Implementation of the Chesapeake 2000 Agreement

Prepared by the Secretary of Natural Resources
November, 2008

Introduction

This report fulfills the obligation of the Secretary of Natural Resources to report annually on activities related to the implementation of the commitments contained in the Chesapeake 2000 (C2K) Agreement. In order to meaningfully report on the key elements of the agreement, this report updates the eleven "keystone" commitments identified in the 2006 annual update. The Chesapeake Bay Program has established these keystone commitments because of their preeminent importance to the overall Chesapeake Bay restoration effort. Future reports will continue to focus on these priority commitments for they will continue to serve as the foundation of restoration efforts.

We fully understand that great challenges, in many areas, remain in meeting the goals of the C2K agreement. However, Virginia's agencies remain committed to the commitments contained in the agreement.

This reports wishes to acknowledge the work of all the individual agency staff and for their dedication to the goals of the agreement.

For additional information on this report, please contact the office of the Secretary of Natural Resources at sonradmin@governor.virginia.gov.

For additional information on the Chesapeake 2000 Agreement please visit www.chesapeakebay.net/c2k.htm or www.naturalresources.virginia.gov.

Annual Report on the Implementation of the Chesapeake 2000 Agreement

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Common Abbreviations

Terminology:

BMP – Best Management Practice
C2K – Chesapeake 2000 Agreement
CREP – Conservation Reserve Enhancement Program
CWO – Community Watershed Organization
GIS – Geographical Information Systems
LID – Low Impact Development
NPS – Non Point Source (pollution)
RPA – Resource Protection Area
SAV – Submerged Aquatic Vegetation
TMDL – Total Maximum Daily Load
WQIA (**WQIF**) – Water Quality Improvement Act (Fund)

Government Agencies and Organizations:

ASMFC – Atlantic States Marine Fisheries Commission
CBLAB – Chesapeake Bay Local Assistance Board
CBLAD (**or DCBLA**) – Chesapeake Bay Local Assistance Division
CBP – Chesapeake Bay Program
CWIC – Chesapeake Watershed Implementation Committee
DCR – Virginia Department of Conservation and Recreation
DEQ – Virginia Department of Environmental Quality
DGIF (**or VDGIF**) – Virginia Department of Game and Inland Fisheries
DGS – Virginia Department of General Services
DHCD – Virginia Department of Housing and Community Development
DOC – Virginia Department of Corrections
DOF – Virginia Department of Forestry
DSWC (**or Division)** – DCR- Division of Soil and Water Conservation
EPA – United States Environmental Protection Agency
FSA – Farm Service Agency (formerly ASCS)
MRC (**or VMRC**) – Virginia Marine Resources Commission
NACD – National Association of Conservation Districts
NOAA – National Oceanic and Atmospheric Administration
NRCS – Natural Resources Conservation Service (formerly SCS)
ODU – Old Dominion University
OSNR (SONR or SNR) – Office of Secretary of Natural Resources
PDC – Planning District Commission
RC&D – Resource Conservation and Development Council
SEAS – Shoreline Erosion Advisory Service
SWCD – Soil and Water Conservation District
COE (ACOE or "The Corps") – United States Army Corps of Engineers
USDA – United States Department of Agriculture

USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
VACO – Virginia Association of Counties
VASWCD – Virginia Association of Soil and Water Conservation Districts
VCE – Virginia Cooperative Extension
VCU – Virginia Commonwealth University
VDACS – Virginia Department of Agriculture & Consumer Services
VDH – Virginia Department of Health
VDOT – Virginia Department of Transportation
VGIN – Virginia Geographic Information Network
VIMS – Virginia Institute of Marine Science
VLCF – Virginia Land Conservation Foundation
VML – Virginia Municipal League
VOF – Virginia Outdoors Foundation

Living Resource Protection and Restoration

Oysters

1.1.1 -
By 2010, achieve, at a minimum, a tenfold increase in native oysters in the Chesapeake Bay, based upon a 1994 baseline.

Marine Resources Commission -
Year: **2008**

Approach to Implementation
The effort in Virginia primarily involves habitat restoration with shells; however, there are important elements that involve aquaculture, disease research and management strategies, and oyster stock monitoring.

State Role
There is currently consensus on a Bay-wide strategy for oyster restoration involving 10% of the available oyster grounds being dedicated and restored for oyster sanctuaries (primarily 3-dimensional reefs), and the remainder restored for oyster production. The effort in Virginia primarily involves habitat restoration with shell; however, there are important elements that involve aquaculture, disease research, management strategies, and oyster stock monitoring.

