia's comprehensive coastal guidance, independent of the project(s) requested and/or existing structure(s) on the applicant's site.



The VIMS Reports will utilize our most recent guidance found in the [Comprehensive Coastal Resources Management Portal \(CCRMP\)](#) - a webpage that links users to guidance, data, and tools regarding tidal shoreline management.

We will continue to provide shoreline assessments and alternative analysis reports on proposed projects upon request.

## Shoreline Evaluation Assistance



CCRM is actively engaged in support of the Commonwealth's preference for living shorelines and in research on these management techniques. We are very interested in providing waterfront property owners with the tools and knowledge necessary to actively consider these preferred options for their shoreline erosion control approach.

**We are available upon request to provide on site shoreline evaluations to property owners who would like to learn more about living shorelines and/or determine if their property has the site conditions appropriate for a living shoreline project.**

To request a living shoreline assessment or obtain other tidal wetlands advisory assistance, please contact Christine Tomblason at 804-815-0172 or [Christine@vims.edu](mailto:Christine@vims.edu).

## Contact Info

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## Dawn Fleming

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**From:** Center for Coastal Resources Management <dawnf@vims.ccsend.com> on behalf of Center for Coastal Resources Management <dawnf@vims.edu>  
**Sent:** Thursday, January 29, 2015 11:49 AM  
**To:** Dawn Fleming  
**Subject:** CCRM January e-News



## Center for Coastal Resources Management e-Newsletter



CCRM e-News

January 2015

### Quicklinks

[CCRM Website](#)

[CCRMP's](#)

[Shoreline Inventories](#)

[Workshops](#)

[Climate Change](#)

### New CCRMPs Now Available

Six more locality based [Comprehensive Coastal Resource Management Portals](#), or CCRMPs, are now available. With these new additions, CCRM has completed web portals for 18 coastal Virginia localities.

Products associated with all CCRMPs include a Shoreline Inventory, a Tidal Marsh Inventory, and the output of our Shoreline Management Model, plus guidance for comprehensive plan updates and a sea level rise vulnerability tool.

Comprehensive Coastal Resource Management Portals	
Completed in 2014	Also Available
City of Norfolk	City of Alexandria
James City County	Charles City County
City of Williamsburg	Fairfax County
City of Newport News	City of Hampton
Gloucester County	Mathews County
Northumberland County	Northampton County
	City of Poquoson
	Prince William County
	City of Suffolk
	City of Virginia Beach
	Westmoreland County
	York County

No matter what locality you are from, contact the [CCRM training coordinator](#) if you would like to learn more about CCRMPs or want to plan a training session for staff, Wetlands or Chesapeake Bay Boards, Planning Commissions, or other interested groups.

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### Save the Date: June 5, 2015 Next CCRM Workshop

The next tidal wetlands workshop will be held on Friday, June 5, 2015 at VIMS. The agenda is not final yet. More information and registration details will be announced in the next edition of the [Virginia Wetlands Report](#) later this spring.




---

### Successful Adaptive Planning Conference - December 5, 2014

The Virginia Coastal Policy Clinic at William & Mary Law School and the Center for Coastal Resources Management at VIMS are thrilled with the success of **Adaptive Planning for Flooding and Coastal Change in Virginia: Next Steps for the Commonwealth**. This conference was held at the College of William & Mary and included a meeting of the Governor's Climate Change and Resiliency Update



Commission. It also brought national, state, and local experts and leaders together to discuss current actions being taken to adapt to flooding and coastal change and to highlight key legal and policy matters confronting both the public and private sectors.

The Keynote Address was delivered by the Honorable Tim Kaine, United States Senator for Virginia. The Center's director Dr. Carlton Hershner and scientist Molly Mitchell helped organize the event and gave presentations. You can find videos of the conference, download the speakers' powerpoint presentations, and see results from live audience polling on [VCPC's conference website](#). You can also read a new report entitled **Virginia Accomplishments Since the 2008 Climate Action Plan Release**. Bookmark this site because a post-conference report is forthcoming.

