

2009 Annual Report

Accomack – Northampton Coastal Resources Technical Assistance Program



Virginia Coastal Zone Management Program

Accomack-Northampton Planning District Commission

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2009 Technical Assistance Annual Report

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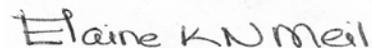
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On the cover – The new Chincoteague Bridge under construction. The bridge opened in 2010 and replaces the former bridge, which had served the island since 1939. The new bridge facilitates traffic to the largest commercial area on the island and also provides direct access to the Assateague National Seashore. Photograph by VDOT.



Virginia Coastal Zone
M A N A G E M E N T P R O G R A M



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1.0 Introduction

The Accomack-Northampton Planning District Commission (A-NPDC) was formed in 1970 to provide planning and housing services on the Eastern Shore of Virginia. A-NPDC is a regional commission consisting of Accomack and Northampton Counties and the Town of Chincoteague. Additionally, the A-NPDC assists 19 incorporated towns on the Eastern Shore.

In response to increased development of the region between 1990 and 2000, the A-NPDC formed the Eastern Shore of Virginia Coastal Management Committee in 2004 to coordinate local efforts to better manage coastal development and its impacts. The A-NPDC coordinates the Coastal Management Committee and offers coastal management training opportunities for local government staff. The A-NPDC also staffs the Eastern Shore of Virginia Groundwater Committee, provides GIS services, conducts state and federal environmental reviews, and works with local governments and organizations to address coastal management issues. The expected outcome is to improve coastal management on the Eastern Shore of Virginia.

As part of the overall mission, the A-NPDC maintains a coastal program with the assistance and support of the Virginia Coastal Zone Management Program and the National Oceanic and Atmospheric Administration (NOAA).

2.0 Executive Summary

The 2009 Fiscal Year (FY2009) program included staff support of the Eastern Shore Coastal Management Committee, coordination of six training and outreach programs; technical assistance to local, state, and federal government organizations; staff support of the Eastern Shore Ground Water Committee, and the development of the Eastern Shore of Virginia Land Use and Ground Water Resources Report. Grant funds were leveraged to aid the completion of multiple projects related to the goals presented in the scope of work for FY2009.

3.0 Products

The following sections describe the activities completed during FY2009 by the A-NPDC.

3.1 Coastal Management Committee Report

The Coastal Management Committee is comprised of local government staff and officials and met four times during FY2009 to coordinate coastal management efforts, provide information and solicit input from localities on state and federal initiatives, and allow the exchange of information between localities. The Committee held four meetings during FY2009. This task implements Executive Order 23, Goal 8.

3.1.1 October 2, 2009 Meeting

The Committee received training regarding the Chesapeake Bay Total Maximum Daily Load Plan (TMDL) by participating in the webinar series hosted by the United States Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (DEQ). Members submitted questions to the webinar hosts regarding the affects the TMDL will have on the Eastern Shore agriculture and aquaculture industries.

The Committee reviewed and discussed proposals for Virginia offshore wind energy projects and potential impacts on the Eastern Shore. The Committee decided to leverage the Certified Planning Commissioners training program and discussed the potential for a public information session on the new broadband network.

3.1.2 February 25, 2010 Meeting

The Committee participated in the second in a series of webinars on the Chesapeake Bay TMDL. The Committee discussed the need for a public outreach campaign on the Eastern Shore that could involve an insert in local newspapers detailing the Chesapeake Bay TMDL and its potential impacts on Eastern Shore agriculture and aquaculture industries.

A review of sea level rise research was presented to the Committee and potential implications for the Eastern Shore were discussed. Staff presented a summary of the North Carolina Sea Level Rise Forum, focusing on current actions and proposed policy changes taking place in North Carolina and potential relevance for the Eastern Shore and coastal Virginia.

3.1.3 September 15, 2010 Meeting

Staff presented draft growth potential maps from the *Eastern Shore of Virginia Land Use and Ground Water Resources Report*. The Committee discussed potential future growth trends in Accomack and Northampton County and provided input in the continued development of the maps. Committee members suggested presenting the outcomes of the final report to each county's Board of Supervisors.

A summary of the Eastern Shore of Virginia Climate Change Workshop was presented to the Committee. The Nature Conservancy hosted a two day workshop on August 18-19, 2010 to bring together multiple community interest groups and stakeholders to discuss and develop adaptation strategies in response to future climate change and sea level rise on the Eastern Shore. The outcomes of the workshop included the development of an Eastern Shore adaptation working group and composed of major stakeholders to continue developing a comprehensive approach to adaptation based on initial strategies discussed at the workshop. Additionally, a LiDAR data users group will be established. The Committee discussed potential implications of climate change and sea level rise on the Eastern Shore's ground water resource. The Committee desired to stay involved with the Nature Conservancy's efforts in developing adaptation strategies.

3.1.4 September 28, 2010 Meeting

The Committee participated in the Chesapeake Bay TMDL webinar series and discussed potential comments to submit during the public comment period. Following the webinar, staff gave a presentation on the geologic evolution of the Chesapeake Bay and the Eastern

Shore of Virginia. The presentation included discussion of geological impacts on ground water resources and quality of surficial soils. Discussion ensued on potential future changes in response to sea level rise and climatic shifts.

3.2 Coastal Management Training Report

The A-NPDC coordinated six training and outreach sessions during FY2009. The sessions are summarized in the following sections. This task implements Executive Order 23, Goal 10.

3.2.1 October 2, 2009 Chesapeake Bay TMDL Webinar Series Training

On October 2, 2009, A-NPDC staff held a training session on the Chesapeake Bay TMDL by hosting a webinar hosted by the EPA and DEQ. The webinar aimed to educate the public on the purpose and workplan for the TMDL. Presenters included personnel from several state and federal agencies. Participants submitted questions to the webinar hosts regarding the affects the TMDL will have on the Eastern Shore agriculture and aquaculture industries. Following the training, the five attendees discussed potential implications the plan could have on the Eastern Shore. The attendees indicated the webinar was beneficial and requested additional training on the TMDL in the future.

3.2.2 Native American Heritage Festival

The Fifth Annual Native American Heritage Festival was held on Chincoteague Island at the Downtown Waterfront Park on November 14, 2009. Many tribes including the Assateagues, Accohannocks and Nanticokes came together to share their heritage and culture in honor of Native American Heritage Month. The event included displays of local artifacts and demonstrations of traditional skills such as flint knapping, corn grinding, storytelling, beading, primitive technology, and Native flute and dance styles. The festival was very well attended by 50 people and has become a favorite of Chincoteague and regional residents. The VCZM and NOAA logos were credited on the announcement posted to the Chincoteague Cultural Alliance website (www.chincoteagueculturalalliance.org) and on all event flyers and posters. Photographs from the Festival are included in **Appendix A**.

3.2.3 Certified Planning Commissioners Training

The A-NPDC coordinated the Virginia Certified Planning Commissioners' Program training for local planning commissioners and staff in January – March, 2010. The training, sponsored by the Citizens Planning Education Association of Virginia, is typically held in Charlottesville, Virginia. The six participating jurisdictions and 32 participants were not required to travel great distances as result of the training program being held locally. The training consisted of three all-day classroom sessions held in Onley, Virginia and weekly homework and reading assignments. Participants described the program as extremely informative and beneficial.

3.2.4 February 25, 2010 Chesapeake Bay TMDL Webinar Series Training

On February 25, 2010, A-NPDC staff held a training session on the Chesapeake Bay TMDL by hosting a webinar hosted by the EPA and DEQ. The webinar provided an update on progress being made by the involved states for the TMDL. Presenters included personnel from several state and federal agencies. Participants submitted questions to the webinar hosts regarding the affects the TMDL will have on the Eastern Shore agriculture and aquaculture industries. Following the training, the seven attendees discussed potential implications the plan could have on the Eastern Shore. Attendees included representatives from local governments and state and federal agencies.

3.2.5 Ground Water Committee Public Workshop

The Ground Water Committee held the first of two annual public workshops on Wednesday, June 9 at Shore Bank Headquarters in Onley, Virginia. The workshop was well attended by 40 persons from town and county governments and planning commissions, private citizens, and businesses. Britt McMillan, Consulting Hydrologist to the Committee of Malcolm Pirnie, Inc., gave a presentation on the hydrogeology of the Eastern Shore with focus on groundwater supply and gave a brief overview of the draft Water Supply Plans for Accomack and Northampton Counties. The workshop was advertised in local newspapers,

on the radio, and on the internet. Britt's presentation was received with great enthusiasm and prompted many questions and discussions. Photos from the workshop and the announcement flyer are included in **Appendix B**.

3.2.6 September 28, 2010 Chesapeake Bay TMDL Webinar Series Training

On September 28, 2010, A-NPDC staff held a training session on the Chesapeake Bay TMDL by hosting a webinar hosted by the EPA and DEQ. The webinar was the final update from EPA and DEQ prior to the beginning of the public comment period on the TMDL. The update included feedback from the EPA regarding the states proposed Bay cleanup plans. Presenters included personnel from several state and federal agencies. Participants submitted questions to the webinar hosts regarding the affects the TMDL will have on the Eastern Shore agriculture and aquaculture industries. Virginia's proposed regulatory changes were deemed inadequate by the EPA. Following the training, the three attendees discussed potential implications the plan could have on the Eastern Shore and discussed potential options for comment from the Coastal Management Committee and/or the Ground Water Committee.

3.3 Technical Assistance Report

The A-NPDC provided technical assistance to local, state, and federal organizations on numerous occasions including environmental review, GIS, and information services during FY2009. Technical assistance activities are summarized in the following sections. This task implements Executive Order 23, Goals 1, 4, and 10.

3.3.1 Partnerships

The A-NPDC partnered with eight agencies during FY2009 to complete projects aimed to complete the Scope of Work. **Table 1** summarizes A-NPDC partnerships for FY2009.

Table 1
FY2009 Partnerships

ID	Agency/Group	Partnership Activity
1	VA DEQ	A-NPDC staff partnered with the VA DEQ to develop Water Supply Plans for Accomack and Northampton County.
2	USDA-NRCS	A-NPDC staff coordinated with the USDA-NRCS Accomack Office to produce educational items for the Eastern Shore Watershed Walk held at the Onancock Harbor Fest in September 2010. The handouts developed aimed to educate local youth on the Eastern Shore's sensitive and limited ground water resources. The display received over 100 visitors.
3	Friends of Onancock School	A-NPDC staff developed a working relationship with FOS in FY2009 to develop a strategic plan for renovating the Historic Onancock School located on 14 waterfront acres in the heart of Onancock and the ESVA. A-NPDC will work with FOS using VCZM funds in FY2010 to develop the strategic plan.
4	Wachapreague Seaside Park Committee	A-NPDC staff partnered with the park committee to attain grant funding and develop strategic plan to purchase and construct the Seaside Park on the waterfront in the heart of Wachapreague.
5	Eastern Shore Watersheds Network	A-NPDC staff served on the Steering Committee of the ESVA Watersheds Network in FY2009. The network is a local watershed group that began meeting annually in 2001 to address pollution reduction strategies for ESVA watersheds through public education and outreach, data sharing, and research communication.
6	The Nature Conservancy	A-NPDC staff partnered with TNC in an effort to assess expected environmental impacts in response to climate change and sea level rise on the ESVA. The workgroup consists of local stakeholders and works to develop and implement adaptation strategies.
7	ESVA Resource Conservation & Development Council	A-NPDC staff partnered with RC&D to apply for funding to implement a restoration project for Onancock Creek to provide baseline water quality information for achieving anticipated nutrient and sediment reductions under the Chesapeake Bay TMDL.

8	Town of Tangier	A-NPDC staff partnered with the town to facilitate the construction of the new Tangier Island Community Health Center. Opening ceremonies were held on August 29, 2010 and were attended by Governor McDonnell.
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3.3.2 Leveraged Funds

The A-NPDC used VCZM grant funds to leverage services and complete projects aimed at improving coastal management on the Eastern Shore of Virginia. **Table 2** summarizes instances where VCZM grant funds were leveraged during FY2009.

<p align="center">Table 2 FY2009 Leveraged Funds</p>		
ID	Agency/Group/ Event	Activity
1	Wachapreague Seaside Park	A-NPDC staff successfully facilitated the purchase and construction of the Seaside Park and successfully completed the VCZM grant award process to develop a Plant ES Natives Demonstration Garden (\$185,958 for purchase and construction, \$14,000 for demo garden).
2	Malcolm Pirnie, Inc.	Eastern Shore Ground Water Committee funds used to support consulting hydrogeologist to the Eastern Shore Ground Water Committee (\$21,666 in FY2009).
3	ESVA Septic Pumpout Program	A-NPDC staff successfully completed the VDCCR-CBLAD grant award process to implement a pumpout program for low to moderate income residences in the Chesapeake Bay watershed. (\$10,000 in FY2009).
4	Household Hazardous Waste Collection	Eastern Shore Ground Water Committee funds used to hold collection in Chincoteague, VA on May 8, 2010. Collection was greatest success in the seven year history of the program bringing in nearly 3.5 tons of hazardous waste. (\$4,695 in FY2009).
5	VA Certified Planning Commissioner Training	A-NPDC leveraged training for 32 planning commissioners and staff from January-March, 2010 in Onley, VA. (Staff time leveraged with VCZM funds).
6	Shellfish TMDL Implementation	A-NPDC served on the advisory committee to develop a prioritization scheme for shellfish-growing watersheds in VA.

