

## State Technical Committee Minutes

Richmond, Virginia

March 27, 2012

**Wade Biddix, NRCS ASTC-Programs**, welcomed the group and opened the meeting at 10:00 a.m. He had attendees introduce themselves and the agency/organization represented.

**Attendance:** Wade Biddix (NRCS), Jack Bricker (NRCS), Libby Norris (CBF), Emily Horsley (FSA), Dan Solomon (NRCS), Patricia Stansbury (VABF, WRIR), Mark Schonbeck (VABF, SSAWG), Chad Wentz (NRCS), Diane Dunaway (NRCS), Patrick Vincent (NRCS), Ron Wood (NRCS), Alan Spivey (VA Forage and Grasslands Council/VA Cattlemen Assn.), Tom Harlan (VDOP), Todd Groh (VDOP), Dale Gardner (WSI), Gary Moore (VA DCR), John Parker (VA Pork Producers), Pat Paul (NRCS), David Kriz (NRCS), Greg Frey (VSU Cooperative Extension), Dave Byrd (USFWS), Keith Boyd (NRCS), Mike Oesterling (SGV), Georgia Solseth (NRCS Recorder).

**Jack Bricker – NRCS – Opening Comments:** Jack noted that there are three initiatives in the state out of 17 country-wide: the Longleaf Pine, Chesapeake Bay Watershed, and, the newest one, the Golden-Winged Warbler. Nationwide, the funding is moving to species specific initiatives. As resources are cut, it will impact the amount and distribution of funds available for our clients. He mentioned the following changes: a year ago we lost the RC&D program, the watershed program and dam rehabilitation programs are essentially non-existent (there are about 12,000 dams in the US with current funding to complete only about 6 projects per year), the Soil Survey Program is undergoing a reorganization, Conservation Delivery Streamlining Initiative will change NRCS planning in the field, and there will be changes with NRCS administrative staff. These changes all affect how we do business – what will the field office look like in the future? We will work with Partners to get input on how they see us best getting the job done. At the next State Technical Committee meeting, there will be a facilitated interview process with attendees to get input. NRCS will also facilitate meetings throughout the state and send questionnaires to employees, partners, and landowners. Information will be analyzed and a plan submitted to Headquarters. Jack was asked if he anticipates more or less use of TSPs. He said that NRCS will keep pushing the use of TSPs. VA has 40 certified foresters who help with private forestry work. Opportunities exist but we have only been moderately successful in getting people interested in becoming TSPs. He also mentioned that he is not optimistic on the 2012 Farm Bill; believes Congress will extend current one.

### *Conservation Reserve Program (CRP & CREP)*

**Emily Horsley – FSA –** (handout attached). Reviewed the CREP enrollment progress report on handout. Indicated a letter was drafted to DCR to increase enrollment ceiling for Southern Rivers by an additional 5,000 acres. Also, recently approved the reduction of Culpeper Safe practice eligibility from 25 to 10 acres. CRP general signup is open until April 6. Producers can offer whole fields for enrollment. There will be a national ranking using Environment Benefit Index.

### *Status of FY12 Program Funds*

**Dan Solomon – (NRCS) Farm Bill Programs:** (handouts attached) The first EQIP evaluation period ended February and the majority of funds have been used. Second period ends the end of March. TSPs are drumming up work for Conservation Activity Plans (CAPs). Energy audits are getting better, so we should see an increase in those. In CBWI, funds were recently allocated to CCPI so activity should start to increase. There are no concerns that funds won't be used. Plan to move \$75,000 from Animals in Confinement to reserve account because we will not receive any money from HQ for contract modifications. We will try to plan for modifications but like to have a reserve just in case. Reminded everyone that EQIP is available state-wide, CBWI is only available in the watershed.

**Ron Wood – (NRCS) Organic:** \$350,000 have been allocated. Sign-ups have been slow. There are 2 approved contracts and 5 pending. **High Tunnel:** HQ manages HT funding and approvals. We have pre-approved funding for 60+ applications for over \$400,000. **Energy:** Two applications for \$130,000 have been funded. Wade added that energy audits must be completed before an application is eligible for implementation funding. Audits have been increasing so requests for implementation will probably increase as well.

**Diane Dunaway – NRCS Easement** (Detailed report attached) – Jeremy Stone is on detail to HQ for another three weeks. **FRPP:** Actively seeking applications because we have \$1.3 million unobligated. **GRP:** There is more interest than money. **WRP:** Easement design is concurrent with acquisition so that once approved it can move forward to construction of the restoration practices. There are 14 site visits planned – 10 for new sites and 4 reapplications. One application is for over 900 acres and could take most of the funding. Will request additional funds, but will probably defer large application until funds are available to fund the entire easement.

#### *FY12 Program Updates*

**Wade Biddix – (NRCS) Golden-winged Warbler:** Provided multiple handouts regarding GWW initiative. Virginia is part of a large focus area (much of which is public land). We will need to work with private landowners. Provided names of committee and key dates. The committee needs to estimate acres before sign-up. May receive a second signup. Believe this is a year for staging and ramping up for the future. Core and supporting practices have been identified. NRCS has developed a draft fact sheet and welcomes any comments or suggestions. The National release was provided to give larger context. The GWW initiative is one of seven nation-wide to focus on a specific species, however, other species will benefit as well. Dan added that he was in contact with a VCU workgroup who is studying GWW counts – suggests partnering with them on this effort. Wade believes that efforts are switching to WLFW because WHIP was cut from \$85 to \$50 million nationwide.

**Ron Wood – (NRCS) Wildlife Practices in EQIP:** (Handout attached) Wade led with describing the situation - there are 71 applications in WHIP with no funding. HQ has directed NRCS to consider trying to fund wildlife practices in EQIP. Plan to get \$150k from EQIP – will pull \$25K from aquaculture, \$50,000 from CMNP since there have been no requests, \$5k each from CAP104 and 118, \$10k from energy audit, and \$55K from cropland. This will be for this year only as WHIP is funded annually. Applicants that have applied under WHIP will need to reapply under EQIP. Ron provided the DRAFT EQIP – Wildlife – Upland Habitat Creation worksheets. It concentrates on upland habitat creation and identifies 17 EQIP practices that can be funded under EQIP.

**Patrick Vincent – (NRCS) National Water Quality Initiative:** (Handout attached) Virginia was directed to set aside 5% of EQIP funds for this initiative which amounts to \$456,780 and to select 1-3 watersheds; worked with DCR and DEQ to identify one in each Area with the exception of Area 1 which already has Smith Creek. Handout provides maps of each of the areas and a breakdown of the land cover. Provided a list of tentative core and supporting practices some of which will require a waiver since we don't have them in Virginia. Wade added that selection was difficult because many watersheds had impairments from natural causes. Our goal is for TMDL waters to be removed from the impaired waters list. If NRCS can move them off of TMDL list we need to focus on agriculturally impaired watersheds and work on cropland and pasture conservation issues. There may be existing EQIP applications that we can move to this initiative. Wade stressed to keep the potential watershed information confidential – this is still an internal action. HQ has not made an official announcement yet and no official state press releases can be made until after the HQ announcement.

#### *FY13 Farm Bill Program Offerings*

**Wade Biddix (NRCS):** NRCS is trying to look forward regarding program offerings for FY13. Please let us know about your potential projects and ideas. NRCS will contact the Local Work Groups to solicit input on things that are or aren't working at the local level. These Work Group meetings will be open to all agencies and organizations. Local SWCDs will be asked to convene local Work Group meetings; the state office will not have meeting dates and times. Received suggestions from the committee members regarding how to solicit

input to include advertising meetings in the VA Cattlemen's Association Magazine which goes to 8,000 people monthly, utilizing Farm Bureau to get the word out, and sending information to technical committee members when ready to advertise meeting.

### *Agency Updates*

**Chad Wentz (NRCS)** – Discussed FY13 Regional Payment Plan. Country was broken into 13 regions. Regions set scenarios but national will set costs for each component of scenarios. In FY-12, identified top 15 practices and cost lists. All other practices will be done by November. Also informed group that NHQ has an agreement with 4 universities to provide CRP Readiness training to TSPs. Our area's training will be in Charlottesville on May 7-8 and registration is through the University of Wisconsin.

**Libby Norris (CB)** – Organization involved with Farm Bill discussion on Hill – agrees with Jack that new Farm Bill will probably not happen. Stewardship grant, which concentrates on Smith Creek and funds a couple of technicians and some cost-share programs, closes in December. Announced Canoe Trip down Smith Creek on April 21.

**Mike Oesterling (SGV)** – Announced that they submitted a CIG proposal on Water Quality Credit trading.

**Keith Boyd (NRCS)** – Area has significant workload in converting applications to contracts. Shared info regarding joint meeting on Wildlife. Informed group that Pat Tyrrell passed away.

**Dave Byrd (USFWS)** – Advised group of temporary personnel changes, that CCPI at Cooper Creek is going well and that agreement with NRCS is good for 3 years but they are reviewing to see what needs updating or adding.

**John Parker (VA Pork)** – Expressed appreciation for work NRCS does and concern that mandated ethanol production will force industry to take land currently in conservation for corn and grain production.

**Patrick Vincent (NRCS)** – CIG update: in National CIG VA had 8 single-state and 3 multi-state proposals that advanced to full proposal stage.

**Gary Moore (DCR)** – Announced agency is releasing \$8.6 M in supplemental cost-share grants, and is changing allocation categories to district level focused funds so that funds get out more quickly.

**Alan Spivey (VA Cattlemen)** – Shared that he reviewed the Stockpile demo enhancement which was excellent and provided some suggestions to JB Daniel.

**Greg Frey (VSU)** – Shared that he works with VSU that has a new Forestry Program and education, outreach, and research program.

**Todd Groh (VDOF)** – Updated group on Nursery operations which were very successful – sold all 26 million seedlings and plan to expand next year to include containerized long leaf pine seedlings. They have struggled with hardwood plantings. DOF is involved with bio-fuels by harvesting timberland debris, chipping and bringing to plants. Effort has helped in timber reclamation. Also, working with Tree Farms to be land certified – would harvest from sustainable land and possibly stewardship land. Informed group that agency is reorganizing as well - losing many positions and moving towards a "Mobile" program where foresters work from trucks. They are also closing 6 buildings to make up for budget shortfalls and to move toward mobile plan. Stated that there will be a possible 14% decrease in the Forest Stewardship Program.

**Emily Horsley (FSA)** – Informed group that BCAP is open to accept proposals for project areas for producers and facilities for financial incentives to produce Bio-fuels; process is involved and more information can be found on the FSA website.