#### Contact Info

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From: Center for Coastal Resources Management <dawnf@vims.ccsend.com> on behalf of Center for Coastal Resources Management <dawnf@vims.edu>  
Sent: Tuesday, April 21, 2015 1:49 PM  
To: Dawn Fleming  
Subject: CCRM April e-News



# Center for Coastal Resources Management e-Newsletter



CCRM e-News

April 2015

## Quicklinks

[CCRM Website](#)

[VIMS 75th Anniversary](#)

[Virginia Wetlands Report](#)

[June 5 Workshop Registration](#)

[GCA Scholarship Awards](#)

## New Issue - Virginia Wetlands Report



As part of the celebration of VIMS 75th Anniversary, the new issue of the [Virginia Wetlands Report](#) takes a look back at the history of tidal shoreline management in the Commonwealth. Scientific investigations at VIMS over the years led to various new regulations and policies to improve tidal wetlands protection. This adaptive management process continues today. That is why the newsletter also highlights the new Chesapeake Bay Agreement and draft management strategies now open for public comment.

Other tidal wetland news and events are also featured.

Workshop - Friday, June 5th  
Registration Now Open

The next tidal shoreline management workshop will be held at the VIMS campus in Gloucester Point, VA on Friday, June 5, 2015 from 9:00am - 3:00pm. The theme will be Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines. VIMS staff will give presentations reflecting back on 50 years of tidal shoreline management. Then everyone will participate in focus group discussions about the future of the Commonwealth's tidal shorelines and what adaptive strategies are necessary. There will also be field sessions at the VIMS Beach & Teaching Marsh to highlight adaptive strategies and research.



The registration fee is \$25 which includes lunch. On-line [workshop registration](#) is now open, including a new [secure credit card payment](#) option.

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## Garden Club of America Coastal Wetlands Scholarship 2015 Awards

The Garden Club of America provides an Award in Coastal Wetlands Studies. The scholarship originated in 1966 when the Rockefeller Fund was established for the purpose of promoting environmental education. The award is a one-year \$5,000 scholarship to support graduate-level field-based research in coastal wetlands. The scholarship is administered by the Center for Coastal Resources Management, Virginia Institute of Marine Science (VIMS) at the College of William and Mary. Applications are reviewed by a selection committee of practicing wetland scientists.



Five students from around the nation were awarded this year's 2015 scholarships by the GCA. Their coastal wetlands research involves floating marshes, methane emissions from wetlands, carnivorous plants, and how sea level changes affect wetland resilience. Visit the [CCRM Garden Club Scholarship](#) web site to learn about the 2015 winners and previous award recipients.

### Contact Info

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This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA14NOS4190141, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.

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## Dawn Fleming

**From:** Center for Coastal Resources Management <dawnf@vims.ccsend.com> on behalf of Center for Coastal Resources Management <dawnf@vims.edu>  
**Sent:** Tuesday, July 07, 2015 3:17 PM  
**To:** Dawn Fleming  
**Subject:** CCRM July e-News



## Center for Coastal Resources Management e-Newsletter



CCRM e-News

July 2015

### Quicklinks

[CCRM Website](#)

[VIMS 75th Anniversary](#)

[VMRC Living Shoreline General Permit - Public Notice](#)

[June 5 Tidal Shoreline Management Workshop](#)

[VIMS Living Shorelines](#)

[Tidal Marsh Inventories - CCRMP's](#)

### Living Shoreline Group 1 General Permit - Public Comment Period Open

The Virginia Marine Resources Commission (VMRC) invites public comment on a proposed general permit regulation entitled "**Living Shoreline Group 1 General Permit for Certain Living Shoreline Treatments Involving Tidal Wetlands.**" The purpose of this general permit is to provide a streamlined permitting process as an incentive to encourage property owners to utilize a living shoreline approach to manage shoreline erosion and promote the planting and growth of tidal wetlands vegetation to restore or enhance ecosystem services.

