

**Virginia Commonwealth University, Center for Environmental Studies**  
**Coastal Management GIS Support & Coastal GEMS**  
**Maintenance: FY12 Annual Report**

October 1<sup>st</sup> 2012 – September 30<sup>th</sup> 2013

NOAA Grant # NA12NOS419

Grant Year FY2012, Task #1.02



**Virginia Coastal Zone**  
MANAGEMENT PROGRAM



## Acknowledgements

This report was prepared by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator. The Coastal GIS Coordinator position is provided through a contract with Virginia Commonwealth University's Center for Environmental Studies and is funded by the Virginia Coastal Zone Management Program at the Virginia Department of Environmental Quality through Grant # NA12NOS419 from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

## Introduction

This report outlines tasks performed and products created under task #1.02 by the Virginia Coastal Zone Management Program's Coastal GIS Coordinator and by staff of Virginia Commonwealth University's Center for Environmental Studies during the grant year FY2012 (October 1st 2012 – September 30th 2013).

This report does not include an image of every map product created for task #1.02 during FY2012. Instead, the images in this report are a sample of the map products created selected to best illustrate each product description.

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## Coastal GEMS Mapping Application

Virginia Commonwealth University's Center for Environmental Studies (VCU CES) continued to host the Coastal GEMS online mapping application through the FY12 grant period and VCU CES staff performed routine maintenance and updates on Coastal GEMS during this time. Tasks were to refresh map services, to update data and cartography in the map file as per CZM staff request, and to install software and security upgrades. Coastal GEMS remained operational throughout the FY12 grant period and was only offline to install software/security updates or to refresh map services.

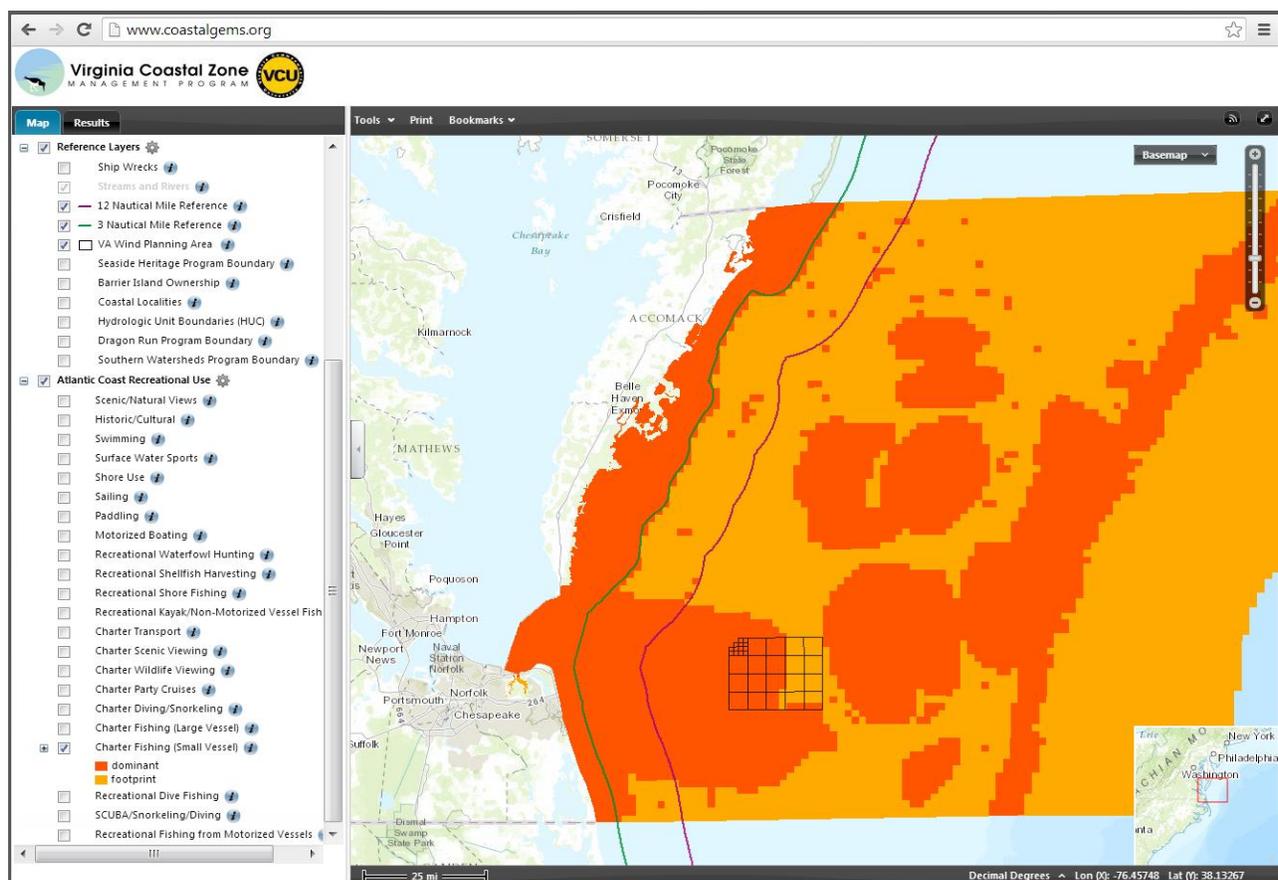
During the FY12 grant period, at CZM staff request, VCU CES staff updated the data and symbology on seven currently in production GEMS layers. The Coastal GIS Coordinator processed GIS data layers for effective display on Coastal GEMS and uploaded layers to VCU to be added to Coastal GEMS. GEMS fact sheets were added/updated where applicable.