**Patricia Stansbury (VABF)** – Stated that agency is hiring a new Executive Director. Provided update on mining uranium in Pittsylvania County and provided public meeting notices on the National Research Council report on Uranium mining.

**Mark Schonbeck (VABF/SSAWG)** - Updated group on the success and exceptional speakers of the annual Virginia Biological Farming Conference in February.

**David Kriz (NRCS)** – Four new soil surveys are available on-line for Patrick, Brunswick, Franklin, and Amherst counties.

**Jack Bricker (NRCS)** - Thanked everyone for their input. Commented that we face many challenges – we have to “feed a hungry world” yet at the same time meet other energy and conservation demands. Yield will increase but won’t be sustainable unless we consider soil health and quality. We need to improve, not just sustain. Reiterated that at the next meeting, he will facilitate comments regarding how to do just that with the Field Office of the Future.

**Wade Biddix – (NRCS)** - Meeting was adjourned at approximately 12:36 p.m. Wade thanked everyone for coming and announced that the next STC meeting is scheduled for May 22, 2012, at 10 a.m.

## Conservation Reserve Enhancement Program Sign-up Progress

As of 03/27/2011

<b>Chesapeake Bay -</b>	1,880 contracts approved <b>17.019 acres</b> <i>AVAILABLE ACRES: 7,981</i> <i>Current Allocation: 25,000</i>
<b>Southern Rivers -</b>	2,128 contracts approved <b>14,124.8 acres</b> <i>AVAILABLE ACRES: 875.2</i> <i>Current Allocation: 15,000</i>
<b>CP-33 - Habitat Buffer For Upland Birds</b>	237 contracts approved <b>1,695.3 acres</b> <i>AVAILABLE ACRES: 804.7</i> <i>Current Allocation: 2,500</i>
<b>CP-36 Longleaf Pines</b>	19 contracts approved 384.9 acres <i>AVAILABLE ACRES: 3,365.1</i> <i>Current Allocation: 3,750</i>
<b>SAFE</b>	
<i>Culpeper Basin Bird Habitat Restoration</i> <i>CP-38A – (Forested Riparian Areas)</i> <i>CP-38E – (Native Grass Areas)</i>	<i>AVAILABLE ACRES: 500</i>
<i>CP-38C</i> <i>Restoration and Management of</i> <i>Eastern Shore Migratory Bird</i> <i>Tree/Shrub Habitat</i>	<i>AVAILABLE ACRES: 300</i>
<i>CP-38C</i> <i>Statewide Tree Planting</i>	<i>AVAILABLE ACRES: 500</i>
<i>CP-38D</i> <i>Longleaf Pine</i>	14 contracts approved 361.5 acres <i>AVAILABLE ACRES: 638.5</i> <i>Current Allocation: 1,000</i>

# EQIP Funds Status

Account Name	Allocated	Contract Approval	Pre-Approved Applications	Funds Remaining	All Eligible Applications
Virginia	\$10,959,942.00	\$1,069,754.06			
Sub Funds	\$10,503,162.00	\$1,069,754.06			
National Initiatives Funds	\$456,780.00				
Aquaculture	\$100,000.00	\$10,000.00	\$35,000.00	\$55,000.00	\$0.00
Beginning Farmer	\$304,517.00	\$0.00	\$287,183.00	\$17,334.00	\$1,968,948.00
CAP 102 CNMP Development	\$50,000.00	\$0.00	\$0.00	\$50,000.00	\$0.00
CAP 104 Nutrient Management Plan	\$10,000.00	\$0.00	\$0.00	\$10,000.00	\$0.00
CAP 106 Forest Mgmt Plan	\$60,000.00	\$39,900.00	\$12,180.00	\$7,920.00	\$0.00
CAP 114 Intergrated Pest Mgmt	\$10,000.00	\$0.00	\$0.00	\$10,000.00	\$0.00
CAP 118 Irrigation Water Management Plan	\$5,000.00	\$0.00	\$0.00	\$5,000.00	\$0.00
CAP 122 Energy Audit Headquarters	\$50,000.00	\$3,730.00	\$5,240.00	\$41,030.00	\$0.00
CAP 124 Energy Audit Field Operations	\$10,000.00	\$0.00	\$2,550.00	\$7,450.00	\$0.00
CAP 130 Drainage Water Management	\$5,000.00	\$0.00	\$0.00	\$5,000.00	\$0.00
CCPI-Ches Bay Foundation	\$250,000.00	\$0.00	\$0.00	\$250,000.00	\$0.00
CCPI-Fish America	\$800,458.00	\$0.00	\$0.00	\$800,458.00	\$33,329.00
Cropland - Christiansburg	\$236,872.00	\$48,621.00	\$95,243.00	\$93,008.00	\$10,358.00
Cropland - Farmville	\$325,711.00	\$43,227.00	\$17,848.00	\$264,636.00	\$13,752.00
Cropland - Harrisonburg	\$325,711.00	\$0.00	\$175,000.00	\$150,711.00	\$0.00
Cropland - Smithfield	\$345,453.00	\$108,888.00	\$229,502.00	\$7,063.00	\$327,672.00
Forestry - Statewide	\$600,000.00	\$305,826.26	\$289,912.00	\$4,261.74	\$616,020.00
FY12 Certified Organic	\$171,548.00	\$0.00	\$0.00	\$171,548.00	\$0.00
FY12 On-Farm Energy	\$15,600.00	\$15,600.00	\$119,892.00		\$0.00
FY12 Organic Transition	\$171,547.00	\$0.00	\$29,355.00	\$142,192.00	\$0.00
FY12 Seasonal High Tunnels	\$417,333.00	\$139,663.80	\$266,932.00	\$10,737.20	\$22,693.00
Limited Resource Farmer	\$304,517.00	\$82,506.00	\$13,103.00	\$208,908.00	\$13,510.00
Livestock in Confinement - Christiansburg	\$1,997,886.00	\$207,608.00	\$1,759,403.00	\$30,875.00	\$739,163.00
Livestock in Confinement - Farmville	\$541,208.00	\$0.00	\$360,433.00	\$180,775.00	\$822,688.00
Livestock in Confinement - Harrisonburg	\$1,010,256.00	\$0.00	\$305,427.00	\$704,829.00	\$0.00
Livestock in Confinement - Smithfield	\$252,564.00	\$0.00	\$243,000.00	\$9,564.00	\$194,000.00
Pasture - Christiansburg	\$550,734.00	\$0.00	\$509,666.00	\$41,068.00	\$1,580,921.00
Pasture - Farmville	\$459,488.00	\$54,905.00	\$375,450.00	\$29,133.00	\$168,636.00
Pasture - Harrisonburg	\$485,558.00	\$9,279.00	\$268,000.00	\$208,279.00	\$0.00
Pasture - Smithfield	\$133,609.00	\$0.00	\$0.00	\$133,609.00	\$32,278.00
Socially Disadvantaged	\$304,517.00	\$0.00	\$18,628.00	\$285,889.00	\$559,478.00
FY12 CIG State Component	\$150,000.00	\$0.00	\$0.00	\$150,000.00	\$0.00
FY12 EQIP Reserve	\$48,075.00	\$0.00	\$0.00	\$48,075.00	\$0.00
			Totals	\$4,134,352.94	\$7,103,446.00

# CBWI Funds Status

Account Name	Allocated	Contract Approval	Pre-Approved Applications	Funds Remaining	All Eligible Applications
Virginia	\$12,496,311.00	\$558,884.35			
Sub Funds	\$12,496,311.00	\$432,884.00			
CBWI - Animals in Confinement	\$5,034,289.00	\$0.00	\$4,491,130.00	\$543,159.00	\$256,427.00
CBWI - Cropland	\$2,519,145.00	\$377,143.00	\$1,674,554.00	\$467,448.00	\$440,034.00
CBWI - Limited Resource Farmer	\$393,577.00	\$3,949.00	\$80,000.00	\$309,628.00	\$0.00
CBWI - New Farmer	\$393,577.00	\$0.00	\$366,177.00	\$27,400.00	\$580,187.00
CBWI - Pasture	\$2,519,145.00	\$48,883.00	\$1,735,594.00	\$734,668.00	\$424,439.00
CBWI - Socially Disadvantaged	\$393,577.00	\$2,909.00	\$74,346.00	\$316,322.00	\$0.00
Forestry CCPI	\$90,000.00	\$0.00	\$0.00	\$90,000.00	\$106,150.00
Forestry CCPI Forest Management Plan	\$30,000.00	\$0.00	\$0.00	\$30,000.00	\$0.00
Shennendoah Valley RCD_CCPI	\$450,000.00	\$0.00	\$0.00	\$450,000.00	\$0.00
Smith Creek Showcase Watershed-Cropland	\$150,000.00	\$0.00	\$73,505.00	\$76,495.00	\$18,400.00
Smith Creek Showcase Watershed-Pasture	\$350,000.00	\$0.00	\$62,802.00	\$287,198.00	\$0.00
Trout Unlimited	\$47,000.00	\$0.00	\$0.00	\$47,000.00	\$0.00
FY12 CBWI Reserve	\$126,001.00	\$126,000.35		\$0.65	
			Totals	\$3,379,318.65	\$1,825,637.00

**FRPP :: Farm & Ranch Lands Protection Program**

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1. Acquisition is proceeding on 8 FRPP easements.
2. FY-12 applications so far total \$2,930,000 in Areas 1, 2, and 3.
3. Several more applications are expected this fiscal year.
4. Work is beginning on FRPP State Plan for FY-13; if your organization is considering an FRPP application in FY-13 please contact Jeremy Stone so he can include information on the potential application in the plan.