If the regulation is adopted as proposed, the Group 1 General Permit will authorize the placement of certain specified sand fill, fiber logs, shell bags, and temporary grazing protection in tidal wetlands, landward of mean low water, to improve the growing conditions for wetland vegetation. The establishment of oysters and ribbed mussels might also be allowed in



*Example of a Group 1 living shoreline project with planted tidal marsh, sand fill, and fiber logs.*

projects that qualify for the general permit.

VMRC has sent the draft Group 1 General Permit to the Local Wetlands Boards for their review. Everyone else can review this document and see the [public hearing notice](#) on the VMRC website. **A public hearing will be held on July 28, 2015** during the Commission's monthly meeting in Newport News, Virginia. Written comments should be mailed to [Chip Neikirk](#), VMRC Habitat Management Division, 2600 Washington Avenue, 3rd floor, Newport News, Virginia 23607. If you wish to submit public comments to VMRC in writing, you must include your name, address, phone, and e-mail address with your comments. Please keep in mind e-mail is not always reliable. VMRC cannot be held responsible for comments lost in cyberspace. **The deadline for public comments is 5:00 pm Friday, July 24, 2015.**

A Group 2 general permit for living shoreline projects that include engineered structures such as marsh sills will be similarly formatted and will follow the same procedure for authorization. VMRC staff expects to have a draft of that general permit regulation available for review later this year. Contact Chip Neikirk for more information about the proposed general permit regulations and the upcoming public hearing.

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## June 5th Workshop

The theme for this year's annual tidal shoreline management workshop at VIMS was ***Looking Backward & Forward: Adaptive Management for Virginia's Tidal Shorelines.***



*Center Director Carl Hershner, Jr. gave the opening workshop presentation.*

There were 72 workshop participants representing 11 local governments, 4 state agencies, 5 non-profit organizations, & 6 marine related businesses. In honor of VIMS 75th Anniversary, the workshop started with presentations that summarized how the scientific understanding of tidal shorelines and their management has evolved over the past 40 years. Breakout group

discussions were held for the participants to outline barriers to reducing the amount of shoreline hardening. Indoor & outdoor activities highlighted adaptive management examples that participants could learn from and replicate in their own communities.

Visit the [June 5th Workshop website](#) to view the presentations and to read a breakout group summary report.

---

## Tidal Marsh Inventory Fieldwork in Progress

As part of an on-going effort to inventory conditions along the

Commonwealth's tidal shorelines, the Center is updating shoreline & tidal marsh inventories in four localities this summer: **City of Portsmouth, Lancaster, Middlesex, & Stafford Counties.**

These localities will join 18 others with recently updated maps of riparian bank conditions, shoreline defense structures, piers, marinas, boat ramps, and tidal marshes. Wetland scientists are surveying tidal marshes in the field to determine plant communities and to ground truth mapped locations. All of the updated shoreline and tidal marsh inventory information will be posted in locality-specific [Comprehensive Coastal Resource Management Portals or CCRMPs](#) later this year. The inventory GIS data will also be made available for downloading.



*Tidal Marsh Inventory coordinator Julie Bradshaw during a recent survey.*

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This newsletter was funded, in part, by the Virginia Institute of Marine Science and the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA14NOS4190141, Task #7 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.