	Advisory Committee	Meetings were held in Richmond and Gloucester Point during FY2009. (Staff time leveraged with VCZM funds).
7	APA ESVA Planning Symposium	A-NPDC staff participated in the ECO ³ -Planning, Development, & Tourism Symposium in Chincoteague, VA on October 16-17, 2009. The symposium focused on developing strategies for sustainable development on the Eastern Shore. (Staff time leveraged with VCZM funds).
8	Captain John Smith Chesapeake National Historic Trail	A-NPDC staff participated in the public workshop held at the Barrier Islands Center on October 19, 2009 regarding plans for the trail. Staff provided input regarding planning for the Eastern Shore's section of the trail. (Staff time leveraged with VCZM funds).
9	ESVA Economic Development Public Workgroup	A-NPDC staff facilitated public workgroup sessions in Accomack and Northampton Counties on October 28 and 29, 2009 to develop economic development strategies for each county. (Staff time leveraged with VCZM funds).
10	Science & Philosophy Seminar	A-NPDC staff attended the seminar on stormwater management on the Eastern Shore on October 30, 2009 at the Eastern Shore Community College. (Staff time leveraged with VCZM funds).
11	MACOORA Conference	A-NPDC staff participated in the annual Mid Atlantic Coastal Ocean Observing Regional Association conference in Portsmouth, VA on November 17-18, 2009. (Staff time leveraged with VCZM funds).
12	MARCO Conference	A-NPDC staff participated in the annual Mid-Atlantic Regional Council on the Ocean in New York, NY on December 9-10, 2009. (Staff time leveraged with VCZM funds).
13	NCDENR Sea Level Rise Forum	A-NPDC staff participated in the forum in Raleigh, NC on January 14-15, 2010. Staff gained understanding of progress made in NC on sea level rise policy. (Staff time leveraged with VCZM funds).
14	VDCR-DNH Data Explorer Training	A-NPDC staff received historic research training in Richmond, VA on January 21, 2010. (Staff time leveraged with VCZM funds).
15	Accomack Co. Green Living Workshop	A-NPDC staff participated in the workshop to help develop the Blue/Green Infrastructure Study for the county in Onley, VA on March 9, 2010. (Staff time leveraged with VCZM funds).
16	Envirothon Competition	A-NPDC staff judged the Eastern Shore regional Envirothon Competition held at the Eastern Shore of Virginia National Wildlife Refuge on April 12, 2010. Three local high school teams gave presentations on Northampton County's ground

		water resources and designed manage strategies to sustain the resource while allowing for development. (Staff time leveraged with VCZM funds).
17	ESVA Garbage Summit	A-NPDC staff participated in the summit in Onley, VA on April 22, 2010. The summit brought numerous local stakeholders together to discuss waste management on the Eastern Shore. (Staff time leveraged with VCZM funds).
18	Eastern Shore Science Fair	A-NPDC staff judged the regional Science Fair on April 24, 2010 at the Eastern Shore Community College. (Staff time leveraged with VCZM funds).
19	NOAA Coastal Habitats Conservation in a Changing Climate Conference	A-NPDC staff participated in the conference in Wilmington, DE on June 21-23, 2010. The conference brought together stakeholders from the Mid-Atlantic region to assess expected impacts and vulnerability and develop actions for promoting climate resilient habitats. (Staff time leveraged with VCZM funds).
20	Climate Change Impacts on ESVA Uplands Workshop	A-NPDC staff participated in the workshop held by the Nature Conservancy in Brownsville, VA on July 28, 2010 to assess expected climate change impacts on ESVA uplands and develop adaptation strategies. (Staff time leveraged with VCZM funds).
21	VA PDC Conference	A-NPDC staff participated in the annual VA PDC conference in Virginia Beach, VA on July 29-30, 2010. (Staff time leveraged with VCZM funds).
22	VA GIS Conference	A-NPDC staff participated in the annual VA GIS conference in Richmond, VA on September 20, 2010. (Staff time leveraged with VCZM funds).
23	ESRI GIS Subscription	An annual subscription to GIS services was leveraged using VCZM funds (\$400 in FY2009).
24	VDHR Data Sharing System Subscription	An annual subscription to the VDHR-DSS historical review online tool was leveraged using VCZM funds. (\$500 in FY2009)

3.3.3 Historical Searches

Thirty five historical searches were performed by A-NPDC staff during FY2009. VCZM and NOAA funds were used to partially subscribe to the Department of Historic Resources Data Sharing System (DSS). Without local availability of DSS, numerous agencies on the Eastern Shore would be required to pay \$100 to \$150 per search. Each environmental review corresponds with a historical search. **Table 3** summarizes the historical searches.

Table 3
FY2009 Historical Searches

ID	Date	Search Description
1	March, 2010	Search performed for property at 4219 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
2	March, 2010	Search performed for property at 4255 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
3	March, 2010	Search performed for property at 4527 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
4	March, 2010	Search performed for property at 4275 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
5	March, 2010	Search performed for property at 4299 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
6	March, 2010	Search performed for property at 4311 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
7	March, 2010	Search performed for property at 5067 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
8	March, 2010	Search performed for property at 4363 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
9	March, 2010	Search performed for property at 4383 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
10	March, 2010	Search performed for property at 4401 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
11	March, 2010	Search performed for property at 4515 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community

		Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
12	March, 2010	Search performed for property at 5073 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
13	March, 2010	Search performed for property at 22086 Aster Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
14	March, 2010	Search performed for property at 5083 Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
15	March, 2010	Search performed for property at 22145 Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
16	March, 2010	Search performed for property at 22170 Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
17	March, 2010	Search performed for property at 22138 Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
18	March, 2010	Search performed for property at 22128 Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
19	March, 2010	Search performed for property at 22056 Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
20	March, 2010	Search performed for property at 22070 Aster Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
21	March, 2010	Search performed for property without a 911 address on Culls Drive in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.

22	March, 2010	Search performed for property without a 911 address on Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
23	March, 2010	Search performed for property without a 911 address on Raymond Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
24	March, 2010	Search performed for property without a 911 address on Aster Lane in Cape Charles, VA to fulfill Virginia Department of Housing and Community Development (VDHCD) Virginia Community Development Block Grant Program requirements for Housing Rehabilitation, which include Virginia Department of Historical Resources (VDHR) Project Review.
25	April, 2010	Search performed for property at 6429 Broadwater Circle in Oyster, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
26	April, 2010	Search performed for property at 6433 Broadwater Circle in Oyster, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
27	April, 2010	Search performed for property at 6488 Broadwater Circle in Oyster, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
28	June, 2010	Search performed for property at 13313 Evans Farm Road in Pungoteague, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
29	June, 2010	Search performed for property at 11380 Hacks Neck Road in Hacks Neck, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
30	June, 2010	Search performed for property at 15238 Locust Street in Onancock, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
31	June, 2010	Search performed for property at 20663 Deep Creek Road in Onancock, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
32	June, 2010	Search performed for property at 20087 Savage Lane in Onancock, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
33	June, 2010	Search performed for property at 13360 Cattail Road in Mears, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
34	June, 2010	Search performed for property at 10018 Marsh Market Road in Hallwood, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.
35	June, 2010	Search performed for property at 3908 Church Street in Greenbackville, VA to fulfill the FEMA HMGP Elevation Project requirements, which include a VDHR Project Review.

3.3.4 Information Requests

The A-NPDC responded to seventeen information requests from private, local, state, and federal organizations and private citizens during FY2009. These requests are summarized in **Table 4**. Additional information requests were completed, but not documented.

Table 4				
FY2009 Information Requests				
ID	Date	Agency/Group	Contact	Request Description
1	October 13, 2009	Eastern Shore Community College	Bryan Smith	Accomack and Northampton demographics request
2	March 12, 2010	Private Citizen	Octavia Moore	Statistical and descriptive housing request for Exmore
3	March 12, 2010	Star Transit	---	Alternative Transportation Study Report request
4	March 17, 2010	VA Dept. of Conservation and Recreation	Shawn Smith	Town Zoning and Subdivision Ordinance Request
5	March 18, 2010	Renaissance High School, Charlottesville	William Patrick Brown	ESVA Ground Water resource management query
6	March 25, 2010	Accomack County	Jim McGowan	Stormwater Management query
7	March 29, 2010	Planning and Zoning Resource Corp.	Rhonda Cain	Keller Zoning Ordinance request
8	April 12, 2010	ESVA Community Services Board	Joe Bulin	Accomack and Northampton Co. demographics info request
9	April 29, 2010	Springsted Consultants	Rebecca Trepanier	ESVA incorporated town query
10	June 3, 2010	Accomack County	Vanlue Morgan	Wachapreague, Parksley, and Melfa demographics request

11	June 9, 2010	Accomack County	Jim McGowan	Water Supply Plan request
12	August 16, 2010	Private Citizen	Steven Wright	Household Hazardous Waste query
13	August 18, 2010	Private Citizen	Joann Labor	Household Hazardous Waste query
14	September 8, 2010	Private Citizen	Adam Balli	Bloxom Zoning and Subdivision Ordinance request
15	September 9, 2010	Private Citizen	Caroline Shields	Protect Your Ground Water Day inquiry
16	September 10, 2010	Private Citizen	Janis Jones	Household Hazardous Waste query
17	September 21, 2010	Private Citizen	Patrick O'Brien	Household Hazardous Waste query

3.4 Ground Water Committee Report

The A-NPDC staffed the Eastern Shore of Virginia Ground Water Committee and managed the Ground Water Committee's consulting hydrogeologist during FY2009. A-NPDC staff coordinated ground water permit reviews with DEQ and local aspects of the ground water model update developed by USGS. A-NPDC staff also maintained and updated the Ground Water Committee web site and conducted educational programs including a public workshop held in June 2010. During FY2009, the Ground Water Committee held 9 meetings, awarded the 2009 Eastern Shore Ground Water Award, sponsored Protect Your Ground Water Day on the Eastern Shore, commented on multiple regulatory actions, reviewed ten ground water withdrawal permits, and presented stormwater information to the Accomack County Board of Supervisors. The Committee served on the Virginia Ground Water Withdrawal Regulatory Advisory Panel. The consulting hydrologist to the Ground Water Committee produced the *Eastern Shore Ground Water Committee FY2009 Annual Progress Report*, which is included as **Appendix B**. The Ground Water Committee Report implements Executive Order 23, Goals 2 and 10.

3.4.1 October 20, 2009 Meeting

The Committee reviewed one Virginia Water Protection (VWP) application pertaining to dredging of the Onancock Creek channel. The Captain John Smith National Historic Trail was discussed and staff were encouraged to participate in planning the Eastern Shore's section of the trail. The Committee reviewed four informational items involving local, regional, and national ground water quality issues. The Committee discussed the Chesapeake Bay TMDL regulations and requested a briefing on the matter during the November meeting. The Committee discussed potential funding options for developing a brochure to inform the public on septic usage. A motion was unanimously supported to draft a letter of support to the State Conservationist for an increase in funding to the Ground Water Resource of Concern fund following a presentation by USDA-NRCS staff regarding local need for funding from this source.

The 2008 Annual Report was presented and it was recommended that the Committee continues holding public workshops based on the past success of previous workshops. The Committee supported the recommendation and decided to hold two workshops per year. The Consultant to the Committee gave an update on the status of the final version of the Ground Water Model for the Eastern Shore. He informed the Committee of a presentation on Ground Water Sustainability on the Eastern Shore presented at the American Waterworks Association meeting in Richmond. The presentation was well received and attended. The Committee continued discussions on potential workshops and agreed that October and June were the best times to hold workshops. Potential workshop topics for this year included xeriscaping and septic systems.

3.4.2 November 17, 2009 Meeting

The Committee discussed nominations for the 2009 Eastern Shore Ground Water Award and voted to award Robin Rinaca, General Manager of Eastern Shore Nursery of Virginia, for her efforts in Ground Water protection and preservation. The Committee's consulting

hydrogeologist, Britt McMillan, was given approval to complete Water Supply Plans for Accomack and Northampton Counties. A Federal Consistency Determination from the DEQ for the Maintenance Dredging of Onancock River project proposed by the USACE was reviewed. Staff briefed the Committee on Concentrated Animal Feeding Operations (CAFO) and their impacts on water quality on the Eastern Shore. Discussion ensued and the Committee requested to invite a local expert on the issue to speak to the Committee on the subject.

The consultant updated the Committee of the closure of the International Paper Mill in Franklin. The mill used approximately 36 million gallons of water per day and was the largest user of ground water in the state. The ground water withdrawal permit expires in December 2009. Mr. McMillan noted the town of Smithfield cannot apply for a withdrawal permit until International Paper withdraws the current permit.

The consultant updated the Committee on the Ground Water Withdrawal Regional Advisory Panel (RAP) application process. The RAP is addressing efficiency problems in the process, which include a lack of staff, need for streamlining the process, and justification for need.

3.4.3 December, 2009 Meeting

No meeting was held during this month.

3.4.4 January 19, 2010 Meeting

The Committee awarded the 2009 Groundwater Award Robin Rinaca, General Manager of Eastern Shore Nursery of Virginia, for her efforts in ground water protection and preservation. Nick Covatta was present to accept the award on her behalf. Ms. Rinaca was recognized for promoting and implementing water quality and conservation measures. Ms. Rinaca helped convert the nursery from field to container grown and in turn, greatly reduced the amount of water needed for daily operations. Additionally, the land was re-

engineered so as to incorporate state of the art practices as related to water conservation, recycling and reuse of water, pollution prevention, recharge area protection and preservation, and aquifer recharge. All of this was accomplished on an entirely voluntary basis. Furthermore, Ms. Rinaca served on numerous local and state committees and has long been an advocate for environmental education.

Bill Satterfield, Executive Director of Delmarva Poultry Industry, Inc., presented an overview of CAFO. The presentation included information on the state and federal CAFO permitting process and ground water conservation measures being practiced in CAFO operations. The presentation was well received by the Committee and multiple discussions among Committee members ensued.

The Committee discussed the planned construction of a Hampton Inn hotel in the Cheriton-Cape Charles area. The site location is within the Kings Creek watershed and proximal to wetlands near the headwaters of the creek. The developer stated that runoff concerns had been overlooked and would be included in the site plans going forward. It was reinforced that it is necessary for the Committee to stay involved with local planning commissions regarding environmental concerns as development on the Eastern Shore continues.

The Committee reviewed a re-application for a Ground Water Withdrawal Permit for the Commonwealth Chesapeake Power Station near New Church. The Committee was involved with the initial power plant permit application and worked with the company to have water withdrawn from the water table aquifer as opposed to the Yorktown. The re-application is similar in terms of withdrawal as originally proposed in the initial application.

The consultant updated the Committee on progress being made by the RAP. The RAP addressed management and regulation of the water table aquifer. A set of questions regarding management of the water table aquifer were developed for the RAP to address.

The Committee moved to draft a letter in support of hiring a Water Quality Specialist at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia.

3.4.5 February 16, 2010 Meeting

The Committee nominated and elected a Chairman and Vice Chairman to serve through the remainder of the fiscal year. Discussion ensued regarding the EPA's role in the Chesapeake Bay TMDL development and the EPA's new regulations for CAFOs and stormwater. The Committee requested that Clifton Bell of Malcolm Pirnie give a presentation on these issues during the March 2010 meeting. The Committee moved to hold this year's Hazardous Household Waste Collection during the Mother Earth Day Festival on Chincoteague on May 5. The Committee moved for Curt Smith to serve on the Shellfish TMDL Implementation Advisory Committee.

A re-application for a Ground Water Withdrawal Permit for the Silver Beach YMCA was reviewed. The re-application was similar in terms of withdrawal as originally proposed in the initial application.

The consultant updated the Committee on progress being made by the RAP. The RAP had addressed water conservation and management needs. It was suggested that the Committee review the RAP during the April meeting while the DEQ made changes to be prepared to comment when the comment period begins.

3.4.6 March 16, 2010 Meeting

The Committee discussed potential topics to be addressed during the first of two annual public workshops. It was agreed that public workshops would be held June and October of each year with talks concentrated on input from the consulting hydrologist. The following series of topics were tentatively scheduled:

June 2010 – General ground water system (Britt McMillan)

October 2010 – Ground water quality: threats and impacts (Britt McMillan)

June 2011 – Ground water usage (Britt McMillan)

October 2011 – TMDL presentation

The consultant gave a presentation to the Committee summarizing data from project documents for a proposed spray irrigation project at the North Accomack Landfill. Several concerns regarding the potential environmental impacts were identified and several items were found to be lacking from the investigation. Discussion ensued regarding details of the project and the Committee decided that Mr. McMillan draft comment letters to the EPA's Sole Source Aquifer (SSA) Program and Accomack County.

The Committee heard from NASA-WFF employees Paul Bull and Josh Bundick regarding NASA's Draft Preliminary Environmental Impact Statement for the Shoreline Restoration and Infrastructure Protection Program (SRIPP) and the Draft Environmental Assessment for the Alternative Energy Project at Wallops. Discussion ensued regarding details and potential environmental impacts for each project and the Committee moved to draft letters of support for both projects.

Mr. Clifton Bell gave a presentation on stormwater and Chesapeake Bay TMDL regulation developments and their impacts on Virginia. Mr. Bell reviewed the existing Virginia stormwater regulations, last revised in 2004, and described the current scheduled revisions to be completed near the end of 2011. An update on the Chesapeake Bay TMDL included a

description of the EPA's schedule and process, potential consequences of new regulations, and a summary of Virginia's preliminary goals for agriculture and urban/suburban development. Following the presentation, discussion ensued on potential impacts specific to the Eastern Shore.