**GRP :: Grassland Reserve Program**

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1. Acquisition is proceeding on 2 GRP easements, totaling approx. 235 acres.
2. 33 applications were received from Areas 1, 2, 3 (14 counties), totaling 4,910 acres, for \$13,198,865. Initial FY-12 allocation is \$90,584; have requested additional from NHQ. Top ranking applicant (Rockingham) accepted opportunity for a reduced acreage easement.
3. Counties that sent applications:

Augusta	Fluvanna	Lunenburg	Stafford
Clarke	Grayson	Page	Washington
Culpeper	Halifax	Rockingham	
Cumberland	Louisa	Smyth	

**WRP :: Wetlands Reserve Program**

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1. Acquisition is proceeding on 9 WRP easements, totaling approx. 400 acres.
2. Restoration plan (WRPO) design and implementation are underway on 7 closed WRP easements, totaling 273 acres; plus one ten-year restoration agreement of 3.4 acres; one restoration was completed in February; WRPO design is concurrently underway on the 9 easements in the acquisition stage.
3. Five-year plan was completed addressing: Monitoring, Restoration, New Acquisitions.
4. 19 applications were received from Areas 1, 2, 4, totaling 1,224 acres, requesting \$3,732,100; have requested additional from NHQ. Initial FY-12 Allocation Total: \$1,139,022 is split: Enrollment: **\$879,118**; Restoration: \$259,904.
5. NOTE about large easement: 14 eligible applications total 244 acres for **\$890,100**; one large eligible application is 980 acres for \$2,842,000.
6. WRP Team site visits are underway in March and April; ranking is expected for early May.
7. Counties that sent applications:

Caroline	Culpeper	Greensville	Rappahannock
Charles City	Fauquier	Isle of Wight	Shenandoah
Chesapeake	Grayson	Prince William	Washington

# Golden-winged Warbler

Status: Species of Concern



*Vermivora chrysoptera*

Focus Area: Georgia, Kentucky, New York, North Carolina, Pennsylvania, Tennessee, Virginia and West Virginia

- Golden-winged warbler has undergone significant population declines in the Appalachian region of its range
- Golden-winged warblers and many other species depend upon shrubby, early successional habitats at high elevations including forest clear-cuts, alder swamps, areas harvested for timber, and utility rights-of-way.
- The Appalachian region offers a tremendous opportunity to improve habitat for golden-winged warbler and other neotropical migratory birds. The vast forested lands, grasslands and forb-rich areas provide structurally diverse vegetation for breeding and foraging, and offer the greatest opportunity to combat declines in golden-winged warbler populations.
- Working Lands for Wildlife will assist private land owners create and maintain the habitat necessary to sustain breeding populations within and adjacent to their current range.

## GWW Initiative – Committee

Galon Hall – NRCS

Brian Smith – ABC Birds.org

Todd Fearer – ABC Birds.org

Sergio Harding – DGIF

Carol Croy – USFS

Marek Smith – TNC

J. Lorder – TNC

David Byrd – USFWS

Melanie Carter – USFWS

Jay Jeffreys – DGIF

Mary Elfner – Audubon

Andy Rosenberger – PLBs

Debbie Wright – PLBs

Wade Biddix – NRCS

Ron Wood - NRCS

## Dates:

- **April 12, 2012** – States must estimate acres needing treatment and funding needs for FY-12.
- **April 19, 2012** – States will be issued an initial allocation.
- **April 30, 2012** – First application cut-off date.
- **May 30, 2012** – Second application cut-off date.
- **May 30, 2012** – Ranking due for first cut-off date.
- **June 6, 2012** – States will be issued a second allocation.
- **July 2, 2012** – Obligate all funds.

## **Working Lands for Wildlife – Golden-Winged Warbler**

Only Core and supporting practices that benefit the selected species will be offered. Contracts must include a core practice, even if it is shown in the contract as a non-cost shared practice. Supporting practices are eligible for funding to the extent that they are needed to support the Core practices.

### **Core Conservation Practices**

- 6343 – Restoration & Management of Rare and Declining Habitats
- 645 – Upland Wildlife Habitat Management
- 647 – Early Successional Habitat Development and Management

### **Supporting Conservation Practices**

- 314 – Brush Management
- 315 – Herbaceous Weed Control
- 327 – Conservation Cover
- 338 – Prescribed Burning
- 342 – Critical Area Planting
- 382 – Fence
- 386 – Field Borders
- 394 – Fire Break
- 472 – Access Control
- 484 - Mulching
- 490 – Forest Site Preparation
- 512 Forage and Biomass Planting
- 528 – Prescribed Grazing
- 612 – Tree and Shrub Establishment
- 666 – Forest Stand Improvement

State Questions (Given to us by NRCS National Office; 500 pts total)

1. Species Presence: Based upon available species occurrence data and information, is the target species assumed to occur within the offered area? (300 pts)
2. Is the offered area adjacent or proximate (as appropriate to species dispersal abilities) to areas with known populations?  
Adjacent (100 pts)  
< ¼ mile (75 pts)  
¼ < x < ½ mile (50 pts)  
½ < x < 1 mile (25 pts)
3. Documentation: Is there credible verification of species occurrence (for example, photos, Heritage Database, USFWS, NRCS or State fish and wildlife agency documentation)? This should not be taken to imply that a site visit is required. 75 pts
4. Will 75% or more of the practices be located within the "Focal Area"? 25 pts

Local Questions (250 pts total)

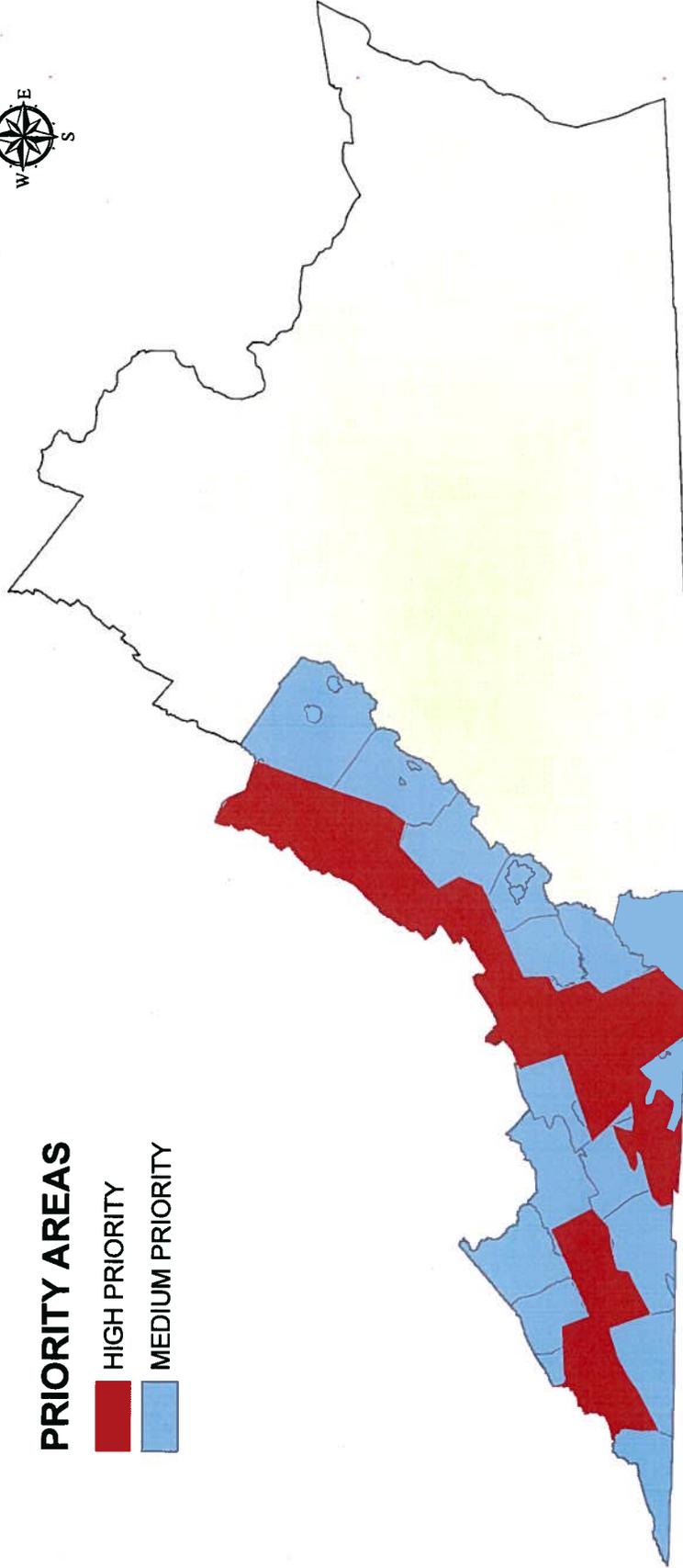
1. What is the elevation of the project site?  
<1600 feet (0 pts)  
1600 < x < 2000 feet (50 pts)  
2000 < x < 2200 feet (75 pts)  
>2200 feet (100 pts)
2. For a forested project area, is it adjacent to suitable GWWA early successional open land habitat? For an open land project area, it is adjacent to appropriate GWWA forest habitat? (75 pts)
3. The project is in the counties of Lee, Buchanan, Tazewell or Bland (These counties border focal areas in other states but are not part of VA's focal area)? (50)
4. The project site is located in a Virginia Important Bird Area? (25 pts)

# GWW FOCUS AREA



## PRIORITY AREAS

- HIGH PRIORITY
- MEDIUM PRIORITY



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# 2012 Working Lands for Wildlife Initiative At A Glance



**Do you want to make conservation investments on your privately-owned land that will:**

- ✔ **Create habitat for more bird and game species?**
- ✔ **Make better use of dormant pastures and old fields?**
- ✔ **Help you improve your forest management?**

**First and second evaluation periods end on April 30 and May 30.**

## Program Description



Working Lands for Wildlife is a new partnership between NRCS and the U.S. Fish and Wildlife Service to focus joint resources on reversing the decline of seven wildlife species while benefiting other species with similar habitat needs.

Virginia landowners in designated focus areas can receive technical assistance and funding to create and maintain habitat for breeding populations of the Golden-winged Warbler. This migratory songbird once thrived in the Appalachian region but is now at-risk for listing under the Endangered Species Act.

You must own or have control of the land you wish to enroll for the length of the agreement and for the lifespan of the conservation practices in the agreement. Participants agree to install and maintain the practices, allow NRCS or its agent access to monitor the effectiveness of the practices, and establish at least one essential practice within the first 12 months. NRCS provides technical assistance and pays up to 75 percent of the cost of installing the practices.

2012 Resource Concern	Description	Sample Practices
<p><b>Insufficient Habitat for Golden-winged Warbler (GWW)</b></p>  <p><i>This at-risk species can thrive in high elevations with forest cover.</i></p>	<p>This campaign will focus on creating/managing early successional and upland wildlife habitats for GWW and other species that benefit from similar habitat (i.e., quail and turkey).</p> <p>Land should be at a high elevation with established forest cover. The area should be within one mile of other similar habitats with no known Blue-winged Warbler populations. Wetlands, old fields, fire and timber harvest sites are good locations for new GWW projects.</p>	<ul style="list-style-type: none"> <li>• Access Control</li> <li>• Conservation Cover</li> <li>• Field Borders</li> <li>• Fence</li> <li>• Hedgerows</li> <li>• Prescribed Burning</li> <li>• Tree/Shrub Establishment</li> <li>• Vegetation Management</li> </ul>

## Goals, Objectives and Coverage Area



GWW use mixed blackberry and forb cover for nesting. (Placeholder photo.)