Progress/Outlook
2008 reported progress:

- More than seventy, 3-dimensional reef sites have been constructed Bay-wide since 1993.
- Stock assessment of current oyster populations indicate similar populations of oysters in 2008 as in 2007, but since salinities have increased due to the current drought conditions, there has been a significant decline in large oysters due to disease mortalities. The Bay-wide population of oysters was about the same in 2007 as in 1994 (the baseline for this commitment) despite the significant increase in funding and effort since that time.
- Management strategies currently being implemented appear not to be increasing oyster population numbers, as weather and disease still have the greatest effect on short term and local population levels. There have been significant increases in citizen aquaculture efforts to grow oysters, and this should continue.
- Counteracting the devastating impacts of oyster diseases is the most important issue. Following the severe drought in 2002, salinities were high, and oyster disease impacts were severe throughout Virginia and almost all of Maryland. These conditions were reversed in 2003 and 2004 when record rainfall lowered salinities. The low salinities allowed some oysters to survive to larger size categories by reducing the impacts of disease, but at the same time there was little natural reproduction. Salinities in 2005 and 2006 were near normal, but there has been relatively low reproductive success in most areas of the Bay. In 2007 and 2008, drought conditions returned and salinities increased, resulting in elevated oyster mortalities and moderate reproductive success.
- Cultch is currently limited to shucked, fresh shell and to available deposits of fossil shell. Fossil shell mining permits have been difficult to obtain for both States.

- There will be a significant shortage of Chesapeake Bay oysters Bay-wide at least through 2009, which will severely impact the oyster industry.

Additional Efforts
Virginia's Blue Ribbon Oyster Panel completed its deliberations and released its report in June 2007. The Panel recommended increased funding for native oyster restoration with a more focused approach on the oyster fishery and oyster production through an expansion of remote setting of "spat on shell" and intensive aquaculture. There was the recognition that ecological restoration may take a much longer period than originally envisioned, and that more short-term progress may be made through aquaculture development. A harvest rotation strategy and maximum cull size were implemented in the Rappahannock River. Sanctuary areas have been intermixed with harvest areas using the best larval transport models as guidance, and penalties for oyster violations have been stiffened to protect the new initiatives. Spat on shell aquaculture is being evaluated for profitability by both the private oyster industry and on public oyster grounds. The Commission has also implemented a program to develop a market for cow nosed rays, as a way to control predation on oysters.

Acres of Harvest Area Restored
3708

Acres of Sanctuary Reefs Restored
83

Oyster Reefs

1.1.2 -
By 2002, develop and implement a strategy to achieve this increase by using sanctuaries sufficient in size and distribution, aquaculture, continued disease research and disease-resistant management strategies, and other management approaches.

Marine Resources Commission -
Year: **2008**

Approach to Implementation
The Chesapeake Bay Program has adopted the Bay-wide Oyster Plan. The plan can be viewed at www.chesapeakebay.net. The plan also builds upon the scientific and Bay-wide consensus that 10% of the available oyster grounds be dedicated and restored for oyster sanctuaries (primarily 3-dimensional reefs) and the remainder restored for oyster production. The development of this plan is a coordinated effort among all Bay partners.

State Role
State government participants include: DEQ, MRC and VIMS
This is a Bay-wide commitment, with many State, federal, and private partners committing to the effort.

Progress/Outlook
2008 Reported Progress:

The current native oyster restoration strategy is a long-term strategy (decades), which will require significant cultch restoration efforts for the entire period.

Additional Efforts
The Blue Ribbon Oyster Panel completed its deliberations and released its report in June 2007. The Panel consisted of representatives of the oyster industry, environmental organizations, and the Virginia Institute of Marine Science. The Panel recommended increased funding for native oyster restoration with a more focused approach on the oyster fishery and oyster production through an expansion of remote setting of "spat on shell" and intensive aquaculture. There was the recognition that ecological restoration may take a much longer period than originally envisioned, and that more short-term progress may be made through aquaculture development. The panel recommended increases in hatchery capacity in the Commonwealth, and continued investigations in ways to manage and mitigate the impacts of the cow nosed ray. To date, there has been no additional funding to implement many of the Blue Ribbon Panel recommendations. A harvest rotation strategy, and maximum cull size were recommended and implemented in the Rappahannock River. Sanctuary areas have been intermixed with harvest areas using the best larval transport models as guidance, and penalties for oyster violations have been stiffened to protect the new initiatives.

Multi-Species Management

1.4.3 -
By 2007, revise and implement existing fisheries management plans to incorporate ecological, social and economic considerations, multi-species fisheries management and ecosystem approaches.

Marine Resources Commission -
Year: **2008**

Approach to Implementation
- Expand the scope of fisheries management planning.
- Coordinate interests of the Chesapeake Bay Program partners and identify emerging fishery interests.

Implementation depends on the soundness of the biological foundation of the plan. For example, it will be easier to incorporate these considerations into a multi-species plan for biologically stable species. The choice of target species will also determine the success in implementing such a plan.