3.4.7 April 20, 2010 Meeting

The consultant updated the Committee on the outcome of the most recent meeting of the RAP. It was indicated that several key items were omitted from the draft Groundwater Withdrawal Regulations including provisions encouraging water table withdrawal and provisions to simplify minor withdrawals. The Committee decided to continue pursuing to have the recommendations adopted by the RAP and moved to draft a letter to DEQ proposing that regulatory language be included in the draft Ground Water Withdrawal Regulations. The consultant informed the Committee that the Groundwater Withdrawal Regulations will officially be on the State Water Control Board (SWCB) agenda after May 13. It was suggested that the Committee and Counties submit letters to the SWCB voicing the concerns.

The Committee discussed and planned the Household Hazardous Waste Collection to be held on Chincoteague in conjunction with the Mother Earth Day Festival.

Staff presented a review of Luckenbach et al.'s June 2008 report entitled *Evaluating the Relationship between Impervious Surfaces within Watersheds and Coastal Water Quality on Virginia's Eastern Shore*. The study revealed that the presence of impervious surfaces within the watershed contribute to loadings of bacteria, sediment, and nutrients. The study concludes that minimizing the amount of impervious surface within a watershed should be part of an integrated approach to preserving water quality. The study was considered in the *Land Use and Groundwater Resources Report*.

3.4.8 May 18, 2010 Meeting

Staff reported that the 2010 Household Hazardous Waste Collection was the most successful in the history of the program with nearly 100 participants bringing in 7,326 pounds of hazardous waste. Staff indicated that advertizing efforts and holding the collection in conjunction with a local festival were the key to making the event such a great success. The first of two annual public workshops was scheduled for Wednesday, June 9 at Shore Bank Headquarters in Onley. Britt McMillan was scheduled to present on the hydrogeology of the Eastern Shore with focus on the groundwater supply. The Committee reviewed a reissuance of a VPDES permit for Landmark Sewer, LLC's discharge of treated domestic waste on Chincoteague. The Committee reviewed one informational item on residential water use and water conservation opportunities in Virginia Beach. The Committee also moved to draft a letter of support for an increase in funding for the EQIP Program.

Staff updated the Committee that Curt Smith participated on the Shellfish TMDL IAC meeting in Richmond on April 21. The IAC developed criteria for prioritizing the development of Shellfish TMDLs in the state. The IAC developed a prioritization process consisting of three tiers based on location and resources, probability of success in meeting water quality standards or improving water quality, and local interests to support implementation. A draft summary was included for review. A second meeting was scheduled for May 19 and will aim to continue refining these criteria and begin identifying watersheds of highest priority.

The consultant reviewed comments made to DEQ regarding concerns with the draft Groundwater Withdrawal Regulations and discussed potential comments for future letters to the State Water Control Board with the Groundwater Withdrawal Regulations. The consultant also reviewed the Drought Response and Contingency Plan sections from the

draft Water Supply Plans for Accomack and Northampton Counties. The Drought Response and Contingency Plans include tiered stages of drought severity and corresponding contingency plans.

3.4.9 June 9, 2010 Meeting

The Committee held this meeting in conjunction with a public workshop at Shore Bank Headquarters in Onley, Virginia. The meeting is described in detail in **Section 3.2.5**. This workshop was the first of two in a series of annual public workshops intended to present topical information on ground water related issues for the Eastern Shore to the public. Britt McMillan of Malcolm Pirnie, Inc. gave a presentation entitled “Our Eastern Shore Ground Water: Part I – Where is the ground water and how much is there? With an overview of Accomack and Northampton County’s Water Supply Plans”. The presentations was followed by a discussion session for questions and answers.

3.4.10 July, 2010 Meeting

No meeting was held during this month.

3.4.11 August 17, 2010 Meeting

The Committee held elections for FY2011. Vice Chairman Wanda Thornton was elected as Chairman by acclamation. Chairman Larry Trala was elected as Vice Chairman by acclamation.

The June Public Workshop was reviewed and future plans for the series were discussed. The Committee decided to focus the next workshop on the draft Water Supply Plans for Accomack and Northampton County. The Committee also decided to post the draft plans on the website.

Staff informed the Committee that the Shellfish TMDL IAC held a second meeting at VIMS in Gloucester on May 19. The second IAC meeting built on the criteria developed during the

first meeting for prioritizing the development of Shellfish TMDLs in the state. The IAC continued to refine the scoring criteria for prioritization of watersheds. The three categories established during the first meeting: location and resource priorities, probability of success in meeting water quality standard, and implementation support based on local interests were allotted available points of 35, 40, and 25, respectively, on a 100 point scoring scale. Next steps included development of a draft worksheet of the scoring categories and sub-criteria with assigned points. The IAC was scheduled to reconvene once the draft worksheet was completed to review the scoring and finalize the overall rankings.

The Committee reviewed seven ground water withdrawal permit applications for the following:

- Byrd Foods modified permit
- Wyatt Farm re-application
- Webster Industrial Park new application
- Broadleaf Farm re-application
- Lewis Farm (Taylor & Fulton) re-application
- Sommers Farm (Taylor & Fulton) re-application
- Gillespe Farm (Taylor & Fulton) re-application

There were no major issues or concerns regarding the proposed withdrawals according to the consultant. The Committee also reviewed a re-application for a VPDES permit to release treated wastewater from the Island Waterfront Hotel municipal wastewater treatment plant on Chincoteague.

Staff informed the Committee that the National Ground Water Association (NGWA) is sponsoring Protect Your Groundwater Day on September 14, 2010. Protect Your Groundwater Day is part of a public education campaign by the NGWA to raise awareness on ground water conservation and protection. Their motto urges the public to “ACT”, or acknowledge, consider, and take action towards protecting ground water resources. The Committee requested that a proclamation for Protect Your Ground Water Day be drafted

and presented to the Boards of Supervisors and Towns of Accomack and Northampton Counties. It was also requested that the event be published in local media outlets. Staff also informed the Committee that updates were being posted to the A-NPDC Facebook page as an effort to keep the public involved in what the Committee was accomplishing.

Britt McMillan and Curt Smith updated the Committee on a recent workshop on climate change and sea level rise impacts on upland areas on the Eastern Shore held by the Nature Conservancy (TNC). The workshop was part of a larger effort to identify expected environmental impacts to be summarized in a report produced by TNC. Discussion ensued on the potential uses for the report. The Committee was also briefed on the LIDAR survey that has been contracted by a group of stakeholders lead by TNC. Discussion ensued about potential avenues of involvement for the Coastal Management Committee on these topics. The Committee was informed that the draft Groundwater Withdrawal Regulations are currently passing through State legislative committees.

The consultant continued a presentation of the draft Water Supply Plans for Accomack and Northampton Counties. It was suggested that the Chincoteague withdrawal data and projected water demands be omitted from the Accomack WSP with text being added to explain that Chincoteague has its own plan. The Committee also suggested that it should be noted in the Accomack WSP that NASA is not included in the plan. The role of residential irrigation in the plans was discussed. The Project Water Use section of the plan was discussed. It was requested that the consultant's power point presentation be posted on the A-NPDC's website.

The Committee decided to move discussion to the proposed North Accomack Landfill Spray Irrigation Project due to time restraints. The Committee moved to amend the Committee By-Laws to lengthen the monthly meetings to two hours.

3.4.12 September 21, 2010 Meeting

A Coastal Management Committee meeting was held in conjunction with the Ground Water Committee meeting. Drafts of new Growth Potential Maps for Accomack and Northampton Counties were presented to gather the Committee's input prior to presenting the maps to each county. The maps were planned to be included in the *Eastern Shore of Virginia Land Use and Ground Water Resources Report*. Examples of the data and explanations with more detailed analysis of the maps were also presented. The maps revealed several interesting trends in growth potential and spurred discussion on the subject. Suggestions were made to include conservation easements in the analysis and to edit the map coloring scheme to increase legibility.

Staff presented the *Summary Report* of the ESVA Climate Change Workshop held on August 18-19, 2010. The workshop was held by the Nature Conservancy to develop climate change adaptation strategies on the Eastern Shore by bringing together multiple community interest groups and stakeholders. Key outcomes of the workshop and future steps were discussed.

The Committee decided to vote on amending their By-Laws at the October public workshop to lengthen the meeting time to two hours in response to time restraints during meetings. The longer meetings should allow the Committee to complete all desired tasks.

The Committee reviewed a letter from the EPA to the consultant for Accomack County regarding the proposed North Accomack Landfill Spray Irrigation Project. The EPA identified most of the deficiencies that the Committee identified during the review of the latest report at the August meeting. Due to time restraints at the September meeting, this project was not addressed in detail. Staff informed the Committee it plans to continue to communicate with the EPA regarding this project. A conference call meeting was suggested

between Accomack County, the County's consultant, Britt McMillan, and Curt Smith to discuss the project in greater detail.

The Committee reviewed a USGS Professional Paper on ground water quality in the Virginia Coastal Plain and an article detailing renovations to the Northampton County Governmental Complex. Staff updated the Committee that Protect Your Ground Water Day was successfully held on September 14. The event was proclaimed by both counties and multiple towns. The event was promoted on radio and in newspapers and generated multiple phone calls to staff.

The consultant continued his presentation of the draft Water Supply Plans for Accomack and Northampton Counties. The presentation focused on the Water Demand Management and Drought Contingency Plan sections of the plans. It was requested that Chincoteague be removed from the Projected Water Demand section, since they are developing their own plan. The Drought Contingency Plan includes four stages of drought characterized by ground water levels. It was requested that the Drought Contingency Plan reference the counties' Emergency Operation Plans. A suggestion was made stating that the Committee could potentially track drought ground water levels and the counties could declare drought emergency/warning. Discussion ensued on how the water supply plans of the governing bodies could enforce private ground water users to ration use during droughts.

The withdrawal permit for the Northampton County Governmental Complex was reviewed. It was indicated that permit would be for a relatively small (35,000 gallons/day) withdrawal and would have a small area of impact in an area with no historical ground water issues. Based on the nature of the application, the Committee decided not to comment on the permit.

3.5 Land Use and Ground Water Resources Report

The A-NPDC completed the *Eastern Shore of Virginia Land Use and Ground Water Resources Report* in FY2009. The report documents the areas on the Eastern Shore determined to be best suited for future residential development based on ground water availability, existing development, current zoning, and soil type conducive for construction. The report considered these factors and produced growth potential maps for Accomack and Northampton County. The growth potential maps reveal trends for potential residential development in specific regions of each county. The intent of the report is to identify most ideal areas on the Eastern Shore that could support residential development under current zoning without compromising the quality and quantity of natural resources and to identify areas where residential development may not be able to be supported by the existing natural resources.

The report has been made available to local governments as a resource to consider in future planning endeavors. The report is included as **Attachment D**.

Appendix A

Eastern Shore Native American Heritage Festival Photographs



Photograph 1 – Participants at the Heritage Festival.



Photograph 2 – Participants dancing at the Heritage Festival.



Photograph 3 – Participants at the Heritage Festival.



Photograph 4 – Participants dancing at the Heritage Festival.

Appendix B

Ground Water Committee Public Workshop Photographs and Announcement



Photograph 1 – Britt McMillan addressing the crowd at the Public Workshop.



Photograph 2 – Britt McMillan addressing the crowd at the Public Workshop.

EASTERN SHORE of VIRGINIA GROUND WATER COMMITTEE

PUBLIC WORKSHOP SERIES

Our Eastern Shore Ground Water

Part I – Where is the ground water and how much is there? With an overview of Accomack and Northampton County’s Water Supply Plans

The Eastern Shore of Virginia Ground Water Committee invites you to the first in a series of public workshops aimed at providing specific information on the Shore’s ground water resource used in each of our lives daily. This presentation will explain exactly where our ground water is located and detail how much is available. Britt McMillan, Consulting Hydrologist to the Ground Water Committee of Malcolm Pirnie, Inc. will be presenting. Britt has consulted the Ground Water Committee for over a decade and has a broad understanding of the Shore’s ground water resource. His enthusiastic presentation covers the following:

1. **A review of the theory behind groundwater flow.**
2. **The Water Balance – where does the water come from, how does it get there, and where does it go?**
3. **How and where water is used on the Shore and effects on the resource?**
4. **What limits our use of ground water?**
5. **Water Supply Planning – what is being done to manage our ground water resource?**

**The seminar will be held at the Shore Bank Financial HQ Building,
25020 Shore Parkway, Onley, Virginia, on Wednesday, June 9th,
from 6:30 to 8:00 p.m. Refreshments will be served.**

To learn more, contact Curt Smith, Accomack-Northampton Planning District Commission at
(757) 787-2936, ext 114.



Appendix C

Eastern Shore of Virginia Ground Water Committee Report

Eastern Shore of Virginia Ground Water Committee FY 2010 Annual Progress Report

Summary of Accomplishments

Committee Organization

- A. Committee Officers elected for FY 2010. Mr. Jeff Walker was elected as Chairman; Ms. Wanda Thornton as Vice Chairman.

Statutory, Regulatory, and Permit Tracking/Review

- A. Routine review and tracking of Ground Water Withdrawal Applications and Permits.
- B. Regulatory Advisory Panel (RAP) formed to consider changes to the Groundwater Withdrawal Regulations and Groundwater Management Area. Britt McMillan represented the Eastern Shore of Virginia Groundwater Committee on the RAP.
- C. Draft Groundwater Withdrawal Regulations were presented to and approved by the State Water Control Board. The draft Regulations are currently in the Governor's Office for review.

Research and Investigation

- A. USGS published final report titled "***Simulation of Groundwater Flow in the Coastal Plain Aquifer System of Virginia***". Full text is available at: <http://pubs.usgs.gov/sir/2009/5039/>.
- B. USGS published a Fact Sheet titled "***Outdoor Water Use and Conservation Opportunities in Virginia Beach, Virginia***". General discussion in the Fact Sheets is applicable to water use on the Eastern Shore of Virginia. Full text of the report is available at <http://pubs.usgs.gov/fs/2010/3007/>.

Implementation of Ground Water Protection

- A. Ground Water Resource Protection and Preservation presentation at the AWWA/VWEA Joint Conference. Presentation titled: "***Groundwater Protection and Management Planning for the Eastern Shore of Virginia – Using a Sustainable Development Approach***"
- B. First of a Semi-Annual Series of Public Workshops on Groundwater Resource Issues on the Eastern Shore of Virginia. Presented paper titled "***Our Eastern Shore Groundwater, Part I: Where is the groundwater and how much is there?***"
- C. Presentation titled "***Stormwater Management in Virginia***" was presented at the Stormwater Workshop held by the Accomack County Board of Supervisors.
- D. Continued Ground Water Awards Program to recognize actions that protect and/or preserve the ground water resource.
- E. Pesticide and Household Hazardous Waste Collection in September and May.

Monthly Progress Reports July 2009 through June 2010

The following summarizes the Eastern Shore of Virginia Ground Water Committee activities for the period July 2009 through June 2010. Specifically included in this report are significant Committee meeting resolutions, present status of on-going programs, new ground water development and permits, and new or proposed ground water initiatives.

JULY 2009

- A. No Ground Water Committee Meeting in August

AUGUST 2009

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Ground Water Committee Officers elected:
 - 1. Jeff Walker, Chairman
 - 2. Wanda Thornton, Vice Chairman
- C. Discussed the upcoming VDEQ Regulatory Advisory Panel (RAP) to evaluate potential changes to the current Groundwater Withdrawal Regulations and the Groundwater Management Areas.
 - 1. Presented issues that the RAP would address and potential benefits that changes to the regulation could have to groundwater resources on the Eastern Shore of Virginia.
 - 2. Groundwater Committee moved to have Britt McMillan represent the Eastern Shore of Virginia Groundwater Committee at the RAP meetings.