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## Dawn Fleming

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**Sent:** Tuesday, September 01, 2015 4:05 PM  
**To:** Dawn Fleming  
**Subject:** CCRM September e-News



## Center for Coastal Resources Management e-Newsletter



CCRM e-News

September 2015

### Quicklinks

[CCRM Website](#)

[VIMS 75th Anniversary](#)

[Rivers & Coast,  
Summer 2015](#)

[Marine Debris  
Reduction Plan](#)

[SAGE](#)

[Virginia Master  
Naturalists](#)

[Living Shoreline  
General Permit](#)

### Rivers & Coast: New Issue Now Available

The Summer 2015 issue of the [Rivers & Coast](#) newsletter focuses on **Marine Debris & Microplastics: Sources & Solutions for Coastal Virginia**. Read about different sources of marine debris and the impacts this pollution has on wildlife, coastal habitats, navigation, and the economy, plus learn about the [Virginia Marine Debris Reduction Plan](#). Everyone can help reduce the marine debris problem by reading this issue and learning how to get involved using the links provided.



*VIMS Teaching Marsh volunteer removing litter from a wetland before it reaches the York River.*

---

## Green + Gray = SAGE: Join the SAGE Community

Our coastal communities and shorelines are facing escalating risks from more frequent and more powerful storms, sea-level change, and changing precipitation patterns that can result in dramatic economic losses. SAGE is an initiative that brings together experts and practitioners from the federal, academic, non-profit and private sectors to pursue and advance a comprehensive view of shoreline change. Visit the [new SAGE web site](#) recently launched by CCRM and other partners and join the SAGE community of practice.



*SAGE partners are working together to implement coastal projects that combine green, nature-based features with gray, engineered elements.*

---

## CCRM Now Sponsors Virginia Master Naturalist Program

The Center for Coastal Resources Management recently became the seventh sponsoring agency of the [Virginia Master Naturalist Program](#). This is a statewide volunteer training and service program providing education, outreach, and service to better manage natural resources and natural areas in Virginia. Karen Duhring, the Center's outreach and training coordinator, will represent CCRM on the Program's steering and executive committees. CCRM collaborates with other VIMS educators to conduct annual basic training courses for Master Naturalists on coastal and estuarine ecology. As a sponsoring agency, CCRM and VIMS will be able to provide assistance to any chapter interested in community service or citizen science projects related to coastal issues.



*Northern Neck Master Naturalists at VIMS for basic training on coastal ecology and management issues.*

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## Virginia's First General Permit for Living Shoreline Projects

The Virginia Marine Resources Commission (VMRC) unanimously approved the [Living Shoreline Group 1 General Permit Regulation](#) at their July 28 Commission Meeting. The effective date of the regulation is Sept. 1, 2015. According to Chip Neikirk of the VMRC Habitat Management Division, "this is the first of two living shoreline general permits. We hope to have a draft of the Group 2 general permit completed within the next couple of months. The second general permit will involve structures including riprap sills." Hopefully these streamlined living shoreline processes will provide the property owner with some additional incentive to utilize a living shoreline approach when considering alternatives to stabilize eroding shorelines.

VMRC staff are now in the process of briefing Local Wetlands Boards on the general permit and associated procedures at regularly scheduled meetings over the next few months. In the interim, contact [VMRC staff](#) assigned to each locality if you have any questions concerning the process.

Carl Hershner, Director  
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# Product 3: Permit Database Website

On January 1, 2015 the Virginia Marine Resource Commission (VMRC) began serving permit records, including the joint permit application, VIMS permit review reports, and all related additional information at this website <https://webapps.mrc.virginia.gov/public/habitat/>. In an effort to not duplicate the same service using state funds, the Center for Coastal Resources Management and CZMP staff, Shep Moon decided to stop populating our digital permit records website. CCRM continues to maintain and serve complete historical records for Joint Permit Applications with VMRC assigned numbers for years prior to 2010, including any additional information that may still be generated for those records. This searchable database is available here <http://ccrm.vims.edu/perms/newpermits.html>. This grant year there were 419 hits on the online permit database by both regulators and the regulated community. The following is a list of all the applications that were received and posted to our website during this grant year.