State Role
State government participants include: MRC
The state standards for preparing single species fisheries management plans include consideration of social and economic factors. Incorporation of these factors and ecological considerations into a multi-species plan will entail extensive outreach to stakeholders, but efforts may be complicated by existing or new requirements associated with interstate or federal mandates.

Progress/Outlook
Bay-wide, goal 1.4.3 has been very difficult to achieve. As stated, success in this effort will require significant outreach to stakeholders based on information that is sound and accepted by all involved. To reach this end the Commonwealth is supporting a 3-year study on the ecosystem and economic valuation of the Atlantic Menhaden under the direction of Dr. J. Kirkley, VIMS. The study is entering year 3 and as of this reporting there are no results to expand on. When the study is complete, the results will be an important consideration in the development of the interstate fisheries management plan providing both a value of the fishery and an ecosystem service value of the menhaden as a filter feeder.

Additional Efforts

These will be determined as progress on plan development occurs.

Vital Habitat Protection and Restoration

Submerged Aquatic Vegetation

2.1.3 -
By 2002, implement a strategy to accelerate protection and restoration of SAV beds in areas of critical importance to the Bay's living resources.

Marine Resources Commission -
Year: **2008**

Approach to Implementation
See Commitment 2.1.2.
[Excerpt: Bay Program Partners have set a new bay grass restoration goal of 185,000 acres by 2010. A Chesapeake Bay Program SAV Strategy document has been developed entitled "Strategy To Accelerate The Protection And Restoration of Submerged Aquatic Vegetation In The Chesapeake Bay".]

This strategy has four essential elements which are mutually complementary and will be pursued simultaneously:

1. For areas where SAV should grow, the CBP partners will complete the establishment of water quality criteria and water quality standards, and thereafter implement them to achieve the water quality necessary to provide for SAV recovery in areas designated for that use;
2. For areas where SAV grows, protect existing SAV beds from destructive anthropogenic activities and invasive species;
3. For areas where water quality is suitable but where SAV does not yet grow, accelerate SAV restoration by planting 1,000 acres of new SAV beds by December 2008; and
4. Strengthen the scientific and public support for SAV protection and restoration through enhanced SAV research, citizen involvement and education.

State Role

See Commitment 2.1.2.

State government participants include: DCR, DEQ, MRC and VIMS

Agencies most involved in efforts necessary for SAV restoration and protection includes the MRC (State-owned submerged lands management), VIMS (transplantation research and monitoring), DCR (Non-point source pollution management) and DEQ (Point source pollution management).

Progress/Outlook
For 2005, 78,260 acres of SAV were mapped in Chesapeake Bay and its tributaries.

For 2006, 59,090 acres of SAV were mapped in Chesapeake Bay and its tributaries. This acreage represents 32% of the 185,000-acre goal and a decrease from 78,263 acres in 2005. This loss marks the first setback for SAV after two consecutive years of moderate gains and the lowest total SAV acreage figure since 1989.

In 2006 the lower Bay was still experiencing the effects of a large eelgrass dieback that took place in late summer 2005 after a period of record high temperatures. Many of the areas affected by the dieback in 2005 did not produce grass at all in 2006, while the remaining SAV beds observed were very thin.

Scientists attributed acreage declines in the upper and middle Bay to:

- The very dry spring in 2006, which caused more saline water to penetrate into many of the Bay's upper reaches. The higher salinity levels are believed to have increased stress on and loss of SAV species used to fresher water.
- An abnormally large rain event in early June that “muddied” the upper and middle Bay for about a month. The massive amount of sediment that followed this event caused further stress on bay grasses and likely contributed to additional acreage losses.

In 2007 SAV covered nearly 65,000 acres of the Chesapeake Bay and its tidal rivers, about 35 percent of the 185,000-acre bay wide restoration goal. Though a 10 percent increase from 59,000 acres in 2006, bay grasses have not yet recovered to the recent high of 90,000 acres in 2002.

Review of photographic evidence from a number of sites dating back to 1937 suggests that close to 200,000 acres of SAV may have historically grown along the shoreline of the Bay. However, by 1984, the SAV community had fallen to a low of about 38,000 acres. Increasing quantities of nutrients, such as phosphorus and nitrogen, as well sediment in the water have choked or eliminated the growth of SAV in many areas, and contributed to declines in SAV acreage throughout the Bay. Using SAV as yardstick for measuring the progress of Chesapeake Bay restoration efforts is a very unique approach. SAV is not under harvest pressure and its health is closely linked to water quality. Increases in Bay grasses are expected in areas where water quality conditions are improving.

Additional Efforts
1. Restoration will be dependent on improvements in water quality.

2. Restoration and protection efforts involve management of state-owned submerged lands (MRC), transplantation research and monitoring (VIMS), point source pollution management (DEQ) and nonpoint source management (DCR).
3. Strategy implementation is occurring in part through development of a shallow water management plan in response to House Joint Resolution 765 (2001 Session).
4. Planting and transplantation efforts will be dependent on research and development of funding sources as well as support of voluntary programs.
5. Continuation of annual monitoring is essential.