Bobwhite quail and turkey also benefit from early successional habitat development.

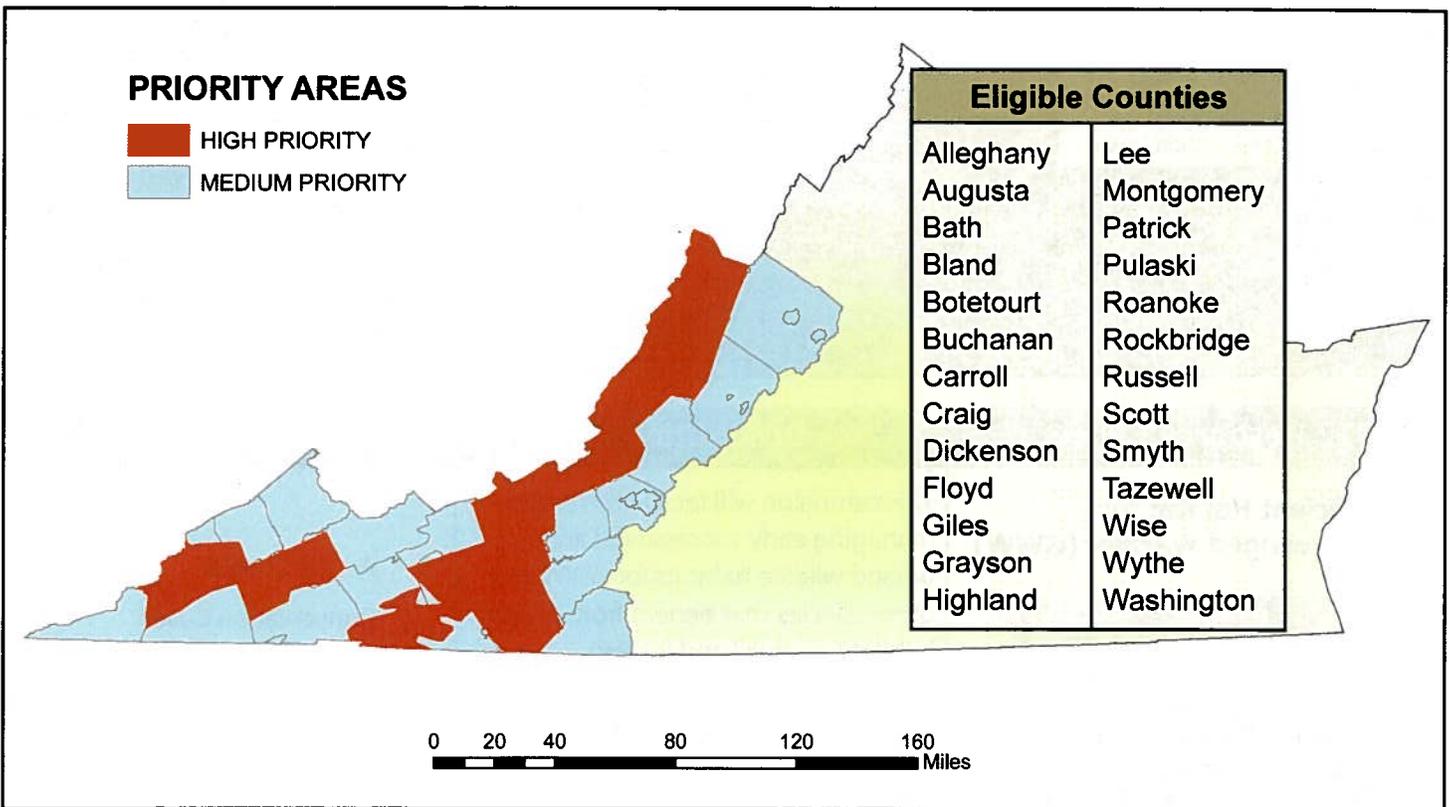
The Appalachian region offers diverse vegetation for Golden-winged Warbler breeding and foraging. However, these habitats have declined due to development, re-forestation of farmland, fire suppression, and changes in agricultural and forestry practices.

Virginia is part of a multi-state effort to increase reproducing populations of GWW by working with private landowners to create and enhance about 10,000 acres of early successional forest habitat over five years. Other priority habitat areas include:

Georgia	New York
Kentucky	North Carolina
Maryland	Pennsylvania
New Jersey	West Virginia

**Working Lands for Wildlife** is also focusing on restoring six other species nationwide: Greater Sage-grouse, New England Cottontail, Bog Turtle, Gopher Tortoise, Lesser Prairie-chicken, and the Southwestern Willow Flycatcher.

Keeping these species off the endangered list will also benefit landowners in the focal areas. Those who voluntarily make habitat improvements on their land will receive USFWS assurance that they will not be asked to take added conservation actions in the future.



To sign up, contact your local NRCS office or one of these private land biologists:

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Photo: Greg Lavaty

## Golden-Winged Warbler

**Listing Status: At-Risk**

**Georgia, Kentucky, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Tennessee, Virginia, West Virginia**

### Focal Area Map

#### Golden-Winged Warbler



### Background

The vast forested lands, grasslands and forb-rich landscape of the Appalachian Mountains was once considered a population stronghold for the golden-winged warbler (*Vermivora chrysoptera*). Today, the species in the Appalachian region is considered to be at-risk, however has not been recognized as a candidate species.

The most common explanations point to the loss and degradation of early successional habitat. Golden-winged warblers and many other species depend upon shrubby, vegetated areas like forest clear-cuts, alder swamps, utility rights-of way and other similar habitats for breeding. Several factors have contributed to the decline of these habitats including direct losses to development, reforestation of farmland, fire suppression, and changes in agricultural and forestry practices.

The Appalachian region offers a tremendous opportunity to improve habitat for golden-winged warbler and other neotropical migratory birds. These high elevation forests provide structurally diverse vegetation for breeding and foraging, and offer the greatest opportunity to combat declines in golden-winged warbler.

Working Lands for Wildlife will assist private land owners create and maintain the habitat necessary to sustain breeding populations of golden-winged warbler within and adjacent to their current range. It focuses on the creation, management and maintenance of early successional habitat in close association with forested landscapes, or adjacent to active agriculture or pastureland. Conservation efforts in support of the golden-winged warbler will benefit several other species that depend on similar habitat.

Resource Concern	Total Acres Needing Treatment
<b>Fish and Wildlife</b> Upland Wildlife Habitat Management	9,500
<b>Plant Condition</b> Restoration and Management of Rare and Declining Habitats	500

### Goals / Objectives

Working Lands for Wildlife will enable private landowners to create and enhance approximately 10,000 acres of early successional forest habitat over five years through actions that are designed to remove threats and reverse species declines.

## Actions

- Restoration and maintenance of habitat supporting healthy, reproducing populations of golden-winged warbler in targeted areas in eight States.
- Increase cooperation with state wildlife agencies and bird conservation partnerships.
- Develop timber harvest technologies and forestry management strategies to support golden-winged warbler and other species sensitive to canopy closure.

## Outcomes and Impacts

Working Lands for Wildlife will increase improve early successional habitat, decreasing habitat fragmentation and reducing isolation of golden-winged warbler populations. The result will be an expansion of Appalachian breeding habitat and an increase in reproducing golden-winged warbler populations, increasing the success of conservation of the species.

Additional species benefiting in this focal area are: wild turkey, ruffed grouse, mourning dove, rabbit, bass, and trout.

Core Practices	Supporting Practices	
643 Restoration and Management of Rare and Declining Habitats	314 Brush Management	484 Mulching
645 Upland Wildlife Habitat Management	315 Herbaceous Weed Control	490 Tree Shrub Site Preparation
647 Early Successional Habitat Development and Management	324 Deep Tillage*	511 Forage Harvest Management*
	327 Conservation Cover	512 Forage and Biomass Plantings
	338 Prescribed Burning	528 Prescribed Grazing
	342 Critical Area Planting	612 Tree/Shrub Establishment
	382 Fence	655 Forest Harvest Trails and Landings*
	386 Field Borders	666 Forest Stand Improvement
	394 Firebreak	
	472 Access Control	

\*Not offered in Virginia



Photo: Greg Lavaty

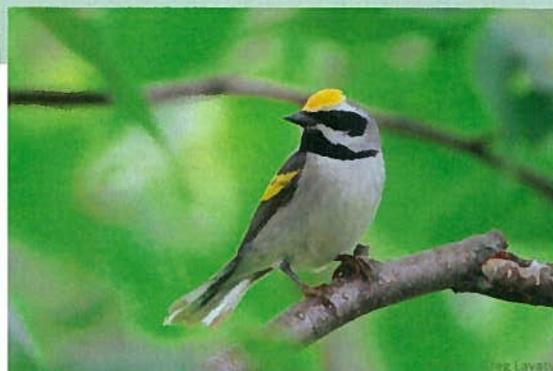


Photo: Greg Lavaty

# DRAFT EQIP – Wildlife – Upland Habitat Creation

## Fund Code: Upland Wildlife Habitat Creation

Description: This tool applies **ONLY** to the following project types

- Establish native hardwood forests (primarily oaks) to create widely spaced hardwoods with early successional understory (savannas; use 612 and coordinate with the State Biologist)
- Restore rare or declining habitat: Eastern Shore Atlantic Flyway Habitat (643), Longleaf Pine Historic Range (Accomac, Northampton, Brunswick, Greenville, Sussex, Prince George, Southampton, Isle of Wight, Surry, Suffolk, Chesapeake, Virginia Beach, James City and York Counties; 643), Mine Shaft and Adit Closing (457), Grassland >25 acres for Grassland Birds (327)
- Creation of new early successional habitat (for pollinator habitat use Wildflower Meadows for Wildlife, 327)

Priority Practices	Companion Practices
327 Conservation Cover	314 Brush Management
382 Fence – livestock exclusion	315 Herbaceous Weed Control
386 Field Border	338 Prescribed Burning
390 Riparian Herbaceous Cover	342 Critical Area Planting
391 Riparian Forest Buffer	394 Firebreak
422 Hedgerow Planting	645 Upland Wildlife Habitat Management
457 Mine Shaft and Adit Closing	647 Early Successional Habitat Management
612 Tree/shrub Establishment	666 Forest Stand Improvement
643 Restoration and Management of Rare and Declining Habitats	
647 Early Successional Habitat – fescue conversion or mulching	