Layers updated in this period include: SAV coverage, shellfish condemnation zones, conservation lands, public access lands, Baylor grounds, private oyster leases, and DGIF boat access

At CZM staff request, VCU CES staff added a new map service to the application containing the 22 finalized data layers created through the VA Atlantic Coast Recreational Use Project.

The Coastal GIS Coordinator presented on and gave a live demo of Coastal GEMS v3 at the NC Shoreline Mapping & Coastal Atlas Workshop at the UNC Coastal Studies Institute in Manteo, NC on May 7.

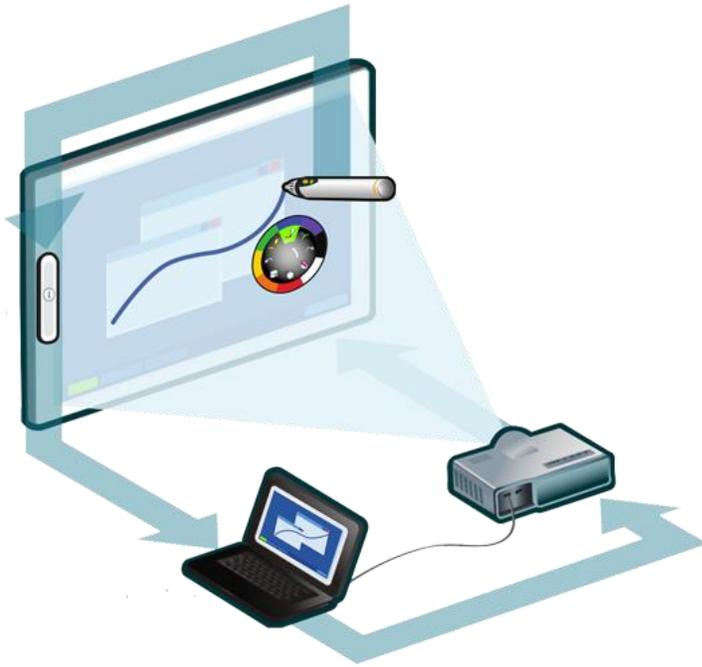
Google Analytics services for Coastal GEMS set up by VCU CES staff remained operational throughout the FY12 grant period. Google Analytics sends an email PDF report to CZM staff weekly to show access and web statistics for the GEMS application and VCU CES staff created additional reports at CZM staff request by querying specific date ranges. From October 1, 2012 to September 30, 2013, Coastal GEMS received 786 visits from 411 unique visitors resulting in 1,131 pageviews and an average site visit time of 2 minutes and 48 seconds. The full Google Analytics report for the Coastal GEMS mapping application during the FY12 grant period can be found in the appendix of this report.



Screenshot from Coastal GEMS showing one of the data layers from the VA Atlantic Coast Recreational Use Mapping Workshop. To see more visit Coastal GEMS at [www.coastalgems.org](http://www.coastalgems.org).

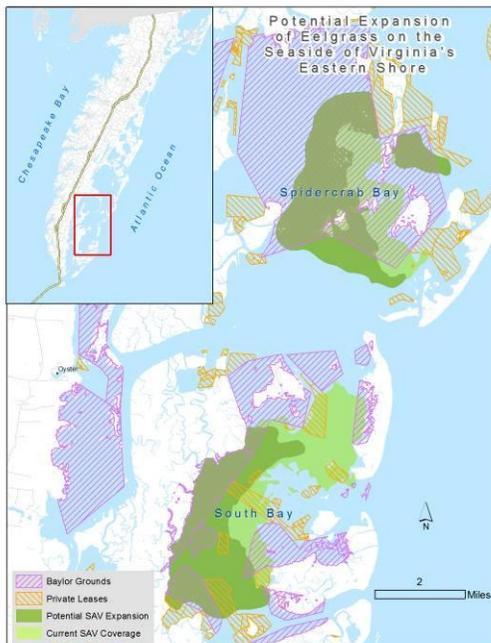
## Participatory GIS

Beginning with the VA Atlantic Coast Recreational Use Workshop in July of 2012, and continuing throughout the FY12 grant period, the VA CZM program has been utilizing a participatory mapping process developed by NOAA's Marine Protected Areas Center to collect spatial data from expert stakeholders. The process utilizes digital whiteboard technology and live GIS to engage participants in the sharing of their collective spatial knowledge.