SEPTEMBER 2009

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Clifton Bell presented information on the proposed Chesapeake Bay Total Maximum Daily Load (TMDL) requirements.
- C. Clifton Bell presented a model (SUSTAIN) that aides in the screening level evaluation of Sustainable Watershed Management Practices and benefits, including effects on the proposed Chesapeake Bay TMDLs that certain practices could have.
- D. Britt McMillan presented a paper titled “*Groundwater Protection and Management Planning for the Eastern Shore of Virginia – Using a Sustainable Development Approach*” at the Joint Virginia Section, American Water Works Association (AWWA) and Virginia Water Environment Association annual conference.
- E. Britt McMillan attended the first VDEQ Regulatory Advisory Panel meeting to discuss proposed changes to the Groundwater Withdrawal Regulations and Management Area.
- F. Household Hazardous Waste Collection on September 14 (Accomack County) and 15

(Northampton County), 2009

OCTOBER 2009

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Britt McMillan presented the FY 2008-2009 Annual Report to the Groundwater Committee. The Committee moved to approve the report.
- C. Success of the Workshop held in June 2009 was discussed and the Committee moved to continue with two Workshops held annually, with one in June and the second in October.
- D. Presentation by Britt McMillan on the final USGS Eastern Shore model. The USGS Model was the first major update to the original Eastern Shore model developed in the late 1980's. The update included:
 - 1. Migration of the original from a SHARP interface model to a diffuse boundary model using the USGS SEAWAT code.
 - 2. Restructured to allow the Columbia aquifer to function as a water table aquifer.
 - 3. Increased the model domain to include portions of Maryland to avoid artificial model induced boundary conditions and allow for simulation of withdrawals in Maryland.
 - 4. Significant updated use for permitted withdrawals plus the addition of individual domestic use for the first time in the model.
 - 5. Recalibration to current and historical use patterns to improve model accuracy.
- E. Britt McMillan represented the Groundwater Committee at the VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal Regulations and Groundwater Management Area.

NOVEMBER 2009

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Britt McMillan updated the Committee on the Regulatory Advisory Panel.
- C. Britt McMillan discussed the closure of the International Paper Mill in Franklin and the effects the 36 million gallon per day groundwater withdrawal by the Mill had on the mainland.
- D. Britt McMillan discussed the VDEQ Water Supply Planning requirements. The Groundwater Committee moved to approve Mr. McMillan to complete Water Supply Plans for Accomack and Northampton Counties.
- E. Britt McMillan represented the Groundwater Committee at the VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal Regulations and Groundwater Management Area.

DECEMBER 2009

- A. No Ground Water Committee Meeting held.
- B. Britt McMillan represented the Groundwater Committee at the VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal

Regulations and Groundwater Management Area.

JANUARY 2010

- A. Ground water withdrawal permits
 - 1. Re-application for the Commonwealth Chesapeake Power Station near New Church was reviewed by Britt McMillan. Through, in part, discussions with the Groundwater Committee in the original Power Station design, the water supply is provided by on-site ponds and the water table aquifer. As such, potential impacts on the more vulnerable confined Yorktown aquifer are avoided. The reapplication requested the previous permitted amount. Given the beneficial use for the Power Station and the measures taken to avoid impacts to the Yorktown aquifer, no concerns related to the re-application were expressed by the Groundwater Committee.
- B. Ground water committee elected Robin Rinaca, General Manager of Eastern Shore Nursery of Virginia to receive an award recognizing the significant efforts in water conservation and management, including:
 - 1. Promoting and implementing water quality and conservation measures
 - 2. Implementing recycling and water reuse
 - 3. Change in nursery operations to reduce water use
 - 4. Modifying fields to promote recharge area protection and preservation and promote aquifer recharge
- C. VDEQ Regulatory Advisory Panel progress was reviewed by Britt McMillan. Of specific interest to the Groundwater Committee were discussions on the use of the water table aquifer and measures that could be taken to encourage / require use of the aquifer in preference to the confined aquifers. Of particular interest was using a General Permit structure to simplify the process of obtaining a withdrawal from the water table aquifer in order to reduce the burden on both the applicant and regulator and as a means to encourage use of the water table aquifer over a confined aquifer. Questions developed by VDEQ to discuss the water table aquifer were presented to the Groundwater Committee and discussed in some detail.
- D. Britt McMillan represented the Groundwater Committee at the VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal Regulations and Groundwater Management Area.

FEBRUARY 2010

- A. Ground water withdrawal permits
 - 1. Re-application for the YMCA Campground near Silver Beach was reviewed by Britt McMillan. The overall renewal amount was approximately the same, with the maximum monthly amount slightly lower and the annual total slightly higher than the current permit. Because the amount is relatively small with no major groundwater users nearby, a significant impact to the groundwater resource or other groundwater users was found to be very unlikely. Additionally, permit conditions including conservation requirements, mitigation, and monitoring afford additional protection to the resource and other

groundwater users.

- B. VDEQ Regulatory Advisory Panel meeting was discussed. The most recent RAP reviewed significant proposed changes to the water conservation and management requirements. The principal changes were to create three categories to address water conservation and management:
1. Public water systems,
 2. Industrial and commercial system, and
 3. Irrigation / Agricultural use
- Requirements for each category were reviewed and comments or concerns by the Committee were discussed. Significant questions or concerns by the Committee were provided to the RAP at the March RAP meeting.
- C. Britt McMillan represented the Groundwater Committee at the VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal Regulations and Groundwater Management Area.

MARCH 2010

- A. Ground water withdrawal permits
1. No new ground water withdrawal permits
- B. As part of EPA's Sole Source Aquifer program for the Eastern Shore of Virginia, the EPA requested comments from the Groundwater Committee on a proposed land application system to treat leachate from the Accomack County Landfill. Britt McMillan reviewed the documents provided and presented findings to the Groundwater Committee:
1. The proposed system was designed to address exceedances of Total Kjeldahl Nitrogen (TKN), biochemical oxygen demand (BOD), total suspended solids (TSS), and zinc. The majority of the TKN is organic nitrogen. With the exception of zinc, the proposed land treatment system should be effective in treating the constituents of concern. While not conclusive, sorption to clays or binding to soil organic matter may be sufficient to reduce the zinc to within permit limits.
 2. Based on the preliminary hydraulic design for the spray field, it appears that there may not be adequate area to accept the additional hydraulic load from the spray field. Based on the review, additional information on the hydraulic loading capacity was warranted.
- The Groundwater Committee requested that Britt McMillan prepare a response letter on behalf of the Committee presenting the above findings to the EPA Sole Source Aquifer Program and Accomack County.
- C. Pending storm water regulations and the upcoming Chesapeake Bay TMDL developments were presented by Clifton Bell with Malcolm Pirnie. The presentation included a review of existing and pending revisions to the regulations, schedule, process, and potential consequences for the Eastern Shore. Also discussed were Virginia's preliminary goals for agriculture and urban/suburban development.
- D. Agendas for upcoming Workshops were discussed, with the following schedule identified:
- a. June 2010 – Present Groundwater Hydrology of the Eastern Shore
 - b. October 2010 – Present Groundwater Quality Characteristics with a focus on threats and impacts for the Eastern Shore

- c. June 2011 – Discuss Groundwater Use: Trends, types, and impacts
 - d. October 2011 – Chesapeake Bay TMDL
- E. Britt McMillan represented the Groundwater Committee at the final VDEQ Regulatory Advisory Panel meeting for proposed revisions to the Groundwater Withdrawal Regulations and Groundwater Management Area.

April 2010

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Britt McMillan presented the draft Regulations prepared by VDEQ at the end of the Regulatory Advisory Panel meetings. DEQ’s intent is to submit the draft Regulations to the State Water Control Board in June for approval. The review discussed in some detail the largely administrative changes intended to streamline the permit process and add clarity to the application requirements. Also discussed were technical considerations that were supported by the Groundwater Committee but not addressed in the draft Regulations, including a simplified General Permit structure to streamline:
 - 1. Use from the water table aquifer
 - 2. Small withdrawals
 - 3. Use of alternative technologies such as ASR
- C. Britt McMillan provided a brief overview of the Water Supply Plans for Accomack County and Northampton County and a detailed review of the projected water demands. The Groundwater Committee requested removal of the projected demands for the Town of Chincoteague, who is preparing a separate plan plus inclusion of information on the NASA Wallops Water System in the description of water users in Accomack County (NASA Wallops, a federal facility, is not participating in the VDEQ Water Supply Planning process).
- D. Clifton Bell, Malcolm Pirnie, attended the Storm Water Workshop held by the Accomack County Board of Supervisors. Mr. Bell presented information on the pending storm water regulations and the upcoming Chesapeake Bay TMDL developments, including a review of the pending revisions, schedule, costs, process, and potential consequences for the Eastern Shore. Other presenters at the Workshop included State representatives from the Department of Conservation and Recreation (DCR).

May 2010

- A. Ground water withdrawal permits
 - 1. No new ground water withdrawal permits
- B. Household Hazardous Waste Collection was the most successful in the history of the program on the Eastern Shore with the collection of 7,326 pounds of hazardous waste from nearly 100 individuals.
- C. Britt McMillan reviewed the overall structure of the Water Supply Plans for Accomack County and Northampton County and in detail for the Draft Response and Contingency Plan. The four levels of drought conditions were discussed:
 - 1. Normal

2. Moderate Drought (Drought Watch)
3. Severe Drought (Drought Warning)
4. Extreme Drought (Drought Emergency)

Measures take at each stage was discussed and special consideration given the sole source of potable water on the Eastern Shore is from groundwater. Unlike surface water supply, water stored in aquifers are buffered from droughts and the principal issues related to droughts are system limitations (pump capacities and intake depths) and in certain limited areas saltwater intrusion.

June 2010

- A. Ground water withdrawal permits
 1. No new ground water withdrawal permits
- B. Committee met as a workshop to for the public at Shore Bank from 6:30pm to 8:30pm. This was the first of a series of what will become Semi-Annual Public Workshops, presenting topical information on ground water related issues for the Shore.
 1. A brief review of the theory behind groundwater flow.
 2. The Water Balance – where does the water come from, how does it get there, and where does it go?
 3. How and where the water is used on the Shore and what are the effects on the resource?
 4. What limits our use of the groundwater?
 5. What can we do the protect and preserve the resource?

In addition to the topics related to groundwater hydraulics on the Eastern Shore, a brief overview of the Water Supply Plans was provided for the public.

Appendix C

Eastern Shore of Virginia Land Use and Ground Water Resources Report

Eastern Shore of Virginia
Land Use and Ground Water Resources
Report

September, 2010

Prepared For:

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Virginia Coastal Zone
MANAGEMENT PROGRAM



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1.0 Introduction

The Eastern Shore is a region of Virginia that is unique for its geographic isolation, economic dependence on agriculture, and limited quantity of natural resources. The Eastern Shore has retained its rural character and nature unlike other areas along the Mid-Atlantic coastline that have experienced unprecedented development over the past several decades. As an anomaly along the Mid-Atlantic coast, the Eastern Shore is a likely target for continued growth and development with its vast natural beauty, recreational opportunities, and relatively affordable land.

The Eastern Shore of Virginia is a north-south trending peninsula about 80 miles long and 10-15 miles wide on average (**Figure 1**). The peninsula is bound by Maryland to the north, the Atlantic Ocean to the east and the Chesapeake Bay to the west and south. The Eastern Shore is divided into two counties, Accomack County to the north and Northampton County to the south. The peninsula is dominated by a 30-45 foot ridge located in the center.

This report documents the areas on the Eastern Shore determined as most suitable for future development in light of available ground water resources, existing development, county zoning ordinances, and soil type conducive for construction.

2.0 Land Use and Zoning

Ground water and soil type shape land use and development patterns on the Eastern Shore, generally speaking. These natural features and land conditions either constrain or support development by affecting the way in which a parcel of land can be used, thereby greatly influencing overall land use patterns and affecting the cost of public facilities and services. Furthermore, many land areas are suited for more than one use and therefore, judgments

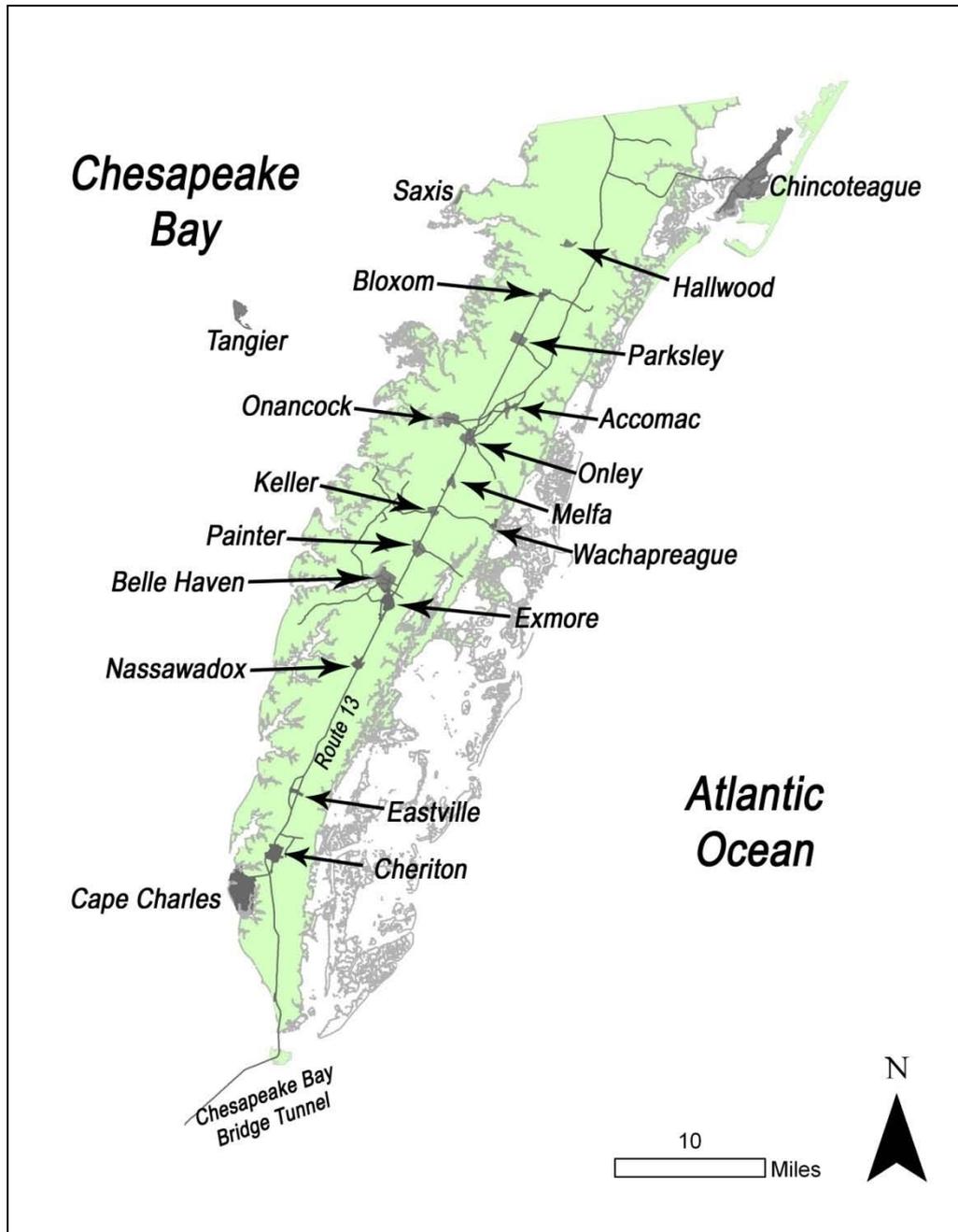


Figure 1 – Eastern Shore of Virginia Vicinity Map showing location of surrounding water bodies, 19 incorporated towns, and major roadways.

often need to be made to prioritize economic and environmental factors. Conflicts of this nature are commonly encountered where opportunities for development exist along the Route 13 corridor and areas bordering shorelines.