<b>PERMIT</b>	<b>APPLICANT</b>	<b>LOCALITY</b>	<b>DATE</b>
14-1439	Christopher Newport University	City of Newport News	2014-10-01
14-1441	Rappahnock River Estates Civic Association	Essex County	2014-10-01
14-1445	Kenneth Payne	Westmoreland County	2014-10-01
14-1447	Charles G. Evans, Jr.	Middlesex County	2014-10-01
14-1448	Ramy Y. Eid, et al	Middlesex County	2014-10-01
14-1451	George W. Husband, Jr.	Lancaster County	2014-10-01
14-1454	Andrew Busk	City of Virginia Beach	2014-10-01
14-1398	Stingray Point Boat Works, LLC	Middlesex County	2014-10-01
14-1463	Carl V. Yutzy	Gloucester County	2014-10-07
14-1465	Jorge Lancho	Accomack County	2014-10-07
14-1469	Jean-Marie Kanyinda	City of Norfolk	2014-10-07
14-1472	Virginia P. Sasser, et al	Essex County	2014-10-07
14-1474	Bruce C. Gottwald	Lancaster County	2014-10-07
14-1480	William L. Trolan	James City County	2014-10-07
14-1481	Nancy L. Hubbard	Middlesex County	2014-10-07
14-1482	Chuck Maddox	Northumberland County	2014-10-07
14-1483	Stephen Graves	Mathews County	2014-10-07
14-1486	Richard A. Urban	Middlesex County	2014-10-10
14-1489	Youth Sailing Virginia, Inc.	City of Hampton	2014-10-10
14-1497	Robert Mance, Jr.	Accomack County	2014-10-10
14-1501	Alex Bell	City of Virginia Beach	2014-10-10
14-1503	Todd Gehr	Middlesex County	2014-10-10
14-1514	Scott Kezman	City of Virginia Beach	2014-10-16
14-1516	John H. Cronly, III	Northumberland County	2014-10-16
14-1520	Eric Olson	City of Virginia Beach	2014-10-16
14-1521	Manuel Cunha, Jr.	Westmoreland County	2014-10-16
14-1528	Thomas J. Muratore	Northumberland County	2014-10-16
14-1199	Mia Norton	Middlesex County	2014-10-22
14-1529	Robert Cushing	Northumberland County	2014-10-21

14-1530	Merton A. English	Northumberland County	2014-10-21
14-1531	Menhaden Fisheries, Inc., et al	Northumberland County	2014-10-21
14-1533	Pedro Becerra	City of Virginia Beach	2014-10-21
14-1536	Veronica Kidder	Accomack County	2014-10-21
14-1541	John Bowen	City of Virginia Beach	2014-10-21
14-1542	Benton S. Halsy Trust	Middlesex County	2014-10-21
14-1544	Michael Skelton	Northumberland County	2014-10-21
14-1549	Donna M. Rice	Northumberland County	2014-10-21
14-1500	James Teichert	Northumberland County	2014-10-24
14-1547	Virginia T. Brown	Lancaster County	2014-10-21
14-1548	Norfolk Department of Public Works	City of Norfolk	2014-10-21
14-1551	JRW Inc.	Accomack County	2014-10-21
14-1555	Luck Stone	City of Richmond	2014-10-21
14-1556	Jessica R. Crouch, et al	City of Norfolk	2014-10-21
14-1557	I. L. Hancock	City of Virginia Beach	2014-10-21
14-1559	Front Street Flats, LLC	City of Norfolk	2014-10-24
14-1560	David Roberts	Gloucester County	2014-10-24
14-1562	Norfolk, City of	City of Norfolk	2014-10-24
14-1564	Henry Nixon	Accomack County	2014-10-24
14-0786	Christopher Ollice	City of Virginia Beach	2014-10-24
14-1567	Hampton Department of Public Works	City of Hampton	2014-10-24
14-1571	Mathews, County of	Mathews County	2014-10-24
14-1572	Samuel M. Gaddy	Middlesex County	2014-10-24
14-1573	Barbara P. Tennant	Middlesex County	2014-10-24
14-1574	Garey Cropper	Accomack County	2014-10-24
14-1575	Gregory G. Rogers	York County	2014-10-24
14-1577	Thomas M. Murphy, Jr.	City of Virginia Beach	2014-10-24
14-1579	Billy Dunn	City of Virginia Beach	2014-10-24
14-1517	Roger Q. Anderson	Mathews County	2014-10-29
14-1518	Raymond A. Messina	Mathews County	2014-10-29
14-1535	Daniel M. Walker Trust	Henrico County	2014-10-29
14-0726	Hermitage Foundation, The	City of Norfolk	2014-10-31
14-1507	Rebecca Yates	City of Virginia Beach	2014-10-10
12-1079	Charles Adlon	Westmoreland County	2014-11-04
14-1581	James O. Ash	Northumberland County	2014-10-29
14-1588	Oletha M. Wilkinson	Northumberland County	2014-10-29
14-1591	William S. Edwards	Mathews County	2014-10-31
14-1593	Leonard Bennett, et al	Isle of Wight County	2014-10-31
14-1598	Thomas Wimbrough	City of Portsmouth	2014-10-31
14-1608	Michael Waro	City of Virginia Beach	2014-10-31
14-1610	Robert Sperry	Mathews County	2014-11-04
14-1611	Anne B. Terhune	Richmond County	2014-11-04
14-1612	Riverdale FArm, Inc.	Richmond County	2014-11-04
14-1617	Brays Point, LLC	Gloucester County	2014-11-04