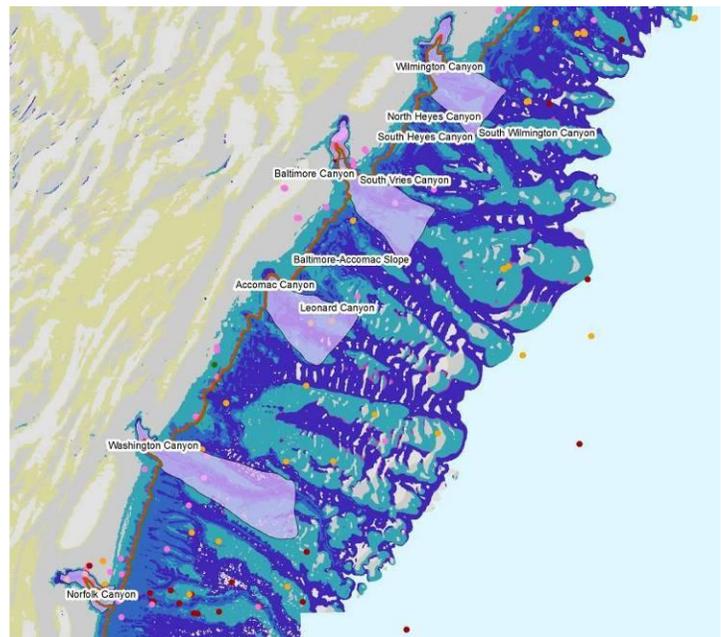


*Diagram of the digital whiteboard hardware utilized by VA CZM for participatory mapping purposes. For participatory mapping, the laptop would be running GIS software and the stylus would be used by participants to draw polygons on the map.*

The Coastal GIS Coordinator worked with Nature Conservancy staff to plan and run a pGIS session for a MAMFC meeting to share spatial knowledge from fishermen and scientists to inform an amendment to protect corals and utilized pGIS tools in a meeting between VMRC and VIMS staff to map potential SAV expansion on the seaside of VA's Eastern Shore.



*Map of potential eelgrass expansion areas on the seaside of Virginia's Eastern Shore using data created with participatory GIS tools.*



*Screenshot showing some of the basemap data layers available to participants at the MAMFC Coral Alternatives Workshop.*

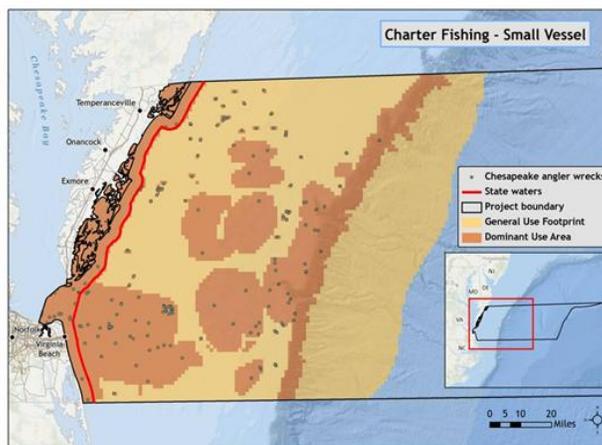
## Participatory GIS continued

The Coastal GIS Coordinator presented at the ES GIS Users Group Symposium on the Virginia Atlantic Coast Recreational Use Mapping Project and helped to plan and run two participatory GIS workshops to map recreational uses off the coasts of Maryland and Delaware.