### National Priorities Addressed

1. **Healthy Plant & Animal Communities – Wildlife Habitat Conservation – Will the proposed project assist the applicant to:**
  - a. Retain wildlife and plant benefits on land exiting the Conservation Reserve Program? (40)
  - b. Address and support one of the following priorities: (40)
    - i. Restoration of Longleaf Pine Forests
  - c. Benefit federally listed threatened and endangered, at-risk, candidate, fish or wildlife species of concern? (20)
  - d. Benefit prioritized native habitat critical to a fish or wildlife species? (20)
  - e. Increase, improve or establish pollinator habitat? (20)
  - f. Eradicate or control prioritized noxious or invasive species? (20)
  - g. Benefit declining or important aquatic wildlife species prioritized in the State WHIP Plan? (20)
  - h. Implement conservation practices which benefit prioritized fish or wildlife species in forested areas? (15)
  - i. Establish habitat on pivot corners and irregular areas on agricultural land? (10)
  - j. Provide self-sustaining habitat for prioritized fish and wildlife while reducing net carbon emissions or boosting carbon storage (e.g., warm season perennial grasses, trees or shrubs)? (10)
  - k. Benefit migration and other movement corridors for prioritized wildlife? (15)
2. **Business Lines – Conservation Implementation – Additional Ranking Considerations – Will the applicant in the proposed project:**
  - a. Complete habitat development within the first two years of the agreement? (20)

## State Issues Addressed

1. For questions 1-3, only ONE yes answer may be given (use the appropriate habitat evaluation worksheet, if applicable).
  1. The planned habitat is >50 points and at least 60 points higher than the benchmark. (75)
  2. The planned habitat is ≥50 points and at least 40 points higher than the benchmark. (50)
  3. The planned habitat is ≥50 points and at least 20 points higher than the benchmark. (25)
2. For questions 4-6, only ONE yes answer may be given.
  4. The size of the planned 645 area is greater than 25 acres. (50)
  5. The size of the planned 645 area is 11-25 acres. (30)
  6. The size of the planned 645 area is 2-10 acres. (10)
3. For questions 7-8, only ONE yes answer may be given.
  7. The planned area will serve as a >50 ft wide corridor for wildlife travel, regardless of total acreage. (50)
  8. The planned area will serve as a 35-49 ft wide corridor for wildlife travel, regardless of total acreage. (30)
4. Will the proposed practices protect, promote or create any of the following rare or declining habitats:
  9. Oak Savanna Restoration (612) (100)
  10. Prescribed burning will be used to manage oak savannas (25)
  11. Longleaf Pine forests (643) (100)
  12. Prescribed burning will be used to manage longleaf pine (25)
  13. Eastern Shore Bird Habitat (643) (100)
  14. Mine Shaft & Adit Closing (457) (350)
  15. Creation of grassland bird habitat that contains a single >25 acre block of mixed native warm season grasses and no planted woody species (327) (100)
5. General Questions:
  16. Is there an existing wildlife habitat plan approved by the State Biologist or Private Land Wildlife Biologist? (25)
  17. Prescribed burning will be used to manage any of the habitat (25)
  18. Livestock will be excluded from wildlife habitat. (25)
  19. The proposed project establishes new early successional habitat. (25)
  20. Planting of pollinator habitat (327a) containing a minimum of 2 native warm season grass species and 9 native wildflower species is planned. (50)

## Local Issues Addressed

1. Will the project benefit Early Successional species in the Quail Action Plan focus Districts (Big Walker, Headwaters, Culpeper, Three Rivers, Chowan Basin, Halifax)? (80)
2. Will the project occur within 2 miles of and benefit a species that is in the Toolkit layer T&E species (either DGIF or Natural Heritage)? (60)
3. Will the project occur within 2 miles of a listed water (Toolkit layer "T&E Water) and improve stream quality? (60)
4. The location of the planned 643 area is within 6 miles of the southernmost tip of Northampton County (from outlet of Plantation Creek and south). (25)
5. The location of the planned 643 area is within one mile from either coastline (bayside or oceanside). (25)

## **EQIP National Water Quality Initiative**

NRCS will be administering a National Water Quality Initiative (NWQI) program for FY 2012. This Initiative will assist producers to address high-priority water resource concerns in small watersheds with streams or water bodies in targeted areas. All states have been required to set aside 5% of their statewide EQIP allocation to fund this Initiative. In Virginia, this amount totals \$456,780.

EQIP funding will be used to accelerate efforts to improve water quality in at least one, but not more than three, 12-digit watersheds with streams identified by EPA on the Clean Water Act section 303(d) list of impaired waters.

Three watersheds for Virginia have been selected that are on the 303(d) impaired streams list and currently have TMDL plans. Those targeted areas are:

- Wolf Creek – Spoon Gap Creek (Washington County)
- Appomattox River-Angola Creek (Cumberland, Prince Edward, and Amelia Counties)
- Somerton Creek – March Swamp (Suffolk City)

**Listed below are dates the deadlines that NRCS will need to meet to roll out the program in Virginia.**

April 24, 2012 – States must submit their selected watersheds to National Headquarters.

April 27, 2012 – States must develop their ranking tool.

May 18, 2012 – First application period ends. All “high” priority applications must be ranked and preapproved for funding for period 1.

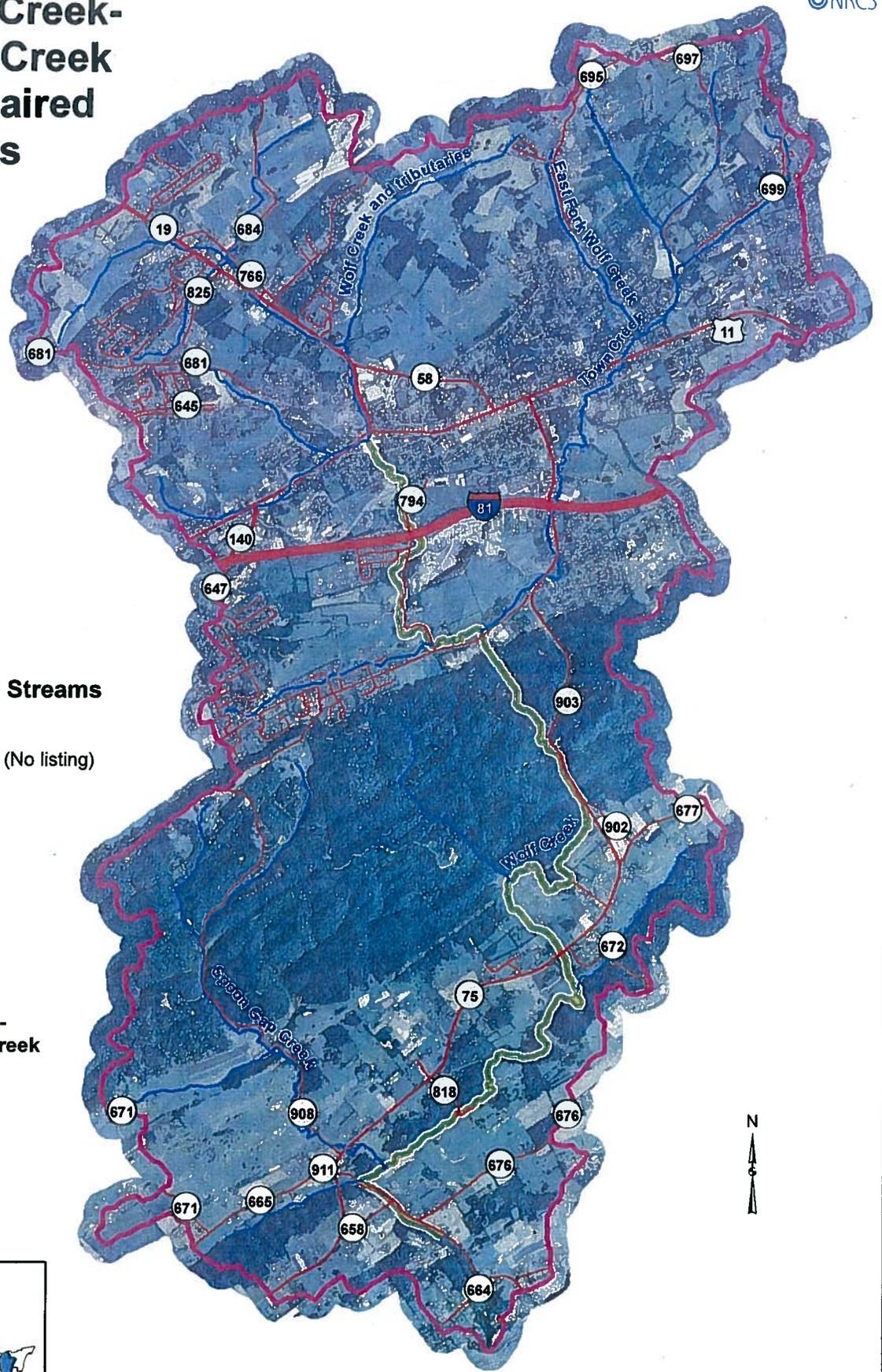
June 15, 2012 – Second application period ends. All eligible “high” or “medium” priority applications must be ranked and preapproved for period 2.

July 2, 2012 – All NWQI program funds must be obligated to contracts.

Listed below are the tentative NWQI core and supporting practices approved for FY 2012.