Watersheds

2.2.1 -
By 2010, work with local governments, community groups and watershed organizations to develop and implement locally supported watershed management plans in two-thirds of the Bay watershed covered by this Agreement. These plans would address the protection, conservation and restoration of stream corridors, riparian forest buffers and wetlands for the purposes of improving habitat and water quality, with collateral benefits for optimizing stream flow and water supply.

Department of Conservation and Recreation -
Year: **2008**

Approach to Implementation
Watershed management planning will always be an important component of and tool to lead to the protection of healthy streams and rehabilitation of impaired and degraded streams. In recent years planning efforts have focused on restoration of these waterways. Total Maximum Daily Load (TMDL) implementation plans (IPs) developed to meet the goals of the individual TMDLs serve as watershed restoration plans in the Commonwealth for many watersheds. The development of TMDL IPs will continue as DCR and all partners work to increase implementation and accelerate restoration. Twenty-eight implementation plans have been completed and approved at the time of this reporting.

In 2007 the US EPA Region III Director of the Water Protection Division announced a new initiative to advance watershed protection. This initiative, known as the Healthy Waters Initiative, is a redefining of the way water protection is undertaken. It is based on:

- The need to implement preventative actions to keep waters from becoming polluted in the first place,
- Accelerating restoration and improving already polluted waters.

The US EPA approach to implementation is centered on:

- A coordinated and collaborative approach to accelerate the pace of water protection.
- Make better use of stream databases, such as INSTAR, to identify healthy waters and to assist in setting goals and target activities.
- Balance restoration with prevention and protection.
- Promote "Green Solutions for Blue Water" by designing protection strategies that mimic

natural systems.

The Commonwealth took early action to work with the US EPA on this effort and initiated a pilot project to develop the State's Healthy Waters Program.

State Role
DCR (DSWC and DCBLA) team effort.

Progress/Outlook
Virginia's Chesapeake Bay and Virginia Waters Clean Up Plan (House Bill 1150, 2006) is viewed as a cornerstone in the effort to protect healthy streams and improve compromised waters. The clean up plan describes the pilot efforts of the Healthy Waters Initiative currently underway:

1. Building capacity for healthy streams: Through the use of the Interactive Stream Assessment Resource (INSTAR) application, communicate to the public and local decision makers the location of healthy streams and the relative threat posed by growth and changing land use patterns.
2. Develop integrated watershed management planning: Integrate watershed /TMDL IP planning into the comprehensive watershed and land use planning that occurs in local jurisdictions in an attempt to improve "buy-in" and local implementation of protection and rehabilitation strategies.
3. Enhance watershed protection planning: Develop a pilot watershed protection plan for a specific healthy water body.

All of these efforts are underway and will be updated as a part of the annual update of the cleanup plan.

Additional Efforts
DCR has continually promoted and supported the development of local watershed management planning. Much agency time and resources were focused on this goal in previous years. As the development of the Bay Tributary Strategies plans culminated in early 2005, focus turned toward promoting implementation of actions at the local level that would result in quantifiable nutrient reductions.

Regional field staff continues to share tools and guidelines for plan development as well as available staff time to encourage and support local planning efforts. Staff have recently developed and submitted grant proposals for additional, outside funding to provide resources directly to local jurisdictions for developing plans.

Wetlands

2.3.2 -
By 2010, achieve a net resource gain by restoring 25,000 acres of tidal and non-tidal wetlands. To do this, we commit to achieve and maintain an average restoration rate of 2,500 acres per year basin wide by 2005 and beyond. We will evaluate our success in 2005.

Department of Game and Inland Fisheries
Year: **2008**

Approach to Implementation

1. Provide technical assistance to local, state, and federal governments on wetland restoration techniques and cost-share programs as requested.
2. Continue building on existing partnerships and programs to achieve net resource gains.
3. Provide technical assistance, as requested, for educational programs that encourage wetland restoration and protection.

State Role

DGIF continues to have an active voluntary wetlands restoration program. The program assists private, state, local and federal government landowners to restore wetlands on their property. Landowners receive assistance with site selection, cost-share programs, restoration design, and permit issues. The Department works with many partners to achieve this goal. The Department has also implemented the Virginia Migratory Waterfowl Stamp Grant Program. This program provides grants to non-profit organizations for wetland enhancement, restoration and creation. Five grants have currently been approved and are in the contracting and restoration process.

The Department is represented on Virginia's Inter-Agency Review Team (previously the Mitigation Banking Review Team) that reviews and approves wetland and stream mitigation bank sites and processes across the Commonwealth. The team consists of representatives from the USACOE, DCR, USFWS, DEQ and USEPA. Currently, this team is responsible to provide oversight of 54 operational bank sites, 34 proposed bank sites, 8 sold out bank sites, 1 suspended bank site, 1 inactive bank site ad 1 terminated bank site.