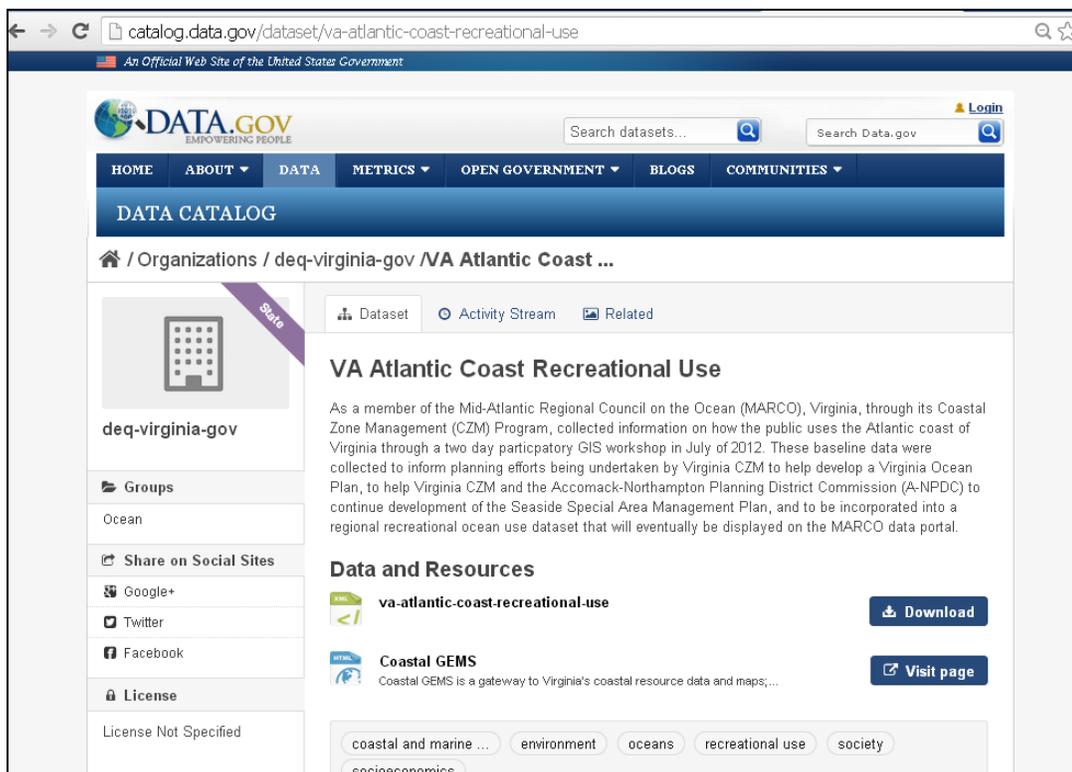
*Left: A participant drawing on the map in a pGIS workshop.*

*Right: Map of processed data collected in a pGIS workshop.*



The Coastal GIS Coordinator processed and uploaded all draft data from VA's Atlantic Coast Recreational Use Workshop to an ArcGIS Explorer online map including use category descriptions and identifiable features and wrote a short step by step tutorial for stakeholders to access and review the interactive maps. The ArcGIS Explorer online map is available at: <http://www.arcgis.com/explorer/?open=7a8b445a339247579a85f6a96fb776f3&extent=-8744521.29699029,4311718.80453884,-8177052.45970874,4666940.99662621>

The Coastal GIS Coordinator updated the Virginia Atlantic Coast Recreational Use metadata to reflect the stakeholder review process and worked with BOEM staff to get registered and post the metadata on data.gov, helping to troubleshoot the process for uploading state level data to Ocean.Data.Gov website.



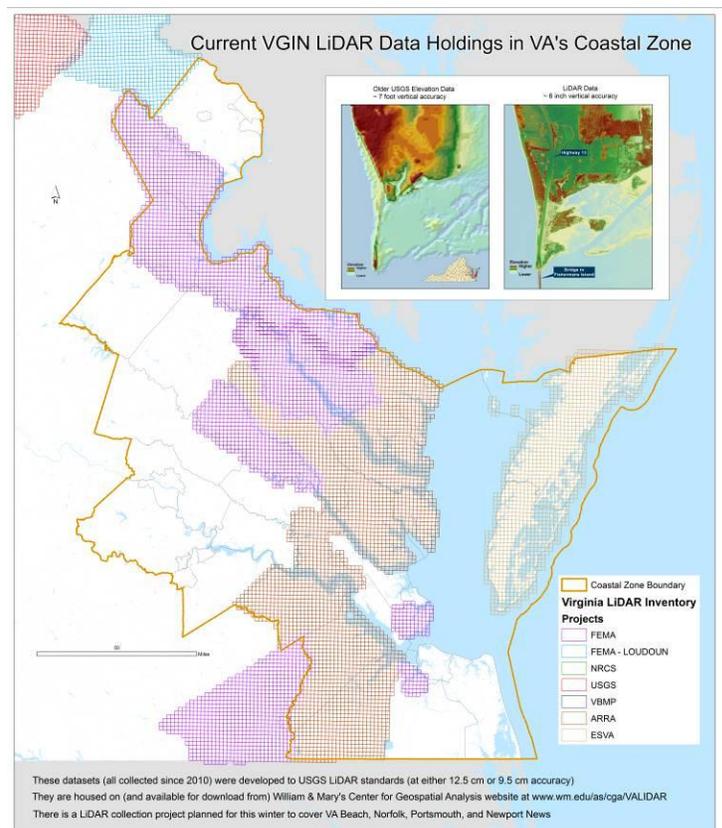
*The finalized metadata from the VA Atlantic Coast Recreational Use Workshop was used as a test case for the process of uploading state data to the national portal, data.gov. The Coastal GIS Coordinator worked with Bureau of Ocean Energy Management staff to troubleshoot the process.*