These areas are desirable for development due to excellent access and scenic beauty, respectively, but environmental impacts on ground water recharge and surface water quality need be considered.

Accomack and Northampton Counties are the administrative units that control all land use activities in conjunction with 19 small towns. Land use planning and zoning for Accomack and Northampton County are discussed in the following sections.

2.1 Accomack County

Accomack County implements land use categories that reflect traditional land uses and the goals, objectives, and policies of the County's Comprehensive Plan. The County recommends that future land use consider protecting the ground water recharge area along the center of the Eastern Shore, encouraging development that is dependent on septic systems for waste disposal in areas in which Bojac is the predominant soil type, and development that is in agreement with traditional land uses.

There are seven land-use categories included in the Comprehensive Plan to promote a balanced, safe, and orderly pattern of development.

2.1.1 Land-Use Categories

Conservation Areas – These areas represent the County's areas of ecological importance on which development would be harmful. No new development is to

be allowed in these areas in the County, thereby ensuring the integrity of the environment.

Agricultural Areas – As the primary economic driver in the County, these areas are intended for the production of agricultural, horticultural, and forestry products. Residential developments are allowed as secondary uses in these areas. One dwelling per five to ten acres, on average, is the target density for individual, developed properties.

Rural Settlement Areas – The primary use intended for these areas is to facilitate rural residential growth complementary to and in the vicinity of existing residential villages and hamlets in the County. Secondary uses include accessory dwellings, cluster development, public safety facilities, and other public uses. The target outcome for these areas is to blend new development with existing development in clustered, rural residential development that reflects the traditional land use pattern. The target density for this area is approximately one dwelling per two to three acres, on average.

Residential Areas – These areas allow for new residential development in existing communities for those who chose to live on moderately sized lots. New developments are encouraged to be located adjacent to existing residential areas outside of flood zones that are suited with access to public roads and soils suitable with septic suitability. The target density for this area is approximately one dwelling per acre, on average.

Village Development Areas – Mixtures of residential and commercial uses are allowed in these areas. Single-family residences are the primary use with multi-family structures, small-scale retail businesses, local offices, restaurants, professional services, schools, public safety facilities, and other public uses as secondary uses. The County envisions the vast majority of future residential development to be located in these areas. The target residential density for these areas is one-half to one acre per dwelling, on average, depending on the mix of uses and availability of central water and wastewater treatment.

Commercial Areas – Commercial areas are to provide appropriate locations for a broad range of businesses which may be characterized by heavy traffic, noise, or other factors that could be considered a nuisance to residential uses. Commercial development is encouraged to be clustered at key access points on Route 13 or Route 175 and is required to provide adequate stormwater management and ground water protection.

Industrial Areas – Industrial areas are to provide suitable locations for industrial activities with minimal interference from or impact on adjacent land uses. Industrial development is required to have managed access, buffers to protect adjacent properties, and to provide adequate stormwater management and ground water protection.

2.2 Northampton County

Northampton County Zoning Ordinances reflect land-use planning goals cited in the County's Comprehensive Plan. The goals identified in the Comprehensive Plan include accommodating growth where it can be supported by infrastructure improvements; maintaining existing community character which supports heritage-, culture-, and nature-based tourism; and preserving natural resources that support agriculture, aquaculture, eco-tourism and maritime activities.

Zoning is separated into Rural Settlement and Development-Area Settlement Types as described in the County's Comprehensive Plan.

Rural Settlement Types include:

- Conservation Areas
- Rural/Agricultural Areas
- Hamlets
- Waterfront Hamlets
- Villages
- Waterfront Villages
- Existing Subdivisions
- Existing Cottage Communities

Development-Area Settlement Types include:

- Towns
- Commercial-Activity Centers
- Town Edges
- Industrial-Activity Centers

2.2.1 Rural Settlement Types

Conservation Areas – This planning area is the least developed of all planning areas and includes the largely undeveloped areas of the County. These include areas currently protected from development and areas with significant environmental sensitivity. Future development is not expected in these areas of the County.

Rural/Agricultural Areas – This planning area includes agricultural and rural uses that support farming as a primary land use and low-density rural residential development as a secondary land use. Rezoning to allow for high-intensity and high-density development is discouraged in these areas.

Hamlets – These are existing, unincorporated, small rural settlements, and typically 10 to 30 houses. Examples of hamlets in the County include Bethel Church, Birdsnest, Culls, Marionville, Pat Town, and Weirwood. The Comprehensive Plan identifies residential infill consistent with existing development as the most appropriate land use for this zoning area.

Waterfront Hamlets – Waterfront Hamlets are similar to Hamlets except they exist on or near the waterfront and they have traditionally functioned as community focal points and gathering places with working waterfronts. Examples of these zoning areas include Bayford, Red Bank, and Cherrystone Landing. These zoning areas likely will be very desirable places for future development due to their close proximity and access to the water.

Villages – Villages are larger unincorporated rural communities with typically 30 to 100 houses that serve as focal points for surrounding rural areas in the County. Villages include Fairview, Capeville, Cheapside, Hare Valley, Machipongo, Martin Siding/Reedtown, Townsend, and Treherneville.

Waterfront Villages – Waterfront Villages are similar to Villages except they exist on or near the waterfront and traditionally served as focal points for

marine-related industries and lifestyle in the County. These zoning areas include Willis Wharf and Oyster. These zoning areas will likely be very desirable for future development due to their close proximity and access to the water.

Existing Subdivisions – These planning areas are principally single-use rural residential subdivisions that have been approved for six or more lots. Many of these areas were developed under prior zoning standards and do not conform to the ideals presented in the current Comprehensive Plan. Future growth of these areas is limited to the extent of their current boundaries.

Existing Cottage Communities – Existing Cottage Communities are existing rural residential subdivisions with typically 50 or more lots located on or near the water. Many of these areas were developed under prior zoning standards, are frequently located directly on the shoreline, and therefore do not conform to the ideals presented in the current Comprehensive Plan. These zoning areas include Battle Point, Downings Beach, Silver Beach, and Smith Beach. Future growth of these areas is limited to the extent of their current boundaries.

2.2.2 Development-Area Settlement Types

Towns – The five incorporated towns in the County include Exmore, Nassawadox, Eastville, Cheriton, and Cape Charles. Towns have their own governing bodies and land-use planning and zoning controls. The amount of new growth that can be accommodated within these areas varies upon the availability of municipal sewer and water service. At this time, Cape Charles and Exmore are the only Towns that offer public sewer and water service and are therefore the most likely areas for growth. Eastville operates a municipal water system and is also expected to attract future development.

Town Edge – These zoning areas are unincorporated areas adjacent to Towns that are governed by the County, but are associated with the Towns. These areas are preferred for development should the Towns be completely built-

out. Future development is expected in these areas due to their close proximity to available municipal sewer and water services.

Commercial-Activity Corridors – These zoning areas are considered the most appropriate locations for new commercial development in the County. These areas are located primarily within and adjacent to existing downtown business districts in existing Towns. The County promotes orderly infill and expansion of these areas through utility agreements and mutually acceptable boundary-line adjustments.

Industrial-Activity Corridor – These zoning areas are considered the most appropriate locations for new industrial development in the County. These areas are located primarily within the Towns of Exmore and Cape Charles and adjacent to the Town of Cheriton. The County promotes orderly infill and expansion of these areas through utility agreements and mutually acceptable boundary-line adjustments.

2.3 Government Lands and Conservation

Government lands include federal facilities such as the Wallops Flight Facility and publicly owned conservation lands such as Fisherman’s Island. Lands under conservation easements include both publicly and privately owned properties that cannot be developed under easement stipulations. These areas are discussed in the following sections.

2.3.1 Government Facilities

The National Aeronautics and Space Administration (NASA) Wallops Flight Facility in northeastern Accomack County consists of three separate parcels totaling 6,200 acres. The facility is a major hub for research, employs a significant number of residents, and is an economic hub for the Eastern Shore. This is the largest government facility on the Eastern Shore and is not included in the Growth Potential Analysis.

2.3.2 Publicly Owned Conservation Lands

The seaside of the Eastern Shore is unique among other regions along the Atlantic coast due to the vast majority of property being owned and managed by federal and state agencies. The majority of seaside barrier islands and marshes are publicly owned conservation lands. Federal and state ownership is also common along the bayside and interior of the Eastern Shore; however, less prevalent than the seaside.

2.3.3 Lands Under Conservation Easements

The Nature Conservancy is the largest owner of private lands under conservation easements. The Nature Conservancy owns and manages the Virginia Coast Reserve on the Eastern Shore seaside, which consists of multiple barrier islands and thousands of acres of marshland. Other agencies such as the Eastern Shore of Virginia Land Trust have helped to promote land conservation easements among citizens to increase the total acreage of lands under conservation easement in both counties.

3.0 Existing Built-Out Parcels

Existing built-out parcels were included in the Growth Potential Analysis. The current analysis only considers residential development primarily because commercial and industrial growth are limited to relatively small areas in each county. It is expected that residential growth would account for the majority of land-use in the future. Built-out parcels are lots that have a maximum number of dwellings allowed by county zoning ordinances. Since these parcels are currently built out, there is no growth potential for the parcel.

3.1 Accomack County

Accomack County until recently has experienced a declining population over the last fifty years. Modest growth has been experienced over the past decade. Unlike historical growth patterns, rural subdivisions and commercial

industrial development outside of towns and villages have become more common in recent years.

Subdivisions exist throughout the county with many developed in close proximity to shorelines. Built-out residential parcels are common along road corridors and areas within close proximity to shorelines (**Figure 2**).

3.2 Northampton County

Northampton County's population has stayed nearly constant for the past decade. The county has experienced an increase in retirees and second-home owners. As result, subdivisions have been increased at a greater rate.

Many existing subdivisions were developed in close proximity to shorelines. Historically, built-out residential parcels were commonly located along road corridors and areas within close proximity to shorelines (**Figure 3**). Northampton County's current zoning encourages residential development in and around existing towns and villages.

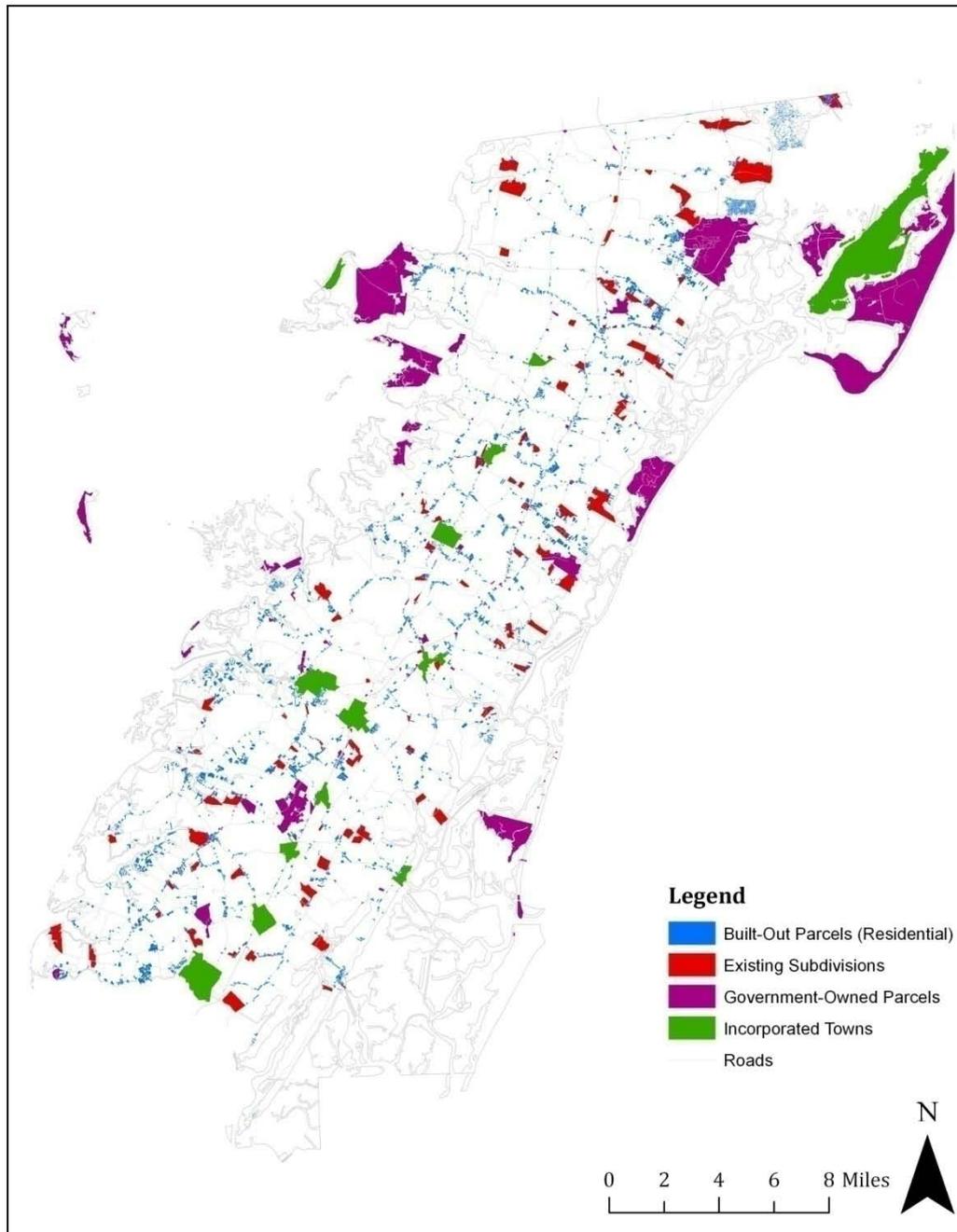


Figure 2 – Accomack County Built-Out Parcels Map showing the location of built-out residential parcels, existing subdivisions, government-owned lands, and towns in the county.