Progress/Outlook

VDGIF is actively restoring wetland habitats in Virginia. Partnerships with organizations such as the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program, the U.S. Department of Agriculture farm bill programs, Ducks Unlimited, the Chesapeake Bay Foundation, and many others have resulted in additional wetland acres restored. During this reporting cycle, restoration totaling 15 acres are in the process of construction on DGIF lands in Appomattox County and 100 acres of phragmites were chemically treated in Surry County. DGIF is also working on wetland restoration state-wide including Atlantic White Cedar restoration on the Cavalier Management Area in the City of Chesapeake and additional private land projects on the Eastern Shore of Virginia.

To be effective in tracking the net resource gain in wetland restoration, an accurate accounting of both wetland creation and loss needs developed. A lack of data to report at this time is a result of not having a centralized wetland database. The situation presents itself, like many data centralizing initiatives, struggling with data discrepancy. Identified issues include cycles of data collection, definition/identification protocols, ownership, as well as maintenance, and the need for annual collection events. The data sources are varied public and private entities. Much of the

success in wetland mitigation occurs through partnership with volunteer organizations. Collecting data from a diverse group requires clear establishment of coordination in the collection of the data with the many non-governmental partners. Priority should be placed on creating the capacity to collect the data required to accurately report on the success toward this goal by 2010

Additional Efforts
The first task to initiate a priority data management project would be identifying the resources available to support project financial and workload needs

Forests

2.4.2 -
Conserve existing forests along all streams and shorelines.

Department of Forestry -
Year: **2008**

Approach to Implementation
Directive 06-01 Protecting the Forests of the Chesapeake Bay: Identify areas where retention and expansion of forests is most needed. Identify and recommend ways that planning, regulations, easements, tax incentives, funding programs and other strategies can protect forest lands, slow loss, and enhance needed stewardship. Expand efforts to link storm water management and land use regulations with forest conservation. Develop in each state a goal, framework, and milestones for protecting forested areas of critical importance for water quality. Work collaboratively with landowners, forest product industries, land trusts, watershed organizations and other business partners to create new partnerships, and develop innovative actions, programs, and incentives to support forest retention and protection of critical to water quality. Continuing effective cost-sharing program for landowners (CREP). Intensify cooperative, collaborative approach among federal and state agencies. Continue efforts to support increased funding for "working landscape" conservation easement purchases and donations. Support Virginia's tax credit program. Intensify GIS applications to target conservation.

State Role
State government participants include: CBLAD, DCR, DEQ, DGIF, DGS, DOC, DOF, VDACS and VDOT

The Commonwealth of Virginia has a direct and significant role in the establishment and preservation of riparian forest and other buffers. A Virginia Riparian Implementation Plan was developed in 1998 and contains specific tasks associated with buffer restoration and meeting the goal of the adoption statement.

The Department of Forestry (DOF) has filled two conservation specialist positions working to conserve forest land in the Chesapeake Bay watershed. The DOF has used GIS to develop forest conservation priority areas and this analysis emphasized water quality protection. The DOF also administers the Forest Legacy Program from the USFS, a grant program funding fee simple acquisition of land or conservation easements. There is also a Riparian Buffer Tax Credit available to landowners that forego timber harvesting within the riparian buffers on their property.

In exchange, the landowners agree to leave the trees for a period of 15 years. The Conservation Reserve Enhancement Program has a riparian easement portion administered by DCR. The Department of Environmental Quality administers the Coastal Estuarine Land Protection Program (CELP), a fee simple acquisition or easement program originating within the National Oceanic and Atmospheric Administration.

Many state agencies participate in a statewide Riparian Working Group chaired by the State Forester. This group will coordinate riparian activities statewide and ensure agencies promote and implement riparian restoration and conservation.

In addition, the Chesapeake Bay Local Assistance Department administers the Chesapeake Bay Act requiring the designation of a 100 foot buffer along all tidal and perennial streams and wetlands. Use and development is restricted with the designated Resource Protection Area (RPA) where vegetation must remain intact. Forestry Best Management Practices (BMPs), including riparian corridor protection, are mandatory within the RPA.

Almost all conservation easements recorded in Virginia include restrictions that also make BMPs mandatory when any forestry activity is undertaken. All conservation easements that result in Land Preservation Tax Credits of one-million dollars or more are required to include riparian buffer protections.

Progress/Outlook

In 2008, Virginia's General Assembly provided additional funding for the VLCF and Purchase Development Rights cost share programs and also approved $30 million for land acquisition for conservation. However, given the budget shortfall there is very little state funding available for land conservation and most of the acres conserved will continue to be through donated conservation easements. At the same time, the economic slowdown has reduced demand for new home construction and many new residential developments have been delayed or cancelled. This may temporarily slow the conversion of forestland to other uses.