## Data Liasion Activities

The Coastal GIS Coordinator acted as the VA CZM lead on NOAA's new data sharing policy, reviewing proposals at the request of CZM coastal planners to determine if they require a data sharing policy, fielding questions from CZM grantees, communicating with NOAA staff for further guidance and creating a FAQ document about the new policy.

## GIS Map Products

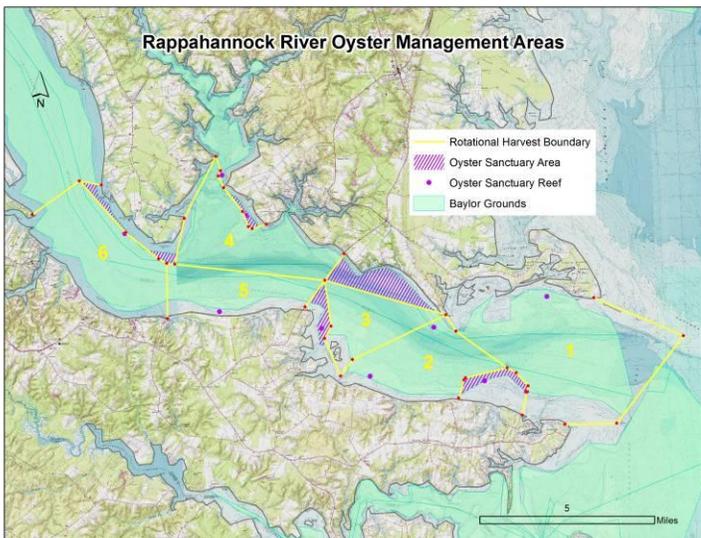
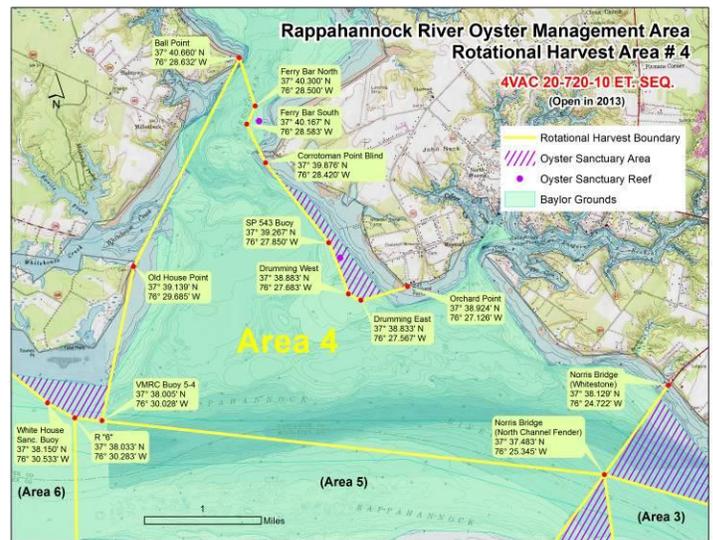
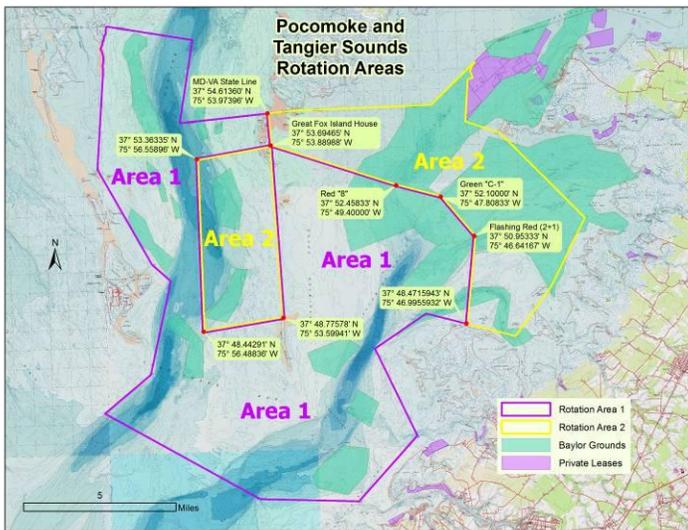
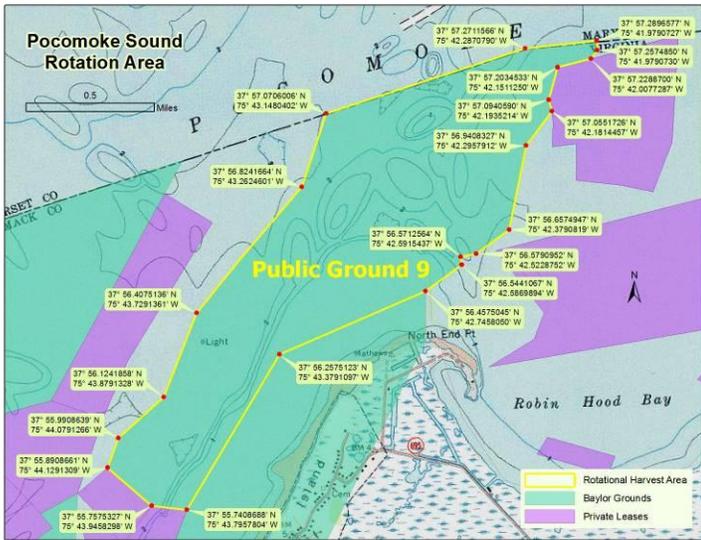
Map products created for CZM staff/partners by the Coastal GIS Coordinator include; a map for ESNWR refuge manager including accurate refuge boundaries, labels, and current aerial imagery for land use planning purposes, a map of current and planned future LiDAR coverage in the Coastal Zone for display at the CZM Coastal Partners Workshop, maps used by VMRC for oyster harvest enforcement including Tangier Pocomoke rotational oyster harvest areas maps, updates to Rappahannock rotational area 4 map and overall Rappahannock rotational harvest areas map, and maps of Pocomoke public grounds 9 and 10, a map of field trip options for the Coastal States Organization Sep 17-19 annual meeting in Norfolk, a map of native plant demo sites on Virginia's Eastern Shore for inclusion in the ES Native plant guide, and maps required for 306a documentation and SHPO clearance for VA CZM funded projects from DCR DNH, VIMS and HRPDC.