<b>Conservation Activity Plans</b>			
102	Comprehensive Nutrient Management Plan	118	Irrigation Water Management Plan
104	Nutrient Management Plan	130	Drainage Water Management Plan
114	Integrated Pest Management Plan		
<b>Core Conservation Practices</b>			
472	Access Control	315	Herbaceous Weed Control
327	Conservation Cover	590	Nutrient Management
328	Conservation Crop Rotation	528	Prescribed Grazing
332	Contour Buffer Strips	345	Residue and Till Mgmt, Mulch Till
330	Contour Farming	329	Residue and Till Mgmt, No Till/Strip Till/Direct Seed
340	Cover Crop	391	Riparian Forest Buffer
342	Critical Area Planting	390	Riparian Herbaceous Cover
386	Field Border	395	Stream Habitat Improvement
393	Filter Strip	580	Streambank and Shoreline Protection
410	Grade Stabilization Structure	600	Terrace
412	Grassed Waterway	612	Tree/Shrub Establishment
561	Heavy Use Area Protection	638	Water and Sediment Control Basin
<b>Supporting Conservation Practices</b>			
560	Access Road	378	Pond
591	Amendments for the Treatment of Ag Waste	338	Prescribed Burning
316	Animal Mortality Facility	643	Restoration and Mgmt of Declining Habitats
575	Animal Trails and Walkways	558	Roof Runoff Structure
314	Brush Management	367	Roof and Covers
317	Composting Facility	574	Spring Development
356	Dike	578	Stream Crossing
362	Diversion	585	Strip Cropping
382	Fence	587	Structure for Water Control
512	Forage and Biomass Planting	635	Vegetated Treatment Area
422	Hedgerow Planting	313	Waste Storage Facility
447	Irrigation System, Tailwater Recovery	359	Waste Treatment Lagoon
468	Lined Waterway Outlet	642	Water Well
516	Livestock Pipeline	614	Watering Facility
484	Mulching	380	Windbreak/Shelterbelt Establishment

# TH16 - Wolf Creek-Spoon Gap Creek w/303D Impaired Streams



### Legend

- TH16 Watershed
- VDOT Roads

### 2010 - 303D Impaired Streams

- Impaired Streams
- Category 2A and 3A (No listing)

### Hydrologic Unit Information

TH16 - 060101020402 -  
Wolf Creek-Spoon Gap Creek  
17331 Acres



2011 NAIP  
Aerial Imagery



TH16 – Wolf Creek – Spoon Gap Creek Watershed = 17,331 acres

<b>Land Cover Name</b>	<b>ACRES</b>
No Data - Cell Edge	48.61
Barren Land	15.91
Cultivated Crops	69.86
Deciduous Forest	5,509.76
Developed, High Intensity	83.62
Developed, Low Intensity	855.79
Developed, Medium Intensity	496.97
Developed, Open Space	2,267.97
Evergreen Forest	91.83
Hay/Pasture	7,540.71
Herbaceous	128.04
Mixed Forest	166.83
Open Water	6.73
Shrub/Scrub	32.40
Woody Wetlands	16.01

Source: 2006 NLCD Land Cover

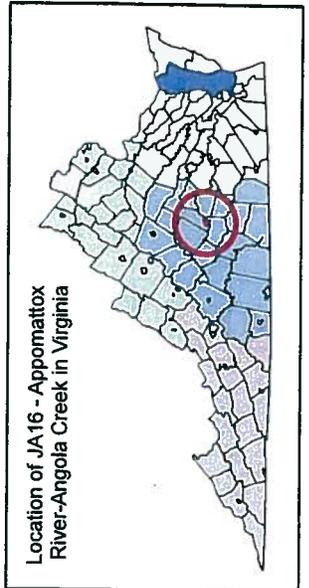
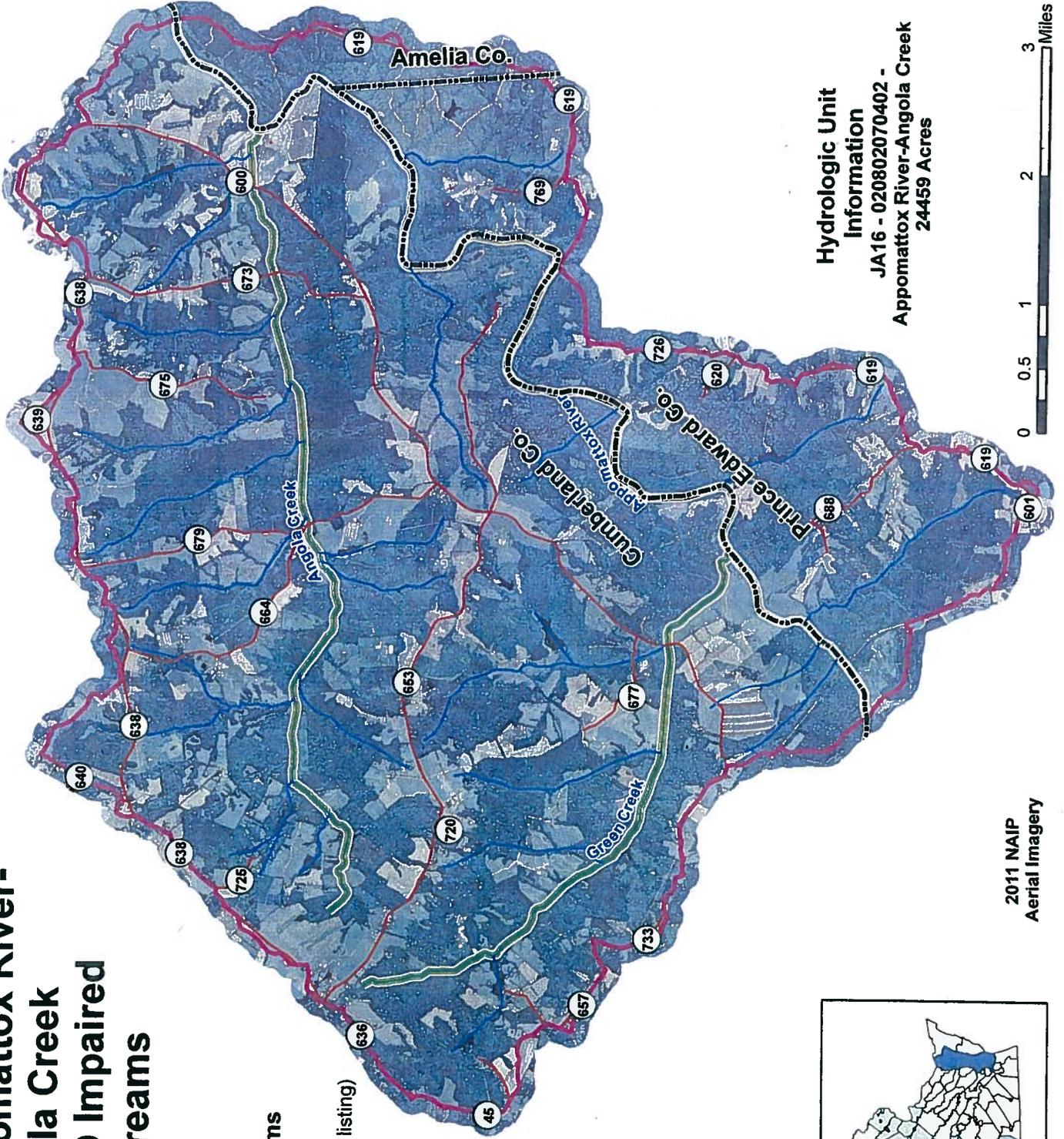


# JA16 - Appomattox River- Angola Creek w/303D Impaired Streams

## Legend

2010 - 303D Impaired Streams

-  Impaired Streams
-  Category 2A and 3A (No listing)
-  JA16 Watershed
-  VDOT Roads
-  County Boundaries



**Hydrologic Unit  
Information**  
JA16 - 020802070402 -  
Appomattox River-Angola Creek  
24459 Acres

2011 NAIP  
Aerial Imagery



JA16 – Appomattox River – Angola Creek Watershed = 24,459 acres

<b>Land Cover Name</b>	<b>ACRES</b>
Barren Land	33.80
Cultivated Crops	145.70
Deciduous Forest	10,680.37
Developed, Low Intensity	11.06
Developed, Open Space	693.70
Emergent Herbaceous Wetlands	18.01
Evergreen Forest	2,946.89
Hay/Pasture	5,373.41
Herbaceous	906.39
Mixed Forest	921.74
Open Water	157.23
Shrub/Scrub	1,048.16
Woody Wetlands	1,491.30

Source: 2006 NLCD Land Cover

# CL03 - Somerton Creek- March Swamp w/303D Impaired Streams

## Legend

-  CL03 Watershed
-  VDOT Roads

## 2010 - 303D Impaired Streams

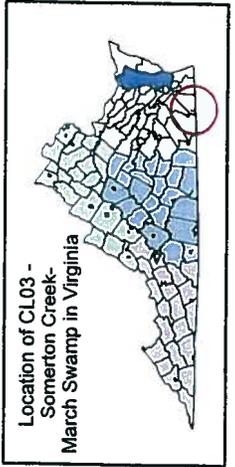
-  Impaired Streams
-  Category 3A (No listing)



2011 NAIP  
Aerial Imagery

North Carolina

North Carolina



Location of CL03 -  
Somerton Creek-  
March Swamp in Virginia

**Hydrologic Unit  
Information**  
CL03 - 030102030103 -  
Somerton Creek-March Swamp  
12,626 Acres

CL03 – Somerton Creek – March Swamp = 12,626 acres

<b>Land Cover Name</b>	<b>Acres</b>
Barren Land	5.8
Cultivated Crops	2,788.6
Deciduous Forest	902.5
Developed, Low Intensity	1.3
Developed, Open Space	591.1
Emergent Herbaceous Wetlands	37.8
Evergreen Forest	2,603.3
Hay/Pasture	690.1
Herbaceous	437.2
Mixed Forest	406.4
Open Water	23.8
Shrub/Scrub	1,732.6
Woody Wetlands	2,406.0

Source: 2006 NLCD Land Cover

# Managing manure for sustainable livestock production in the Chesapeake Bay Watershed

Peter Kleinman, Kristen Saacke Blunk, Ray Bryant, Lou Saporito, Doug Beegle, Karl Czymmek, Quirine Ketterings, Tom Sims, Jim Shortle, Josh McGrath, Frank Coale, Mark Dubin, Daniel Dostie, Rory Maguire, Robb Meinen, Arthur Allen, Kelly O'Neill, Lamonte Garber, Mark Davis, Bobby Clark, Kevin Sellner, and Matt Smith

**M**anure presents one of the greatest challenges to livestock (dairy and beef cattle, swine, poultry, equine, sheep, llamas, etc.) operations in the Chesapeake Bay Watershed, serving both as resource and liability. The Chesapeake Bay is threatened by excessive nutrient loadings, and, according to the US Environmental Protection Agency (USEPA),

manure is the source of 18% of the nitrogen and 27% of the phosphorus entering the Chesapeake Bay annually (figure 1) (Chesapeake Bay Program 2010). Developing economical, practical, and effective manure management options for livestock producers will not only contribute to the restoration of the Chesapeake Bay, but will also provide a model for other areas where water quality and livestock production objectives must be balanced.