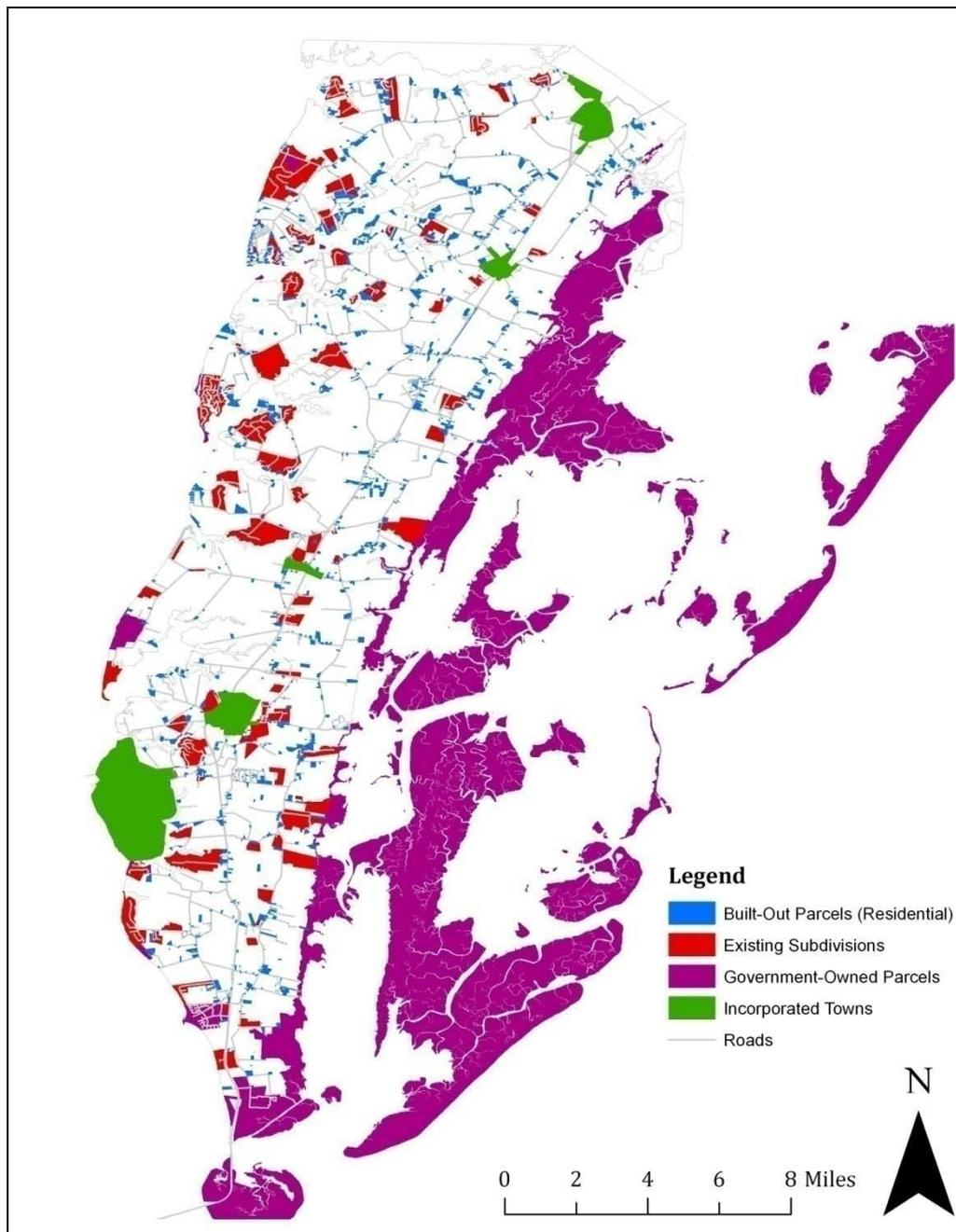


Figure 3 – Northampton County Built-Out Parcels Map showing the location of built-out residential parcels, existing subdivisions, government-owned lands, and towns in the county.

4.0 Soils

The character of soils has a significant influence residential and industrial development as well as on the agricultural industry on the Eastern Shore. Future development will be shaped by the ability of soils to absorb septic wastes and the suitability of soils for supporting buildings and roads.

Specific soil characteristics such as texture, slope, and depth affect the suitability for development of a soil. Texture is the distribution of each particle type (clay, silt, or sand) within a soil. Soil texture directly determines the porosity, or ability to drain surface water, and stability of soil. The slope of the terrain of the Eastern Shore is generally level with surface features ranging from the flat foreland bordering the Chesapeake Bay to the level upland plain in the central and majority of eastern sections of the Eastern Shore. Slope can reach up to 15% locally in hilly sections and elevation ranges from sea level to about 45 feet above sea level. The depth of soil to the water table affects the suitability of the soil for development and agricultural use. Surface soils are excessively wet where the water table is high, making them unsuitable for development and agriculture.

The Eastern Shore exists entirely within the Atlantic Coastal Plain Physiographic Province, which consists of unconsolidated sediments deposited by marine and fluvial processes. The sediments that comprise the Eastern Shore range in thickness from over 1,000 feet in the northern portion to approximately 700 feet in the southern region. The sediments have filled a topographic depression in the underlying continental bedrock, called the Salisbury Embayment, which was formed by tectonic processes during the opening of the Atlantic Ocean. The surficial soils utilized for agriculture were largely deposited during the Pleistocene (1.8 million years – 10,000 years) and Holocene (10,000 years – present) Epochs.

Site specific soil suitability testing is required prior to development on the Eastern Shore. This is largely because the 1917 and 1988 U.S. Department of Agriculture Soil Conservation Service soil surveys were not sufficient for determining land use capabilities on a site-by-site basis.

The three most abundant soil types on the mainland of Accomack and Northampton Counties are the Bojac, Munden, and Nimmo series (**Figure 4 and 5**). These soil types have distinct characteristics that control their suitability for development and agricultural use.

4.1 Bojac Series

Generally, Bojac soils are considered to be the most suitable soils for development and agricultural use on the Eastern Shore. These soils predominantly consist of loamy sands, are moderately to excessively well drained, and are considered to be the most suited for septic drainage. Agricultural and residential are the current primary uses for these soils.

4.2 Munden Series

Munden soils are considered to have fair suitability for development and agricultural use. These soils are slightly more hydric than Bojac soils and therefore are not as well suited for septic drainage. Although, not as well suited for development, Munden soils are generally considered to be prime soils for agricultural use like the Bojac series.

4.3 Nimmo Series

Nimmo soils are poorly drained hydric soils that are generally considered to not be suitable for septic drainage. These soils are therefore considered to not be suitable for development and are often not suitable for agricultural use.

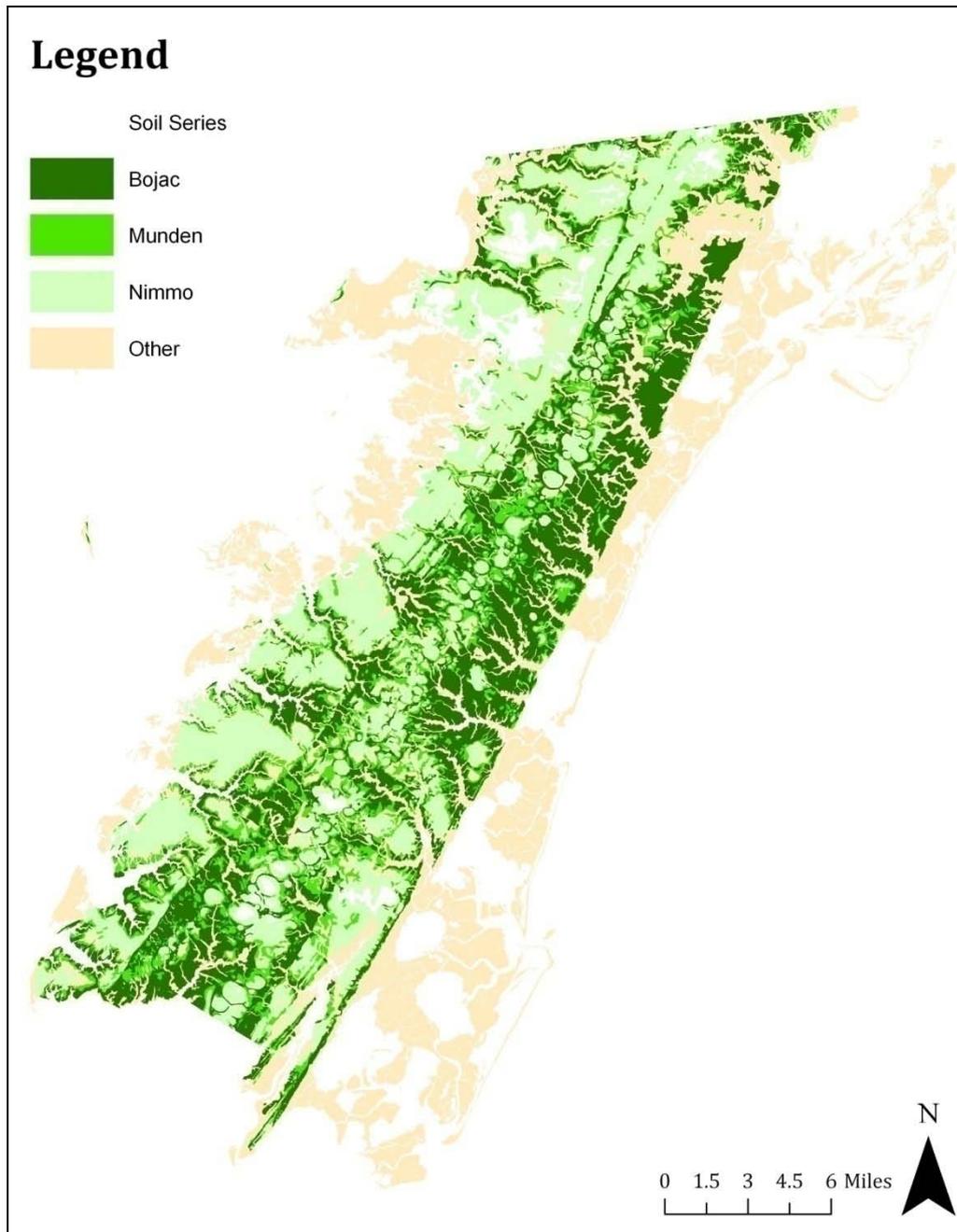


Figure 4 – Accomack County Soils Map showing the distribution of the three predominant soil types in the county.

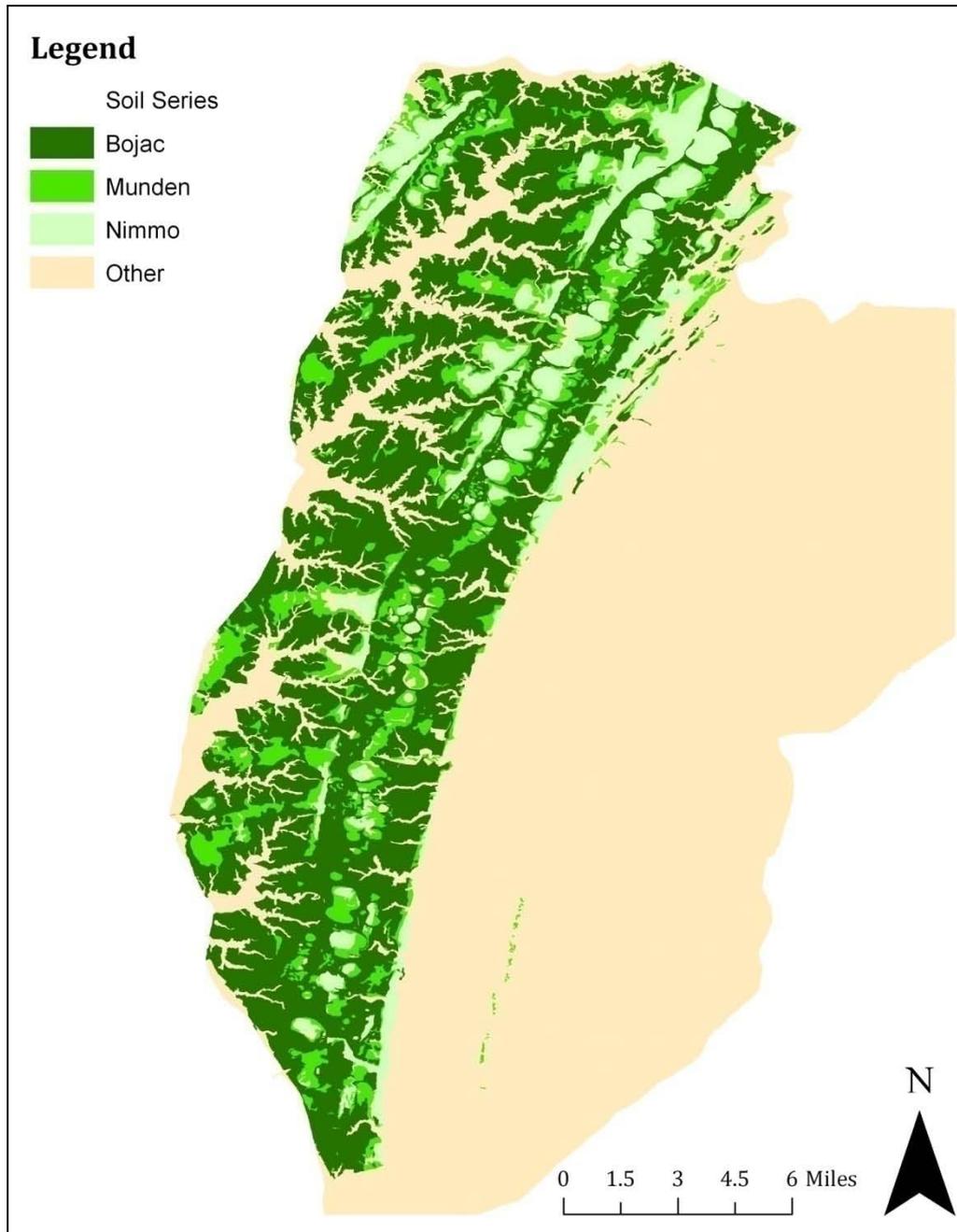


Figure 5 – Northampton County Soils Map showing the distribution of the three predominant soil types in the county.

5.0 Ground Water

Ground water is the sole source of supply for domestic, industrial, and agricultural water use on the Eastern Shore. Agriculture and industry are the largest users of ground water on the Eastern Shore. Two poultry processing plants in Accomack County are the largest individual users of ground water, accounting for 42% of the total permitted withdrawals on the Eastern Shore. Municipal use is mostly restricted to the deeper confined aquifers and represents approximately 20% of all ground water usage.

5.1 Description

The Eastern Shore ground water system is a local system within the regional Atlantic Coastal Plain ground water system. The sediments comprising the Eastern Shore have historically been divided by their hydrologic properties in a layered sequence of aquifers and confining units. Aquifers consist of predominantly sand- and gravel-size material saturated with substantial usable quantities of fresh ground water. Confining units consist of predominantly very fine sand, silt, and clay. These materials do not easily allow ground water to move vertically downward, therefore virtually isolating aquifers beneath. Confining units are also generally continuous across the Eastern Shore except in areas where former channels have eroded through the confining unit.