*Left: Map produced by request of the Eastern Shore National Wildlife Refuge for land use planning purposes.*

*Above: map of current and planned future LiDAR coverage in the Coastal Zone for display at the CZM Coastal Partners Workshop*

GIS Map Products continued (Oyster Harvest Enforcement)



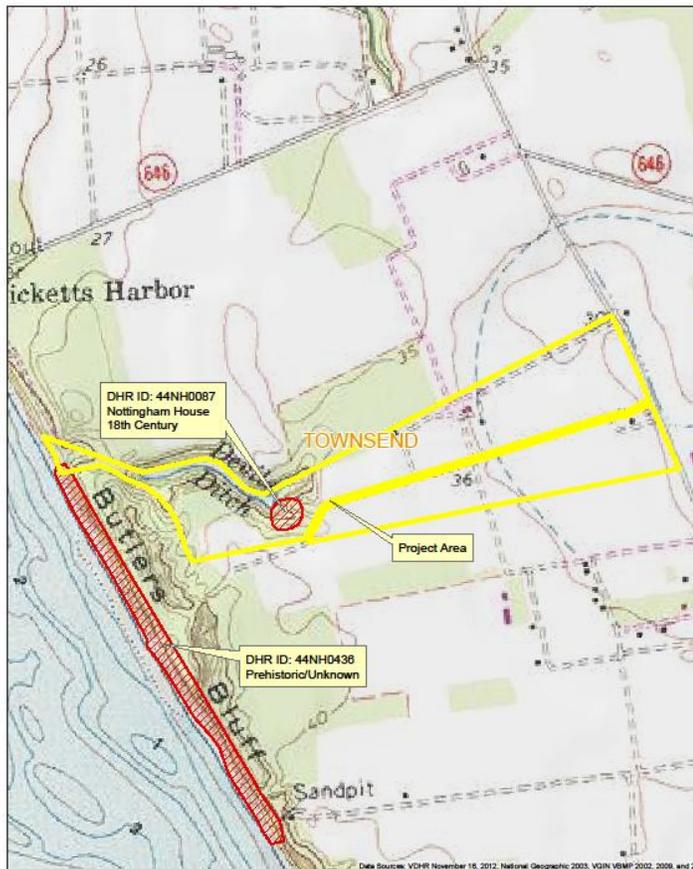
Maps created during the grant period by the Coastal GIS Coordinator for VMRC Conservation and Replenishment staff to utilize for oyster harvest enforcement purposes.

GIS Map Products continued



Left: A map of field trip options for the Coastal States Organization Sep 17-19 annual meeting in Norfolk created at the request of the VA CZM Manager.