The 166,000 km<sup>2</sup> (64,000 mi<sup>2</sup>) Chesapeake Bay Watershed is home to 3.2 million animal units (animal unit = 454 kg [1,000 lbs] of livestock) generating roughly 36 million t (40 million tn) of livestock manure per year. In comparison, the 14 million humans who call the Chesapeake Bay Watershed home generate 3.6 million t (4 million tn) of waste annually (Brosch 2010; Blankenship 2005). The livestock manure contains approximately 259,000 t (285,000 tn) of nitrogen and 70,000 t (77,000 tn) of phosphorus.

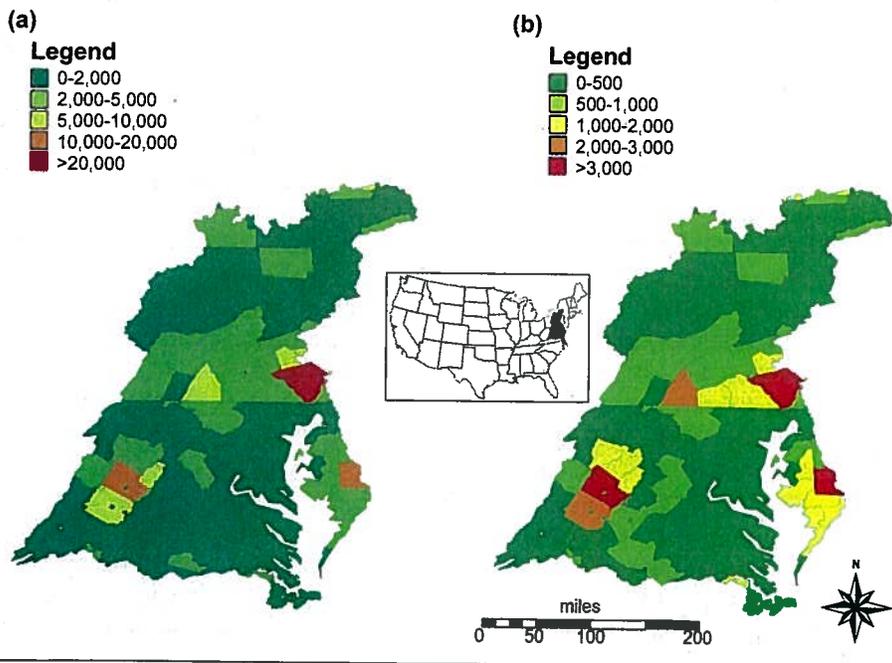
Most manure is applied near the livestock housing on less than 10% of the 47,000 km<sup>2</sup> (18,000 mi<sup>2</sup>) of the watershed's agricultural land (row crop and grassland). High concentrations of livestock in the Delmarva Peninsula (Delaware, Maryland, Virginia), Shenandoah Valley of Virginia, and Lancaster County region of Pennsylvania have created regional manure nutrient hotspots (Chesapeake Bay Program 2010). These hotspots result from farming systems that rely heavily on imported feeds (hence nutrients). Many of these imported nutrients do not leave the farm in the form of animal products.

Manure represents the inherent inefficiency of animals in metabolizing feed resources. Ideally, this byproduct should be managed as a resource (e.g., soil amendment, feedstock for energy production, source of livestock bedding). It is well established that manure provides fertility and tilth benefits to soils (Piccinini and Bortone 1991) and that its carbon

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**Figure 1**

Annual production of manure nutrients (lbs) in 2009 in counties of the Chesapeake Bay Watershed. (a) Manure nitrogen. (b) Manure phosphorus. Location of the watershed is identified in the inset map of the United States. Adapted from Brosch (2010).



can be converted into energy by digestion and pyrolysis (Tafdrup 1995; Lima et al. 2009). However, given its bulky nature, odor, potential pathogens, low nutrient concentration, imbalance of nutrients relative to crop requirement, and regulatory paperwork requirements, manure quickly becomes a liability to those who manage it. The marketplace has sought to provide trade options, both free and for environmental credit, but demand at the local level, combined with limitations in manure availability, storage, handling, transport costs, and value, overwhelm building a stable market for manure and its byproducts (Ribaud et al. 2003). There continues to be substantial use of commercial fertilizer in the watershed (370,000 t [408,000 tn] of nitrogen and 47,000 t [52,000 tn] of phosphorus) that could be replaced by more efficient use of manure nutrients. Even when strong demand exists, off-site transfer of manure can be hampered by logistical obstacles. As such, it is generally the rule that manure's greatest net value lies at or near the source where it is generated. Because manure has a low nitrogen-to-phosphorus ratio, applying manure to meet crop nitrogen needs overapplies phosphorus, and with repeated manure applications, soil phosphorus accumulates well above crop needs, causing environmental concern. With overapplication, the value of manure (organic matter, phosphorus, potassium, and micronutrients) diminishes and only the nitrogen remains as an economic benefit to farmers.

President Obama's 2009 Executive Order 13508 placed the Chesapeake Bay at the highest level of federal concern, and the 2010 promulgation of a "Bay Diet" under the Clean Water Act (USEPA's Total Maximum Daily Load [TMDL]) introduced both resources and urgency to the quest to significantly advance manure management in the Chesapeake Bay Watershed (Stubbs 2011; Federal Leadership Committee for the Chesapeake Bay 2010). The challenges are many fold—the most recalcitrant rooted in the structure of our food production systems requiring profound systemic changes and the most achievable involving expanded adoption of management prac-

tices that improve both water quality and crop or forage production.

#### INDUSTRY-SPECIFIC MANURE MANAGEMENT ISSUES

**Poultry.** Poultry production is spatially concentrated in the Delmarva Peninsula, Lancaster County region, and Shenandoah Valley, primarily due to vertical integration and economics. Vertical integration means that a poultry company owns a feed mill and processing plant and contracts with local farmers to grow their birds with their feed. Transport costs make it economical to raise the birds close to the source of feed and the processing plant. Across the watershed, chickens and turkeys generate 24% of the total livestock manure wet weight, containing 49% of the phosphorus and 44% of the nitrogen found in all livestock manures (Brosch 2010). Traditionally, meat poultry generated dry litter (<30% moisture), whereas egg layers (i.e., battery cage operations) produced semi-solid manure (40% to 60% moisture). However, a growing number of modern egg facilities now employ drying belts that yield powder-dry manure. Long-term trends in feed use efficiency (rations and genetic selection) have resulted in >80% reduction in nitrogen and phosphorus excretion by broilers since the 1950s. In addition, over the past decade, the widespread, voluntary use of phytase, combined with lower addition of phosphorus to poultry diets, has further lowered litter phosphorus content. However, poultry litters possess high nutrient concentrations compared with cattle and swine manures.

This relatively high nutrient density and predominance of dry manure production result in considerably lower transport costs for poultry litter compared to liquid manures, causing poultry manure to have the greatest potential for export and value-added processing. Because poultry litter is a preferred soil fertility and liming amendment for many producers, there has been significant industry and government investment in manure export activities. Perdue's AgriRecycle plant (Seaford, Delaware) was constructed to pelletize approximately 14% of the litter generated on the Delmarva Peninsula and supplies pelletized litter to a large segment of the

organic fertilizer amendment industry. In addition, a growing number of innovative technologies have been developed to provide poultry farmers with opportunities to gain value from the export of their litter (cofiring, gasification, baling).

**Cattle.** Cattle operations are largely found in the upland reaches of the Chesapeake Bay Watershed. Modern dairy farms produce much of their own feed, with crops such as corn silage and alfalfa. However, they also import large quantities of feed concentrates, and much of the nutrients in these end up in manure. Dairy operations within the region tend to be small (<100 head farm<sup>-1</sup>), organized in diffuse cooperatives of independent producers, accounting for 26% of all animal units, 20% of manure phosphorus, and 24% of manure nitrogen in the watershed (Brosch 2010). With the notable exception of the Lancaster region of Pennsylvania, the land base of most dairy operations is extensive (>57 ha farm<sup>-1</sup> [140 ac farm<sup>-1</sup>]). Even so, considerable opportunity exists for precision feeding to reduce nutrients in manure. Manure storage, once uncommon, is increasingly found on dairy farms and is ubiquitous on large operations. However, a 2001 survey of small dairy farms in south-central Pennsylvania reported that 19% had no storage capacity (Dou et al. 2001). The liquid nature of most stored dairy manure reduces its potential for transport to any significant distance.

Beef operations in the region are largely pasture based and small in size. Beef cattle produce 12% of the manure in the watershed (10% of total manure phosphorus and 10% of total manure nitrogen), most of which is directly deposited onto pastures as dung or accumulated at holding areas as semisolid pack (Brosch 2010). As these beef operations are pasture based and do not rely heavily on imported feed, they do not generate excess manure nutrients typical of more intensive confined animal feeding operations.

Given the volume and variable quality of cattle manure generated in the watershed, as well as the diffuse structure of the industry, moving cattle manure off-farm is a major challenge. Dairy operations have engaged in a variety of manure-processing practices, including liquid/solid separation

There is an expectation that the establishment of the bay-wide TMDL can provide a quasi-regulatory driver for fostering nutrient trading by imposing a cap on the regulated discharge of pollutants, creating a buyer for credits generated by the agricultural producers. Whether nutrient credit trading can parallel and potentially offset current levels of annual public funding for agriculture conservation co-share programs for the bay is unknown, but of high interest.

A not yet developed but promising innovation for manure management in the region are manure markets that incentivize redistribution of manure from surplus to deficit areas. The geographic scope of markets is limited by the economic value of manure to recipients relative to the cost of hauling. The economics have improved with higher fertilizer prices and more stringent nutrient regulations (i.e., regulations that restrict application of manure nutrients). Manure exchange programs seek to match manure suppliers (livestock operations with inadequate acreage for spreading) with entities seeking organic materials for field application or other uses. While the scale of such exchanges is nominal, there is growing interest in both the landscape and urban gardening arenas for building win-win trading scenarios in which the nutrient rich materials from animal operations are utilized in areas that would otherwise be limited to commercial fertilizers. Municipal biosolids programs that employ producers in the use and management of wastewater treatment plant byproducts are evidence that larger-scale contractual manure trading is economically and technically possible.

**Improving Compliance with Manure, Erosion, and Sediment Control Rules.** Environmental compliance in the Chesapeake Bay Watershed has been varied, particularly for smaller farms that are perceived to fall below regulatory thresholds or for which regulators have been less likely to pursue compliance. Every state in the watershed has manure or conservation requirements for all farms (table 1) and are seeking to improve communication of their rules and guidelines in response to TMDL mandates, albeit, a perception per-

sist that these rules are new, abrupt, overly stringent, and even unrealistic.