The Eastern Shore ground water system consists of the surficial (unconfined) Columbia aquifer, a series of three confined aquifers (upper, middle, and lower Yorktown aquifers) and confining units (upper, middle, and lower Yorktown confining units), and a basal confining unit (**Figure 6**). Freshwater enters the ground water system through precipitation that falls on the peninsula and percolates through the soil into the sediments of the Columbia aquifer in a process known as recharge (**Figure 7**). Fresh ground water is

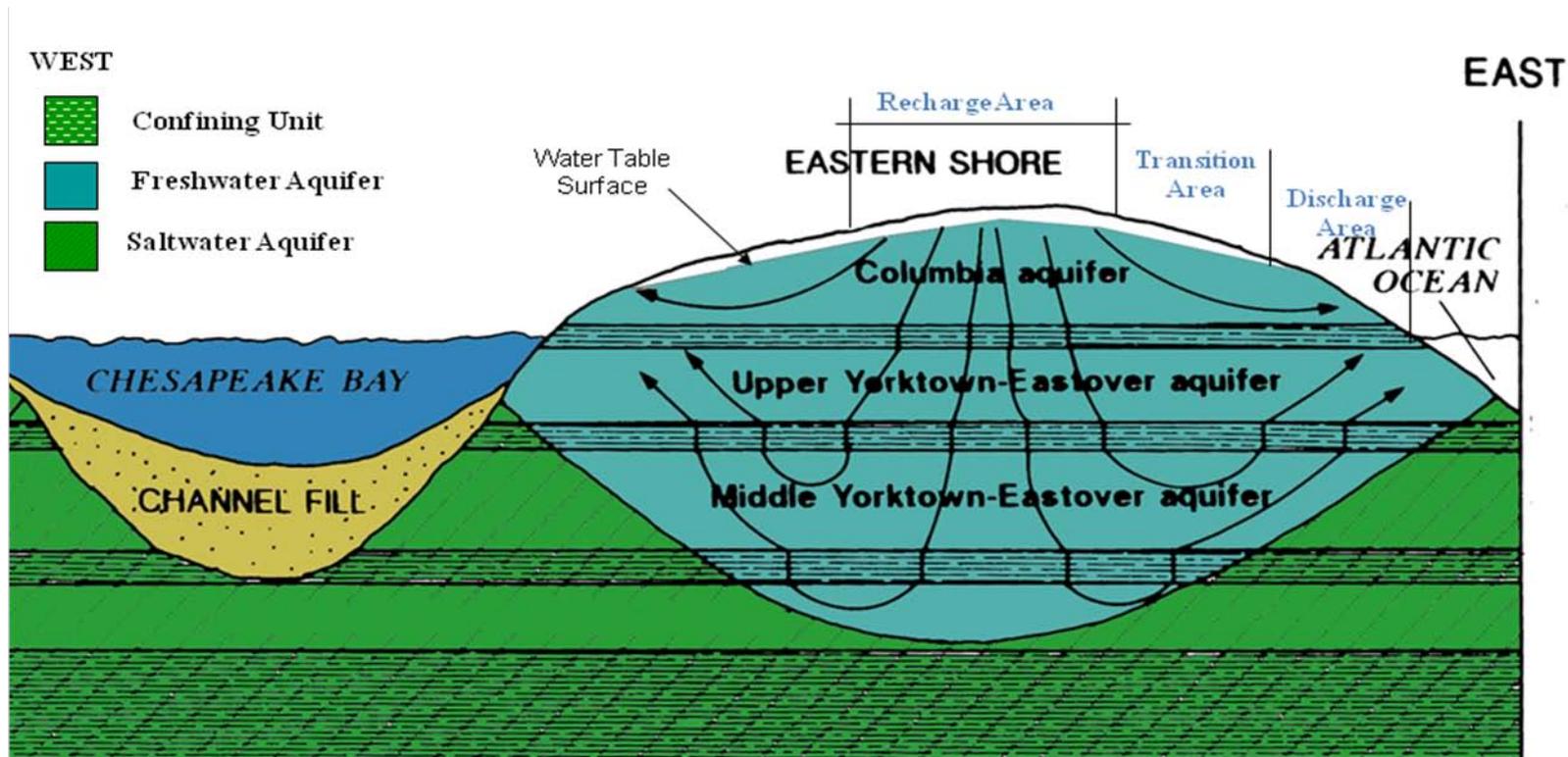


Figure 6 – Conceptual Ground Water Flow Illustration for the Eastern Shore of Virginia ground water system.

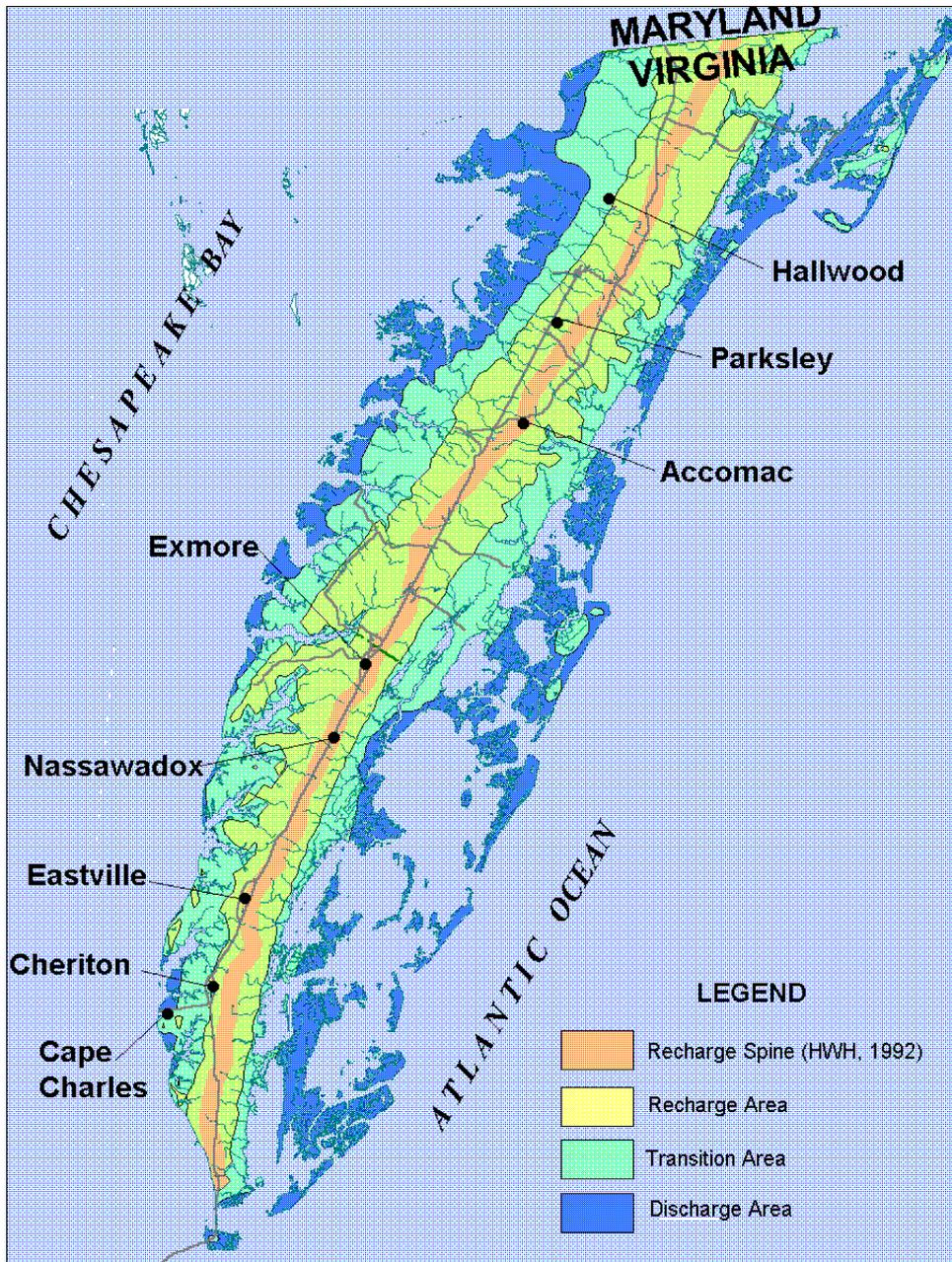


Figure 7 – Eastern Shore Ground Water Map showing the location of recharge, transitional, and discharge areas.

restricted to depths less than 350 feet on the Eastern Shore. Approximately 88% of the 44-inches of annual precipitation that fall on the Eastern Shore never enters the ground water system as it either evaporates, is used by plants, or flows over the land to enter streams, ponds, or other surface-water bodies. Of the 44-inches of annual precipitation, only 5-6 inches infiltrate the surficial Columbia aquifer and only about 0.05 inches make it to the confined Yorktown aquifers annually. Ground water in the Columbia aquifer generally flows vertically downward into the lower parts of the aquifer, then laterally towards discharge sites such as creeks, marshes, the Chesapeake Bay, and the Atlantic Ocean. Lateral ground-water flow generally mimics the flow of surface water which is controlled by topography.

Recharge to the Columbia aquifer is a function of soil type, slope, and location; whereas recharge to the Yorktown aquifers depends more on where pumping from the aquifer is occurring. The recharge rate to the Yorktown aquifers has increased over time due to pumping of ground water. In addition to lesser inflow of ground water through recharge, the Yorktown aquifers, unlike the surficial Columbia aquifer, have a relatively large storage capacity. This has created a dilemma since the majority of ground water pumping occurs in the Yorktown aquifers on the Eastern Shore. The current usage of ground water from the Yorktown aquifers exceeds the amount of inflow through recharge by approximately 1,000,000 gallons per day. Under these conditions recharge to the Yorktown aquifers will increase as use increases, but will not keep pace with pumping for ground water use. Ultimately, the balance of recharge to use dictates the stability of the fresh ground water system on the Eastern Shore.

The surficial Columbia aquifer has been susceptible to pollutants that have been introduced by recent land-use practices. Common pollutants to the

Columbia aquifer include domestic sewage, pesticides, fertilizers, manure, leaking material from underground storage tanks, and household and industrial wastes. Future development on the Eastern Shore may cause continued contamination of this aquifer. In addition, the confined Yorktown aquifers are threatened by surface contamination. As withdrawals continue at a greater rate than recharge in the deeper aquifers, the vertical recharge will increase and in turn induce the vertical flow of pollutants. Ground water from the shallow Columbia aquifer does generally not meet the state and federal standards for potable water. However, this shallow ground water is well suited for industrial and agricultural uses. **Figure 8** illustrates the availability of ground water resources on the Eastern Shore. **Figure 9** illustrates the potential for ground water degradation based on ground water withdrawal trends, point source pollution, and non-point source pollution.

5.2 Ground Water Management

Virginia designated the Eastern Shore as a Ground Water Management Area in 1976 in response to observed ground water level declines, well interference, localized ground water contamination in the surficial Columbia aquifer, and concern of potential depletion of the ground water supply and potential salt water intrusion. This designation by the state requires the major users of ground water (those who withdraw over 300,000 gallons per month) to obtain a permit prior to pumping in order to help prevent well interference and over pumping of the ground water supply.

In 1990, the Eastern Shore of Virginia Ground Water Committee was established by Accomack and Northampton County to study and plan for ground water protection and management. In 1992, the Ground Water Committee adopted the Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia to oversee ground water usage on the Eastern Shore. The 11-member committee meets monthly and includes elected officials, citizens, and local government staff. A consulting

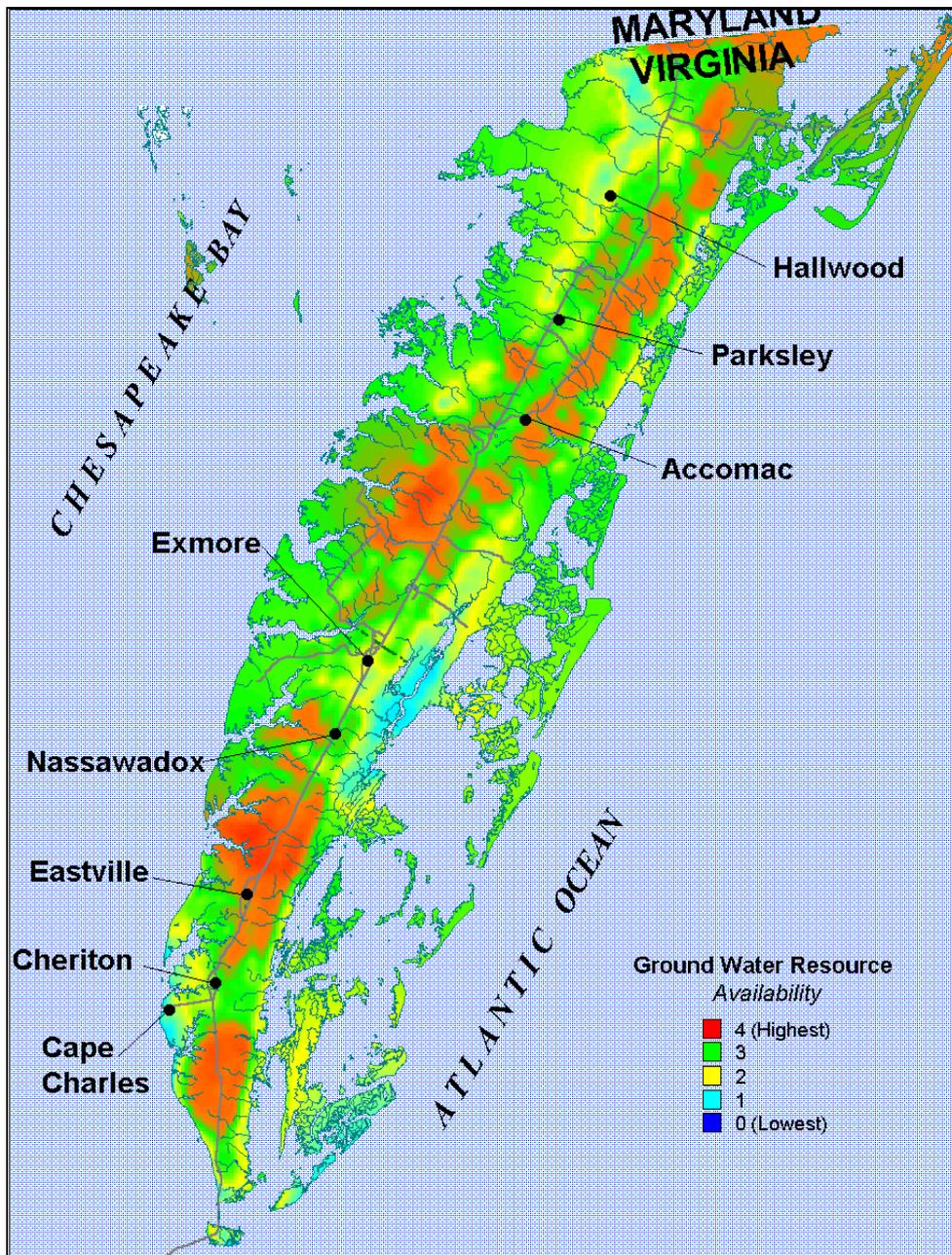


Figure 8 – Eastern Shore Ground Water Availability Map showing the relative availability of fresh ground water.