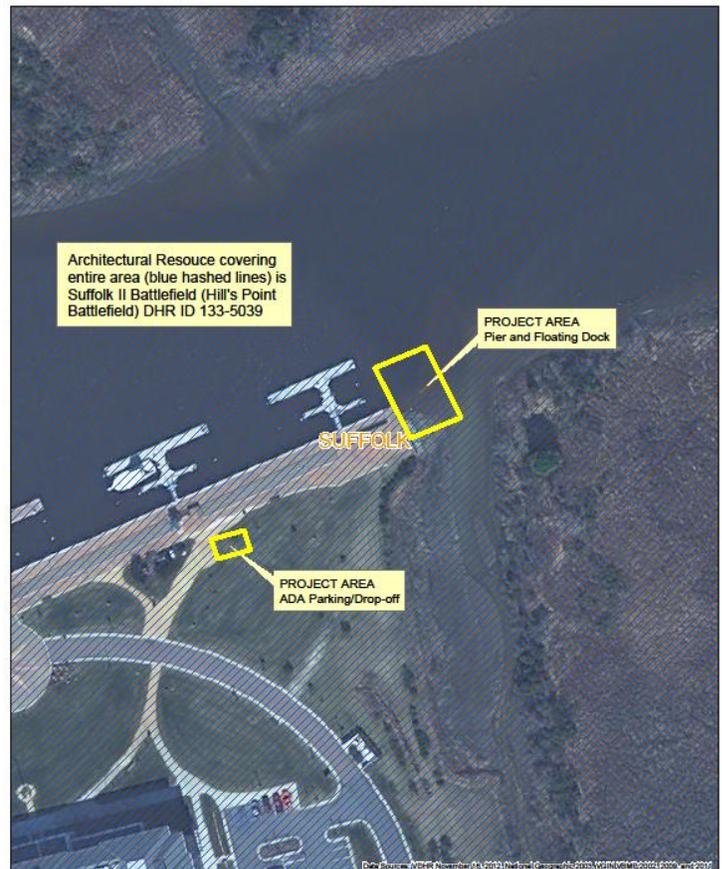
Below: Examples of maps required for 306a documentation and SHPO clearance for VA CZM funded projects created during the grant period by the Coastal GIS Coordinator.



Davis Tract, Pickett's Harbor NAP  
Northampton County, VA  
Quadrangle: Townsend  
VA DCR DNH  
April 4, 2013

1 in = 0.145 miles

- Legend**
- Davis Tract
  - Architectural Resources
  - Archaeological Resources



Public Access - Floating Dock  
Suffolk, VA  
Quadrangle: Suffolk  
HR PDC  
April 4, 2013

1 in = 0.015 miles

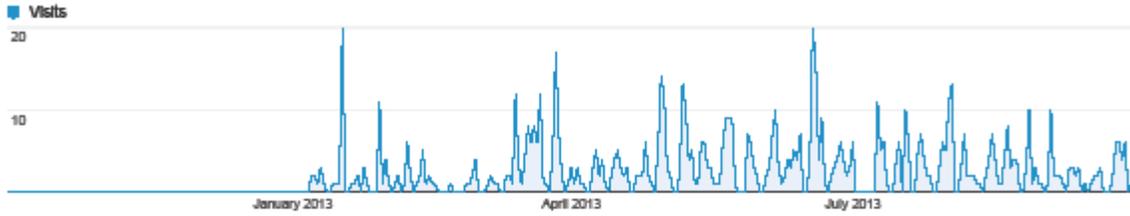
- Legend**
- Architectural Resources
  - Archaeological Resources

Oct 1, 2012 - Sep 30, 2013

**Audience Overview**

All Visits  
100.00%

**Overview**



**411 people visited this site**

<b>Visits</b> 786 	<b>Unique Visitors</b> 411 	<b>Pageviews</b> 1,131 
<b>Pages / Visit</b> 1.44 	<b>Avg. Visit Duration</b> 00:02:48 	<b>Bounce Rate</b> 81.93% 
<b>% New Visits</b> 52.29% 		



Language	Visits	% Visits
1. en-us	779	99.11%
2. en	2	0.25%
3. en-gb	2	0.25%
4. c	1	0.13%
5. en-au	1	0.13%
6. ko	1	0.13%