Additional Efforts

Continue efforts to increase conservation, including riparian areas. Enhance importance of Virginia Land Conservation Foundation efforts to fund conservation.

Water Quality

Nutrients and Sediment

3.1.2 -
By 2010, correct the nutrient- and sediment-related problems in the Chesapeake Bay and its tidal tributaries sufficiently to remove the Bay and the tidal portions of its tributaries from the list of impaired waters under the Clean Water Act.

Department of Conservation and Recreation -
Year: **2008**

Approach to Implementation
The Chesapeake Bay 2000 Agreement has significantly shifted the Commonwealth's goals and process for achieving water quality restoration in Chesapeake Bay and its tributaries. Instead of concentrating exclusively on nutrient load reduction, the Bay Program participants are also focusing attention on the water quality conditions to sustain living resources and protect important habitat areas. Prior EPA Chesapeake Bay water quality criteria were based on the assumption that all areas in the Bay are identical and did not take into account the natural variability of water quality conditions in the Bay ecosystem. Bay nutrient criteria and use designations were completed by EPA Region III in April 2003 and include criteria for dissolved oxygen, chlorophyll a and water clarity. In order to attain these new criteria the EPA Chesapeake Bay Program established new nutrient reduction goals for Bay watershed states to reduce the annual amounts of nitrogen from the current estimated 285 million pounds to no more than 175 million pounds, and phosphorus from 19.1 million pounds to no more than 12.8 million pounds. The EPA Chesapeake Bay Program using the Bay watershed and water quality models determined the cap load allocations for the Bay states and further allocated the loads among the major Virginia tributaries to the Bay. Virginia's nitrogen allocation to the Bay is 51.5 million pounds/year, phosphorus is 6.00 million pounds/year and sediment is 1.94 million tons/year. Complete information on the development and implementation of Virginia's strategies can be found at: http://www.naturalresources.virginia.gov.

State Role
State government participants include: DCR, DEQ, VMRC, and VIMS

The Commonwealth has significant interest and support responsibilities for this commitment.

Progress/Outlook
Refer to Virginia Chesapeake Bay and Impaired Waters Clean Up Plan (HB 1150 report: http://www.naturalresources.virginia.gov/Initiatives/WaterCleanupPlan/) for detailed progress toward removal of the Chesapeake Bay from the impaired waters list. Virginia will need substantial funding and technical resources to implement the revised tributary strategies, in addition to programs such as the Virginia Agricultural Cost-Share Program, the Conservation Reserve Enhancement Program, Environmental Quality Incentive Program, and the Virginia Water Quality Improvement Fund, which have been the mainstays for achievements in Virginia's Chesapeake Bay Watershed for years. USEPA has recognized the need for and is planning on the development of a TMDL for the Bay by May 1, 2011 since it is their opinion that insufficient progress will be made by then for a de-listing to occur.

Additional Efforts
The estimated annual sediment reduction (point source and NPS) that occurred during the first half of 2007 is estimated to be over 10 thousand tons, assuming average hydrologic conditions. Changes in the Bay computer models and BMP efficiencies indicate a reduction of approximately 27 thousand pounds of nitrogen and 21 thousand pounds of phosphorus over 2006 reported levels.

The US EPA's Chesapeake Bay Program has received approval from the seven Bay partner jurisdictions to use the recently calibrated phase 5.1 watershed model and estuary model or water

quality sediment transport model for draft preliminary scoping scenarios. There are technical issues with these models, specifically the nonpoint source inputs to the phase 5.1 watershed model, and EPA has acknowledged that corrections must occur in the next phase, 5.2. The estuary model is currently simulating and is calibrated for 7 of the 10 years EPA is planning to simulate. However, EPA will proceed with the development of initial draft Bay wide TMDL allocations for the 78 listed impaired tidal segments. The additional 3 years are to be calibrated and the phase 5.2 watershed model should be available for more refined allocations in 2009.

Sound Land Use

Land Conservation

4.1.3 -
Strengthen programs for land acquisition and preservation within each state that are supported by funding and target the most valued lands for protection. Permanently preserve from development 20 percent of the land area in the watershed by 2010.

Department of Conservation and Recreation -
Year: **2008**

Approach to Implementation
The primary element of this commitment speaks to preserving 20 percent of the land area in the watershed. Starting from a June 30, 2000 baseline of properties that meet the definition of preserved lands, it was estimated that an additional 1.1 million acres of preserved lands in Virginia is needed to meet the 2010 goal. The Land Conservation Workgroup under the LGSS has developed an overall work plan for monitoring progress on these commitments, implementing tasks and projects, and creating and implementing specific strategies for particular commitments as needed.