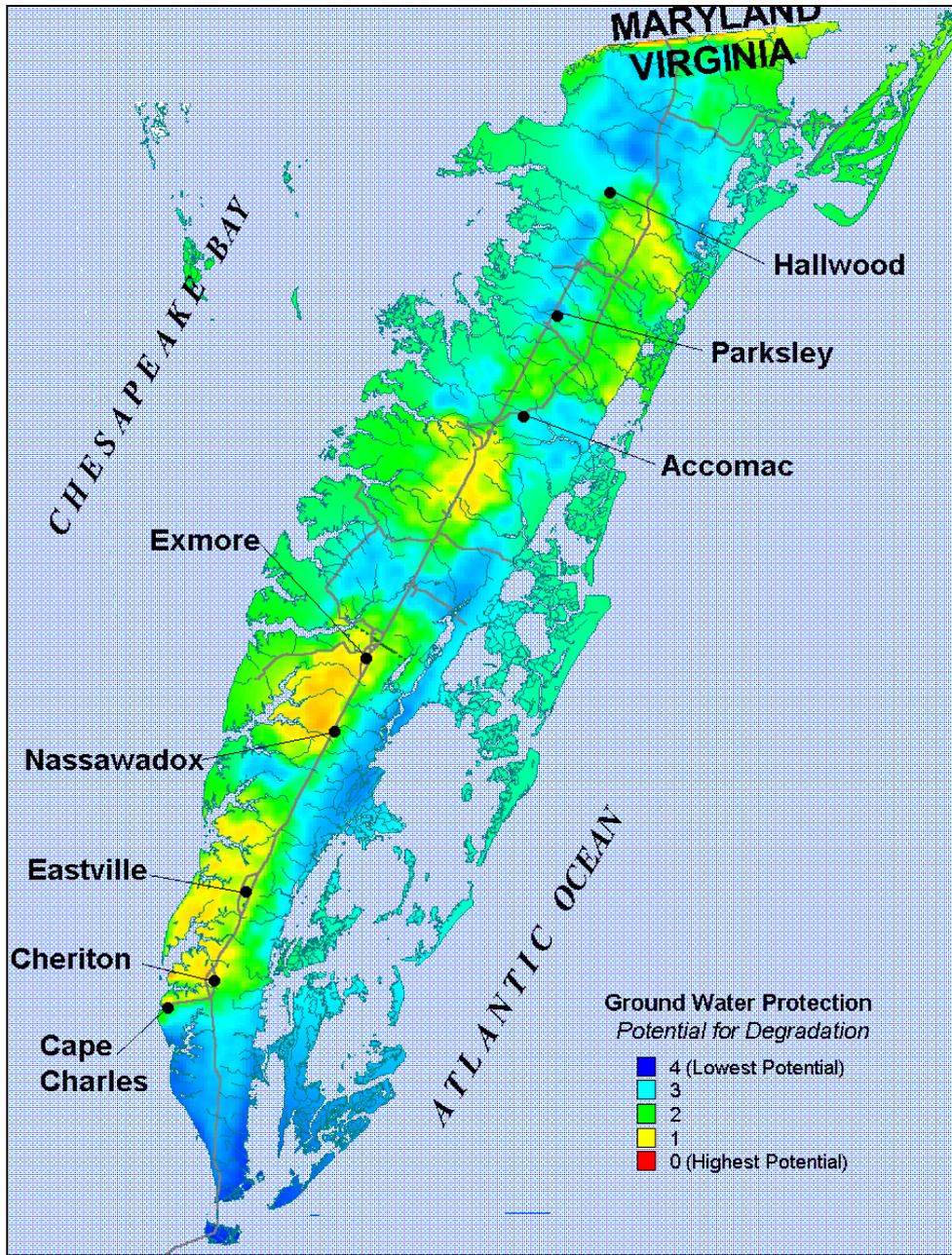


Figure 9 – Map illustrating the potential for ground water degradation on the Eastern Shore based on ground water withdrawal trends, point source pollution, and non-point source pollution.

hydrogeologist advises the committee, prepares technical reports, and coordinates with the Virginia Department of Environmental Quality and the United States Geological Survey. Since 1990, the committee has overseen the development of ground water plans, technical studies, water quality studies, and development of a ground water geographic information system.

The Accomack-Northampton Planning District Commission commissioned a study in 2001 entitled Technical Analysis and Justification for Ground Water Ordinances on the Eastern Shore of Virginia

Several areas in Accomack and Northampton Counties have been identified as having limited ground water resources and/or are beginning to experience saltwater intrusion from the surrounding salt water bodies. These areas must be considered in the planning for future development.

6.0 Growth Potential Analysis

6.1 Introduction

The Growth Potential Maps are comprised of multiple datasets to illustrate the potential for future development on the Eastern Shore of Virginia. GIS data layers included in this analysis include county zoning, built-out parcels, soil type, and existing subdivisions. Ground water conditions and impacts on growth potential are analyzed separately and discussed in Section 6.3. The maps for Accomack and Northampton County are presented in **Figures 10 and 11**, respectively.

6.2 Methods

The following steps were taken to create the Growth Potential Maps:

- The Growth Potential Maps almost exclusively look at residential growth. Commercial and industrial areas are considered by showing zoning. Each layer was overlaid and assigned a 50% transparency.

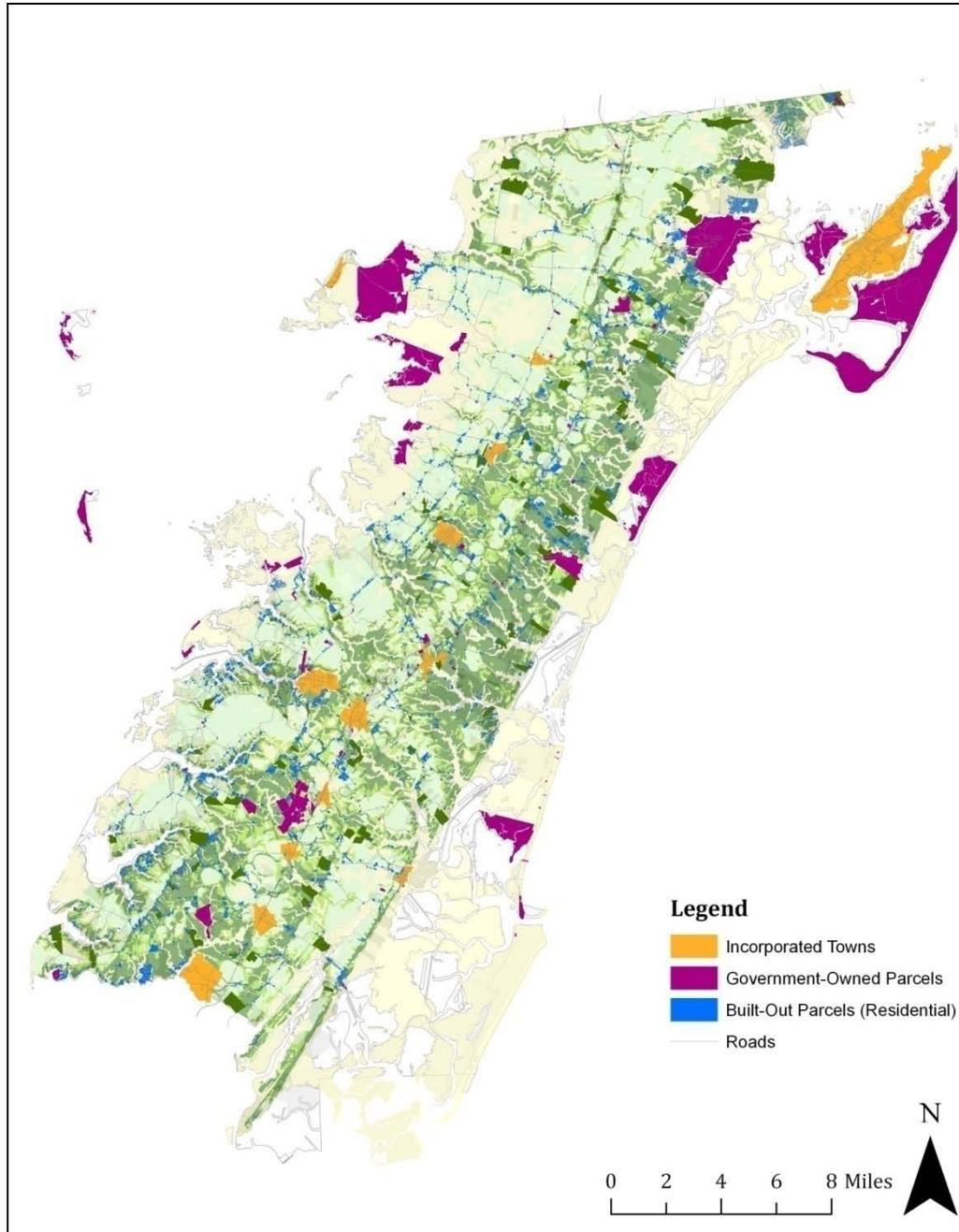


Figure 10 – Accomack County Growth Potential Map illustrating the potential for residential development. The areas with darker green colors indicate areas well suited for development based on soil type and zoning. Areas shaded lighter green are areas not suited for future development.

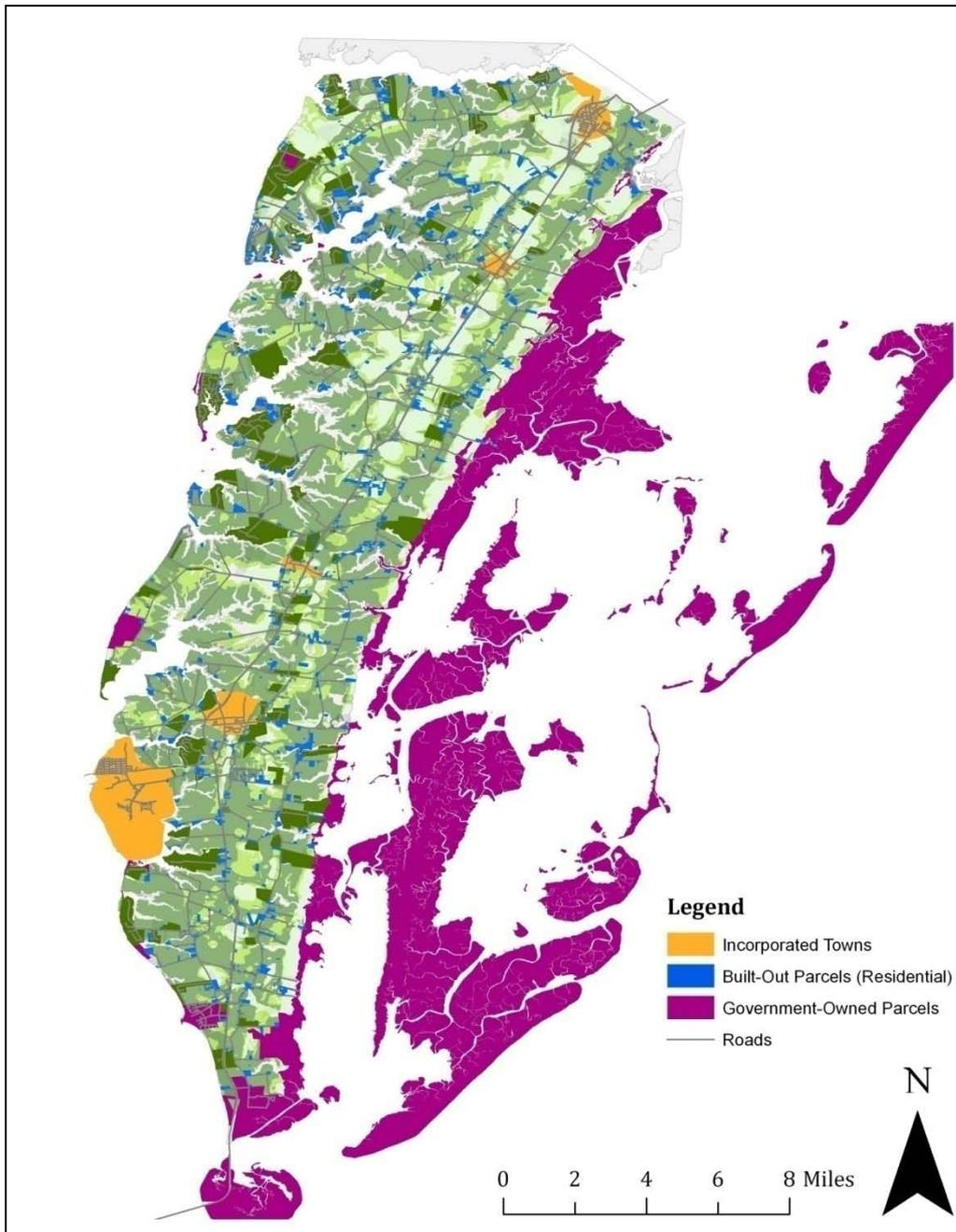


Figure 11 – Northampton County Growth Potential Map illustrating the potential for residential development. The areas with darker green colors indicate areas well suited for development based on soil type and zoning. Areas shaded lighter green are areas not suited for future development.

- Graduated colors were assigned based on development potential. For example, soils rated with higher development potential appear darker than soils with lower development potential. The transparency shows the areas where conditions to support growth are enhanced. The darkest areas are existing subdivisions where soil conditions are conducive to development and zoning allows for growth.
- The second step of the process removed non-conforming parcels that are smaller than the area required in the overlying zoning and also has an existing 911 address. These areas are indicated in shades of gray.
- Finally, government owned land was also removed. Wetlands in the National Wetland Inventory were designated with a light tan color to show areas that may not be developable at all. Existing towns are shown in orange. Built-out parcels are shown in blue.

6.3 Discussion

Several trends can be recognized in the Growth Potential Maps for Accomack and Northampton Counties. There is a significant amount of land in each county that is suitable for future development and growth. The vast majority of marshes and barrier islands on the seaside are currently owned by government entities or have been placed under conservation easement. These lands are not suitable for future development and are crucial landforms in protecting from storm surges and in improving water quality.

6.3.1 Accomack County

The Accomack County Growth Potential Map illustrates several trends unique to the county. There is a long and narrow area along the Accomack County seaside from Accomac to Wallops Island that has very high development potential. Several subdivisions have been developed within the past decade in this area and most have not completely been built out. The growth potential map shows this area is suitable for development, but the map does not consider ground water availability. This area along the shoreline is located on

the thinner edge of the fresh ground water lens underlying the Eastern Shore. Since there are no municipal water supplies located near this area, future development would require increased ground water withdrawals. If the demand for ground water becomes too great, ground water withdrawals could increase to the point where salt water intrusion of the fresh ground water aquifers could occur. Future development in this area should strongly consider proper management of the limited ground water resource.

Several existing subdivisions have been constructed in northern Accomack County near the Maryland border. The growth potential map shows the areas surrounding these subdivisions are not highly suited for development. If construction of subdivisions in this area continues in the future, both water quality and availability could be compromised.

There is high growth potential on the seaside in the area to the south of the NASA Wallops Flight Facility (WFF). The WFF is expected to continue to emerge as one of the leading spaceports in the nation. It can be expected that with the growth of the WFF will come increased development in the surrounding areas. The area to the south is suitable for helping to meet any future demands with its good soils, available parcels, and ground water availability.

There is limited growth potential of waterfront parcels along the bayside and seaside creeks in Accomack County. The majority of these parcels have been previously built out.

The area around the towns of Painter and Belle Haven has high growth potential. This area also has sufficient ground water availability. However it is within the ground water recharge zone, which would need to be considered when planning and regulating future development.

6.3.2 Northampton County

Several trends can be recognized on the Northampton County Growth Potential Map. Unlike Accomack County, there is still high potential for growth on waterfront parcels along the bayside creeks in Northampton County. The combination of soils suitable for development, current zoning, and availability of waterfront lots make these areas highly desirable for residential development. However, development on the coast will increase demand for ground water in an area that is already threatened by salt water intrusion. Ground water management will be imperative to preventing salt water intrusion if significant growth occurs along the bayside creeks in Northampton.

There is a long and narrow area with poor growth potential along the center of the peninsula from Machipongo north to Exmore. This area is characterized with soils with poor suitability for development. Residential development in this area would need to consider connecting homes to the wastewater treatment plant in Exmore as the soils are not suitable for septic drainage. Growth in this area could also impact ground water recharge.

The area in the vicinity of the towns of Cape Charles and Cheriton has high growth potential. However, ground water availability is limited in this area. The town of Cape Charles has experienced some salt water intrusion from over-pumping of the aquifer and increase withdrawals of ground water in this region will only worsen salt water intrusion.

6.4 Results

Based on soil type, ground water availability, and zoning the Eastern Shore has a high potential for future residential growth. With increased development the Eastern Shore will require more from its limited natural

resources, especially ground water. With the aquaculture industry becoming an increasingly larger economic driver for the Eastern Shore, it is critical that future growth be done in a manner not to impair water quality. Some past development occurred without considering these factors and it is imperative that future development not follow the same path.

The Growth Potential Maps for Accomack and Northampton Counties illustrate the areas best suited for future residential growth. The maps, however, do not consider ground water availability. Ground water on the Eastern Shore is an extremely limited resource that the population cannot do without. Ground water will continue to play an essential role in development on the Eastern Shore.