14-1621	Stephen Pastiva	Mathews County	2014-11-04
14-1622	Thomas D. Edwards	Mathews County	2014-11-04
14-1623	Carey S. Donovan	Middlesex County	2014-11-07
14-1625	James W. Brooks, Jr.	Gloucester County	2014-11-07
14-1632	Mr. B's Oyster Company LLC	Northumberland County	2014-11-07
14-1637	Virginia Institute of Marine Science	York County	2014-11-07
14-1639	CRC Belvoir Planned Communities, LLC	Fairfax County	2014-11-07
14-1640	Hampton, City of	City of Hampton	2014-11-07
14-1646	Agnew Swynford, III	James City County	2014-11-07
14-1651	Portsmouth, City of	City of Portsmouth	2014-11-14
14-1654	Cason Barco	City of Virginia Beach	2014-11-14
14-1655	Jon McGruder	City of Virginia Beach	2014-11-14
14-1656	Ernest L. George	Lancaster County	2014-11-14
14-1659	Robert Pembroke	Isle of Wight County	2014-11-14
14-1660	Jack Dorsey	City of Norfolk	2014-11-14
14-1667	Seagate Terminals, L.L.C.	City of Chesapeake	2014-11-14
14-1670	Richard C. Loving	Northumberland County	2014-11-14
14-1671	Kevin Schwartz	Westmoreland County	2014-11-14
14-1676	Kelly Capps	City of Virginia Beach	2014-11-18
14-1680	Lester S. Terhune, III	Richmond County	2014-11-18
14-1681	Thomas Musselman	City of Virginia Beach	2014-11-18
14-1683	Stephen W. Loving	Northumberland County	2014-11-18
14-1684	Donald D. Guthermuth	Northumberland County	2014-11-18
14-1686	James Woodward	Gloucester County	2014-11-18
14-1687	Mary S. Halsey	Northumberland County	2014-11-18
14-1688	Anthony C. Tridico	Northumberland County	2014-11-18
14-1689	Wayne Rohrbach	Northumberland County	2014-11-18
14-1690	Plains Marketing, L.P.	York County	2014-11-18
14-1692	APEX	City of Chesapeake	2014-11-20
14-1694	Chris Gepford	Northumberland County	2014-11-20
14-1699	Herbert E. Teachey	Westmoreland County	2014-11-20
14-1703	Robert G. Gayle	City of Norfolk	2014-11-20
14-1704	Kenneth Hamer, et al	Gloucester County	2014-11-20
14-1716	BAE Systems	City of Norfolk	2014-11-25
14-1717	Colonna's Shipyard	City of Norfolk	2014-12-02
14-1721	Dallace Marable	Middlesex County	2014-12-02
14-1729	Wayland D. Carter	Westmoreland County	2014-12-02
14-1731	Christopher Jacobs	City of Virginia Beach	2014-12-02
14-1734	Joseph Blair	Accomack County	2014-12-02
14-1736	Albert L. Archard	Lancaster County	2014-12-02
14-1741	Tallysville Land & Timber	New Kent County	2014-12-02
14-1746	Annette L. Capocelli	Middlesex County	2014-12-02
14-1748	James H. Salmons	City of Virginia Beach	2014-12-03
14-1749	Katherine Sheppard	Accomack County	2014-12-03