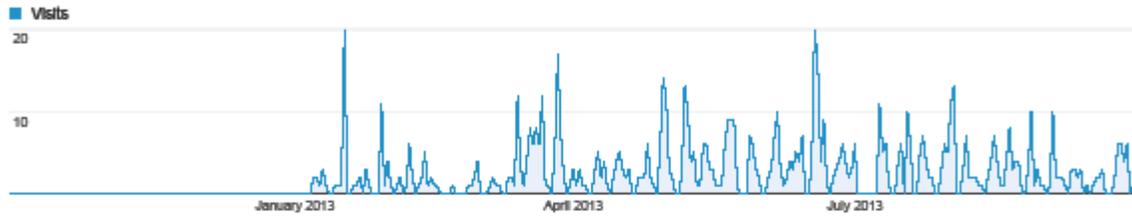
Oct 1, 2012 - Sep 30, 2013

Browser & OS

All Visits  
100.00%

Explorer

Summary



Browser	Acquisition			Behavior			Conversions		
	Visits	% New Visits	New Visits	Bounce Rate	Pages / Visit	Avg. Visit Duration	Goal Conversion Rate	Goal Completions	Goal Value
	786 % of Total: 100.00% (786)	52.42% Site Avg: 52.29% (0.24%)	412 % of Total: 100.24% (411)	81.93% Site Avg: 81.92% (0.00%)	1.44 Site Avg: 1.44 (0.00%)	00:02:48 Site Avg: 00:02:48 (0.00%)	0.00% Site Avg: 0.00% (0.00%)	0 % of Total: 0.00% (0)	\$0.00 % of Total: 0.00% (\$0.00)
1. Chrome	310	37.42%	116	84.84%	1.37	00:04:35	0.00%	0	\$0.00
2. Internet Explorer	290	52.76%	153	79.31%	1.44	00:01:43	0.00%	0	\$0.00
3. Firefox	140	79.29%	111	80.00%	1.54	00:01:49	0.00%	0	\$0.00
4. Safari	37	67.57%	25	83.78%	1.32	00:00:49	0.00%	0	\$0.00
5. IE with Chrome Frame	4	75.00%	3	100.00%	1.00	00:00:00	0.00%	0	\$0.00
6. Android Browser	3	66.67%	2	66.67%	1.33	00:00:16	0.00%	0	\$0.00
7. (not set)	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00
8. BlackBerry	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00

Rows 1 - 8 of 8

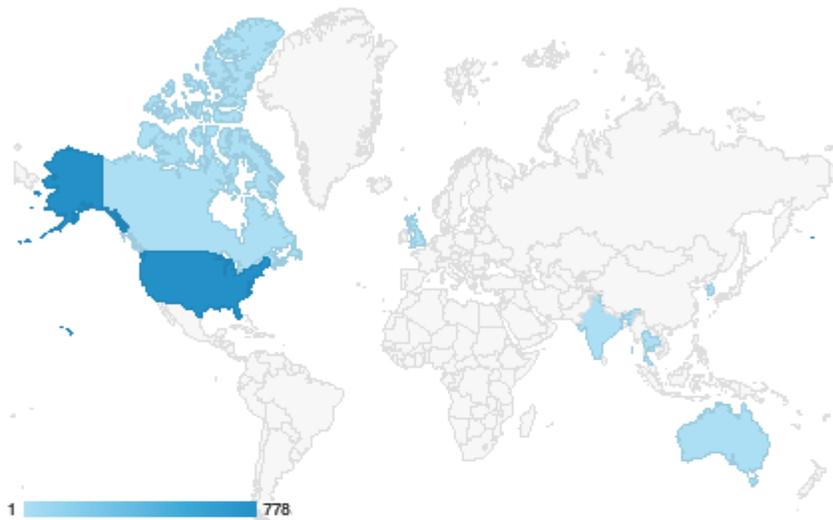
Oct 1, 2012 - Sep 30, 2013

Location

All Visits  
100.00%

Map Overlay

Summary



Country / Territory	Acquisition			Behavior			Conversions		
	Visits	% New Visits	New Visits	Bounce Rate	Pages / Visit	Avg. Visit Duration	Goal Conversion Rate	Goal Completions	Goal Value
	786 % of Total: 100.00% (786)	52.42% Site Avg: 52.29% (0.24%)	412 % of Total: 100.24% (411)	81.93% Site Avg: 81.93% (0.00%)	1.44 Site Avg: 1.44 (0.00%)	00:02:48 Site Avg: 00:02:48 (0.00%)	0.00% Site Avg: 0.00% (0.00%)	0 % of Total: 0.00% (0)	\$0.00 % of Total: 0.00% (\$0.00)
1. United States	778	51.93%	404	81.88%	1.44	00:02:50	0.00%	0	\$0.00
2. United Kingdom	2	100.00%	2	100.00%	1.00	00:00:00	0.00%	0	\$0.00
3. Australia	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00
4. Canada	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00
5. India	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00
6. South Korea	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00
7. Thailand	1	100.00%	1	0.00%	2.00	00:04:57	0.00%	0	\$0.00
8. (not set)	1	100.00%	1	100.00%	1.00	00:00:00	0.00%	0	\$0.00

Rows 1 - 8 of 8