State Role
State government participants include: DCR, DGIF, DHR, DOF, VLCF, VDACS, VIMS, and VOF

As part of its management of the Protected and Managed Lands database; DCR calculates the annual statistics that determine progress toward the 2010 Land Conservation Goal. One key role of the state in this commitment relates to targeting its programs towards the most valued lands. The VLCF splits its funding among four uses (natural area protection, open spaces and parks, farmlands and forest preservation, and historic area preservation) and also passes money to the Virginia Outdoors Foundation for its easement program which includes PDR grants to localities. The VLCF is responsible for developing a “needs assessment” (strategic plan) for future land preservation targeting efforts that will cohesively synthesize those properties and needs identified in the many plans of Virginia’s conservation partners. This needs assessment was included as a chapter of the 2007 Virginia Outdoors Plan. The Virginia Conservation Lands Needs Assessment (VCLNA) developed by DCR and VLCF is a key tool for targeting the most important lands for preservation.

In the past fiscal year (FY2008), efforts by the conservation community across the state led to the protection of 56,644 acres of additional land in Virginia’s Chesapeake Bay watershed. Statewide,

89,283 acres were conserved in the same year. This continues an encouraging trend of land protection in the Bay watershed, but is still short of the pace needed to meet the 2010 Chesapeake Bay Agreement goal. DCR is currently acquiring key State Park and Natural Heritage lands using Virginia Public Authority Bonds and General Obligation Bonds approved by voters in 2002, and in FY2008, the agency added 2,721 acres for both parks and natural areas across the state. In this same time period the Department of Game and Inland Fisheries protected 860 acres statewide, and the Department of Forestry protected 5,480 acres. In FY2008, VOF, working with partners such as Department of Historic Resources, placed 62,400 acres under easement protection.

Progress/Outlook
Progress reported in 2008:

Virginia continues to make progress on mechanisms for spending land protection funds effectively, but still lacks a permanent funding source to aggressively address current goals. The Virginia Conservation Lands Needs Assessment, which serves as a targeting tool for the VLCF, is providing a critical resource for government agencies and private land trusts to engage in strategic land-preservation efforts. Given adequate funding, the Commonwealth has the capability to accurately identify and track preserved lands and the programs in place to protect the lands within the Commonwealth.

Virginia's current land preservation status (i.e. the total amount of land preserved in Virginia's portion of the Chesapeake Bay watershed) as of June 30, 2008, is 2,464,636 acres, which represents 17.82% of the Bay watershed in Virginia. Since 20 percent of Virginia's Bay acreage equates to 2,766,378 acres, Virginia's remaining target is 301,742 acres – presenting a substantial challenge.

Governor Kaine has become a champion for this issue, however, and has made land preservation a keystone component of his natural resources agenda, with an ambitious land conservation goal to preserve an additional 400,000 acres in Virginia by the end of the decade. Those additional acres will achieve significant progress towards the Bay Agreement commitment as well as advance important land preservation in Virginia's southern river watersheds. When he announced the 400,000 acre goal, the Governor noted that "[w]ith every passing day, land is becoming more expensive and scarcer. I will set and meet this preservation goal during my term – not just because it's the right thing to do – I will do it because if I don't, the opportunity to do it will not be there for future governors and future Virginians". The Governor has also recognized that protecting land also helps in meeting goals relating to water quality, recreation, and quality of life.

Additional Efforts
Virginia will also continue to seek federal funds to assist with land preservation efforts and will work to enhance our programs to educate landowners on opportunities available to them to protect their lands from future development and to keep them as working open space.

Development, Redevelopment and Revitalization

4.2.1 -
By 2012, reduce the rate of harmful sprawl development of forest and agricultural land in the Chesapeake Bay watershed by 30 percent measured as an average over five years from the

baseline of 1992-1997, with measures and progress reported regularly to the Chesapeake Executive Council.

Department of Conservation and Recreation -
Year: **2008**

Approach to Implementation
This commitment will be achieved through the continued implementation of Virginia's Chesapeake Bay Preservation Act, which contains requirements for localities within Tidewater Virginia to amend their codes and comprehensive plans to incorporate sound land use techniques and measures to protect water quality. There are two other more recent initiatives that will also advance this commitment. Beginning in 2006, the Virginia General Assembly adopted two amendments to the Code of Virginia that, as these measures are implemented, should facilitate the achievement of this commitment. In 2006 the State Code was amended to provide for the clustering of single-family dwellings so as to preserve open space. This measure applies to Virginia localities with a growth rate of 10%, or 61 of the 167 localities. The provisions became effective in July of 2007. The second change in the State Code occurred in 2007, with the adoption of a transportation bill which included provisions requiring the establishment of Urban Development Areas or UDAs as part of local comprehensive plans. This measure would apply to localities with a growth rate of 15% or a growth rate of 5% and a population of at least 20,000. Under these criteria, the UDA requirements would be mandated in 57 localities in Virginia. Under this statute, UDAs must be designated in locations appropriate for compact, high density development due to proximity to transportation facilities, the availability of central water and sewer systems, or location adjacent to towns, cities or other developed territory. UDAs must allow minimum residential densities of four dwelling units per gross acre and commercial densities of 0.4 floor area ratio per gross acre.