14-1751	Knights Landing Property Owners Association	Northumberland County	2014-12-09
14-1753	Christopher G. Smalley	Westmoreland County	2014-12-09
14-1754	Accurate Marine Environmental, Inc.	City of Portsmouth	2014-12-09
14-1756	Boyd Homes	City of Suffolk	2014-12-09
14-1757	Jonathan Guion	City of Virginia Beach	2014-12-09
14-1762	Matthew W. Greene	Lancaster County	2014-12-09
14-1763	Walter Reiser	York County	2014-12-09
14-1764	Virginia Beach Department of Public Utilities	City of Virginia Beach	2014-12-09
14-1766	Philip E. Stephens	Northumberland County	2014-12-09
14-1769	Willis F. Hutchens	Middlesex County	2014-12-09
14-1752	Turn-Key Homes, Inc.	Westmoreland County	2015-01-06
14-1774	Gerald Speeks	Middlesex County	2014-12-10
14-1775	Pirates Cove, LLC	Middlesex County	2014-12-10
14-1776	Accomack, County of	Accomack County	2014-12-10
14-1777	Joan V. Craven	Accomack County	2014-12-10
14-1783	Michael Koeppen	Gloucester County	2015-01-05
14-1784	Robins & Strickler Properties, LLC	Northumberland County	2015-01-05
14-1787	Ronald T. Sopko	Mathews County	2015-01-05
14-1788	George H. Homich	Mathews County	2015-01-05
14-1789	Anne W. Hart	Northumberland County	2015-01-05
14-1796	Elizabeth River Project	City of Norfolk	2015-01-05
14-1797	Elizabeth River Project	City of Norfolk	2015-01-05
14-1800	Norfolk Yacht and Country Club	City of Norfolk	2015-01-05
14-1780	Creekside Harbor Town House Assoc.	Accomack County	2015-01-05
14-1809	Michael Tempest	Lancaster County	2015-01-05
14-1818	George W. Lauterbach, Jr.	City of Virginia Beach	2015-01-05
14-1823	Stephen Montgomery	Middlesex County	2015-01-05
14-1826	Stephen Barresi	City of Virginia Beach	2015-01-05
14-1827	Walter P. Kitonis, III	City of Virginia Beach	2015-01-05
14-1828	Mark A. Compton	City of Virginia Beach	2015-01-05
14-1840	Upper Brandon Plantation	Prince George County	2015-01-05
14-1842	Thomas J. Ruhf, et al	Mathews County	2015-01-05
14-1816	Casey Robinson	City of Virginia Beach	2015-01-06
14-1830	Matthew Calvin, Jr.	King George County	2015-01-06
14-1831	B. George Yount, Jr.	Lancaster County	2015-01-06
15-0001	David Landsberger	Accomack County	2015-01-06
15-0003	Chincoteague Landmark LLC	Accomack County	2015-01-06
15-0005	Scott Boze	Middlesex County	2015-01-06
15-0008	H. R. Purkey	City of Virginia Beach	2015-01-07
15-0011	Vanessa Hummel	Westmoreland County	2015-01-07