Improving compliance is a complex task that includes leveraging limited resources, balancing different programmatic emphases, and requiring prioritization that considers not just environmental benefit but also the ability of farms to make meaningful management adjustments. Adaptive management has emerged as a philosophy for engaging, educating, and affecting long-term change on farms, small to large. This requires a willingness to support on-farm practices and strategies that constitute effective change and can be counter to the enforcement of regulatory paperwork that the agencies are required to fulfill. Several adaptive management pilot programs are underway in the Chesapeake Bay Watershed (e.g., Pennsylvania's Conewago Creek Initiative), showing success in recruiting and maintaining participants.

The challenges to enforcing compliance are largely economic, as many changes in on-farm manure management will incur costs. Dwindling state and county resources have eroded the very programs needed to buffer on-farm transitions. The task of improving compliance must be grounded in education of manure managers and community support networks, which necessitates maintenance of available resources to do so. Compliance discussions must include realistic assessments of all alternatives, beyond just achieving compliance with adoption of required BMPs.

**Improving On-Farm Infrastructure.** On-farm infrastructure in the Chesapeake Bay Watershed often dates back many decades, particularly on small farms where resources are most limited. Today, unimproved barnyards and areas of heavy animal use represent major sources of manure nutrient loss, especially when located in proximity to water bodies. Manure storage facilities are often absent or inadequate. In part, these deficiencies may be attributed to the limited financial and technical assistance available for infrastructure improvements, as well as to the enormity of the cost. Prudent investment in manure infrastructure demands flexible, farm-specific solutions that weigh the various requirements of particular solu-

tions (e.g., installation of manure storages require ability to handle and apply manure in a timely fashion) with objective expectations of return on investment (even well-constructed barnyards and manure holding areas can be undermined by flooding when they are installed on farmsteads that are located along waterways)

Precedent exists for promoting infrastructure innovation to improve cost effectiveness. The New York City Watershed Agriculture Program, responsible for major water-quality improvements in New York's drinking water supply, provided cost support for practices that improved drinking water reservoirs and pioneered new practices, such as covered barnyards and solar calf housing that were not recognized as approved standard practices at the time. Excellent examples of innovation on unpaved heavy use areas can be found within the Chesapeake Bay Watershed, including rotational lot management systems that emphasize moving animals away from hydrologically active areas, prudent selection of heavy use areas, and maintenance of vegetation through rotation. Continued experimentation, outcome-oriented design standards, and official encouragement of innovation are needed to ensure the broadest array of options for the diverse farming conditions of the watershed.

Given the pressing cost to develop or retrofit infrastructure, it is critical to prioritize investment, as well as to promote creative, cost-effective alternatives. Better decision-support tools are needed to prioritize infrastructure investments, particularly cost/benefit comparisons with other manure management investment opportunities. Experience reveals that rigid approaches to infrastructure-related problems rapidly become cost-prohibitive and can be confounded by site-specific factors. Instead, trained field personnel offer the most effective means of weighing site specific options, linking infrastructure needs with funding sources, and prioritizing and coordinating actions across multiple operations.

**Advancing Land Application Practices—Minimum Disturbance Incorporation.** With more than two-thirds of the agricultural land in the watershed in no-till

**Table 1**

**Manure management priorities identified by states in their respective Watershed Implementation Plans for meeting the Chesapeake Bay Total Maximum Daily Loads.**

Bay state	Select manure management priorities identified in state watershed implementation plans
Delaware	<ul style="list-style-type: none"> <li>• All nutrient handlers must implement state-approved phosphorous-limiting nutrient management plans.</li> <li>• Winter manure application is prohibited.</li> <li>• Phosphorus is managed based on the P Index.</li> <li>• All CAFOs are required to implement a nutrient management plan as part of their NPDES permit.</li> <li>• A state program exists to relocate manure to farms that need the nutrients or for alternative uses.</li> <li>• The state invests in no-till, cover crops, precision agriculture, and heavy use area protection.</li> </ul>
Maryland	<ul style="list-style-type: none"> <li>• Nutrient management plans require farms to efficiently use manure or fertilizer needed to grow a healthy crop and ensure that excess nutrients are not lost to the environment.</li> <li>• Phosphorus is managed based on the P Index.</li> <li>• CAFOs are required to have 100 ft setbacks from riparian areas for manure application. A 10 ft setback is required for all non-CAFOs.</li> <li>• State emphasis is on manure and poultry litter injection, livestock and poultry waste facilities, and manure treatment and transport.</li> </ul>
New York	<ul style="list-style-type: none"> <li>• CAFOs are required to implement a comprehensive nutrient management plan as part of their NPDES permit.</li> <li>• Agricultural Environmental Management Program supports farm efforts to protect water quality and conserve natural resources through voluntary incentives to adopt BMPs.</li> <li>• Agricultural Nonpoint Source Abatement and Control Program provides competitive financial assistance to implement BMPs, including conservation and no-tillage, cover crops, enhanced nutrient management, stream protection, pasture management, barnyard runoff controls, and animal waste management systems.</li> </ul>
Pennsylvania	<ul style="list-style-type: none"> <li>• CAFOs are required to implement a nutrient management plan as part of their NPDES permit.</li> <li>• Livestock operations with &gt;2 animal equivalent units per acre must develop and implement a nitrogen- and phosphorus-based nutrient management plan.</li> <li>• An updated Manure Management Manual requires manure management plans on all farms that generate or utilize manure. Plans include application rate restrictions and automatic setbacks from water bodies on farms without higher level plans in place.</li> <li>• Agricultural Erosion and Sedimentation Plan is required of all farms that plow or till (including no-till for more than 5,000 ft<sup>2</sup>).</li> <li>• State emphasis is on the development of new technologies to address excess nutrients and market-based programs to facilitate adoption of BMPs to reduce the impact of nutrients on the environment.</li> </ul>
Virginia	<ul style="list-style-type: none"> <li>• Resource management plans are required on most acres. State emphasizes improved tracking of voluntary nutrient management BMPs.</li> <li>• CAFOs must implement a nutrient management plan as part of their NPDES permit.</li> <li>• All poultry litter applied to farmland must meet minimum nutrient management standards established by the Virginia Department of Environmental Quality.</li> <li>• Permits are required for certain poultry operations that are not classified as CAFOs.</li> <li>• State provides cost-share funding to achieve implementation of incentive-based practices.</li> </ul>
West Virginia	<ul style="list-style-type: none"> <li>• CAFOs are required to implement a nutrient management plan as part of their NPDES permit.</li> <li>• State focus is on having voluntary plans for all of agriculture.</li> <li>• Transfer of one-third of the poultry litter out of the Chesapeake Bay Watershed is targeted.</li> <li>• Emphasis is on targeting the two counties with the highest nitrogen delivery factor for increasing the number of acres under a nutrient management plan.</li> <li>• There will be a focus on stream restoration and protection and an increase of buffers, cover crops, and conservation tillage.</li> </ul>

Notes: BMP = best management practice. CAFO = Concentrated Animal Feeding Operation. NPDES = National Pollutant Discharge and Elimination System.

or perennial cover (hay, pasture), nearly all manure is applied to the soil surface. No-till reduces erosion, but it leaves applied manure on the surface where it is vulnerable to runoff and atmospheric emission. Incorporation of manure into soil by conventional tillage has not been

advocated because of erosion concerns, even though phosphorus management guidelines of Chesapeake Bay states recommend immediate incorporation following application to soils of low erosion potential. Expanding the options to directly incorporate manure into soil with

the least disturbance is critical to improving soil health and productivity, improving nutrient use efficiency by crops, and minimizing impacts to air and water quality.

Adoption of manure injection technologies in the Chesapeake Bay Watershed is scant, due in part to the difficulty in using

traditional, deep injection techniques on the steep, stony soils that characterize the uplands of the watershed and also the limited experience of farmers with injection technologies. Following considerable testing by government and land-grant institutions, new technologies, such as shallow manure injection, aerator-linked applicators, and subsurface litter applicators, show promise for most of the farming systems of the region (figure 3). Growing recognition for their potential includes bay-focused USDA NRCS incentives for farmers to inject manure and their explicit recognition by states and USEPA as “next generation nutrient management practices” (USEPA 2010; USDA NRCS 2011). Greater adoption of minimum-disturbance manure application technologies requires investment in economical technology transfer activities, including (1) demonstration and technology-transfer activities, (2) peer-based communication of value (farmer-to-farmer), and (3) private sector support.

**Manure Processing and Treatment.** Opportunities exist to process or treat manure for economic, agronomic, and environmental enhancement. However, a large number of treatments have been marketed for manures with little to no scientific basis to their purported benefits (e.g., odor control, improved nutrient bio-availability). For those manure processing or treatment practices that are underpinned by science, the benefits include conserving or stabilizing nutrients to improve manure nutrient use efficiency, reducing bulk, pathogens, and odors to make manure more competitive with commercial fertilizers, and deriving additional value from manure to support export and/or improve other aspects of manure management. Well-established practices include solid-separation, which may be used to generate bedding or litter, chemical treatment, which is generally underutilized but can stabilize and conserve nutrients, and composting, vermicomposting or pelletizing to generate marketable products.

Stronger emphasis is needed in combining processing and treatment practices to conserve manure nitrogen from barn to field. Processes such as composting and pyrolysis significantly lower the nitrogen

content of the final product (compost, bio-char). Chemical amendments such as alum (aluminum sulfate) and ferric chloride lower ammonia volatilization and stabilize phosphorus so that it is less susceptible to runoff when manure or its byproducts are land applied. Notably, anaerobic digestion and solid separation processes render nutrients in the liquid fraction more susceptible to chemical treatments that can improve the nitrogen-to-phosphorus ratio. In addition, separation of manure into homogenous liquid and solid (<30% moisture) fractions improves its properties for injection or subsurface placement.

A variety of manure processing technologies exist that offer energy, fuel, or other economic returns to farmers. These range from anaerobic digesters (on-farm, regional, enhanced) to pyrolysis units to on-farm nutrient-recovery systems (e.g., USDA’s Super Soil Saver). These cannot be viewed as stand-alone practices; rather, they must be integrated into systems of manure management that move manure nutrients to areas where production demand and environmental concerns are balanced. A frequent limiting factor is that these systems are often capital and management intensive. Therefore, they

must be weighed as part of the infrastructure investment process so that the costs and benefits are understood in comparison with alternatives.

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**Figure 3**

The USDA Agricultural Research Service “Subsurfer,” a novel technology that incorporates dry poultry litter into soils with minimum disturbance.



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