Other efforts include:
- Working to identify barriers and opportunities for promoting sound land use practices and strengthening programs that promote sound land use.
- Providing technical and financial assistance to localities to promote environmentally sensitive development and redevelopment (Funds for this purpose are expected to be very limited in the future given expected significant reductions in State and Federal grant sources).

State Role
The primary State government participant with regard to addressing this commitment is the Departments of Conservation & Recreation (DCR), which carries out a number of programs and activities that contribute to the promotion of sound land use management. While DCR plays an oversight role in this area, it is the local governments who do the actual implementation of land use management programs. As stated previously, localities within Tidewater Virginia are required by the Chesapeake Bay Preservation Act to implement sound land use management techniques. With the current status of local implementation of the Bay Act, all 84 of the Tidewater localities have mapped sensitive environmental features such as wetlands, tidal shores and perennial streams, adopted local ordinances that establish criteria to protect those features and meet performance measures to reduce the impact of urban development. Twenty of the 84 localities have designated Intensely Developed Areas in which infill development and redevelopment are encouraged and promoted. Additionally, all 84 localities have adopted provisions in their comprehensive plans for

the protection of water quality. Among such provisions are the identification of areas that are most suitable for development such as near major transportation corridors, areas that are already intensely developed and measures to promote infill. By using performance criteria to reduce the impact of development on waters and the incorporation of the above measures into local comprehensive plans, it is felt that local governments will have the basic tools to address this commitment. The next phase of Bay Act implementation, which is now being developed and is expected to be implemented in 2009, will involve requiring localities to review their local zoning, subdivision and other land development codes to identify specific code provisions which can be improved or added to reduce the impact of development upon water quality. As part of this effort, code provisions will be in place that actively promotes Better Site Design and Low Impact Development for the protection of water quality.

Progress/Outlook
Tracking of this commitment was to have been done by a working group under the charge of the USEPA Chesapeake Bay Program Office (CBPO). Originally, the CBPO was to develop a data collection and tracking system that would be used to set a baseline condition and continue monitoring over the life of the commitment. Due to CBPO reorganization the workgroup charged with this task is not meeting at present and as a result the tracking system is not in place. Status of this commitment cannot be adequately assessed until the baseline is established, the target is set, and the measurement period is determined. DCR, through the Division of Chesapeake Bay Local Area Assistance and other agencies, continues working to support localities in developing the appropriate tools for protecting and improving water quality.

Stewardship and Community Engagement

Education and Outreach

5.1.4 -
Beginning with the class of 2005, provide a meaningful Bay or stream outdoor experience for every school student in the watershed before graduation from high school.

Department of Conservation and Recreation, Department of Education -
Year: **2008**

State Role
DEQ, DOE

Progress/Outlook
A plan for integrating meaningful watershed field experiences in the public school program state-wide is coordinated by the education staff at natural resources agencies, state museums, and the Department of Education through an interagency group, the Virginia Resources-Use Education Council. This plan includes hosting 2 week-long teacher “Institutes,” formal communication of pertinent information to school divisions; distribution of “mini-grants” to schools for appropriate projects, integration of related topics within appropriate SOL educator workshops; presentations at teacher conferences; electronic training broadcasts; and meetings with school division leaders. Supplementary curriculum materials have been developed and used in conjunction with existing

high-quality resources to promote meaningful watershed field experiences across grade levels, especially at middle and high school.

Survey results from the VA Department of Education in 2005 indicate that 100% of VA schools have academic standards related to watersheds and the Chesapeake Bay. In 2007, a second survey was completed by 83% of the school population (110 out of 132 school divisions). Based on these completed surveys, approximately 360,000 elementary school students, or 72 percent of elementary students, 79 percent of middle school students and 77 percent of high school students have participated in at least one MWEE-type program during the instructional year. Despite these high levels of participation, DEQ estimates that less than 25% of the Class of 2007 had a ***high-quality*** experience and approximately 3% of Virginia's 1 million students in the watershed have a meaningful "on-the water" field experience annually. The DOE survey suggests that public schools are partially meeting the intent of this objective via locally developed programs, especially those supported with existing state funding such as the Virginia Naturally Classroom Grant (VEE and DCR provide mini-grants). The General Assembly provides modest funding to the Chesapeake Bay Foundation for watershed field experiences that reach about 1,800 students annually. Local resources such as soil and water conservation districts, 4H extension and master naturalist educators help supplement field and classroom instruction.

Additional Efforts

Meeting this objective completely will require a sustained implementation, including training of teachers and natural resource professionals, development of locations and facilities suitable for field investigations, and enhanced building and central office administrative support.