

DELAWARE

Conservation Reserve Enhancement Program

Final Programmatic Environmental Assessment

U.S. Department of Agriculture, Farm Service Agency

in partnership with the Natural Resources Conservation Service and the Delaware Department of Natural Resources and Environmental Control

November 2006

USDA

ABSTRACT

Proposed Action: The U.S. Department of Agriculture, Commodity Credit Corporation (USDA/CCC), and the State of Delaware have agreed to implement the Delaware Conservation Reserve Enhancement Program (CREP), a component of the national Conservation Reserve Program (CRP). CREP is a voluntary program for agricultural landowners.

CREP is authorized by the provisions of the Food Security Act of 1985, as amended (1985 Act) (16 U.S.C. 3830 *et seq*.), and its regulations at 7 CFR Part 1410. In accordance with the 1985 Act, USDA/CCC is seeking authorization to enroll lands into the Delaware CREP through December 31, 2007.

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The *Delaware Conservation Reserve Enhancement Program Programmatic Environmental Assessment* has been prepared pursuant to the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321-4347); the Council on Environmental Quality regulations (40 CFR Parts 1500-1508); USDA-Farm Service Agency draft environmental regulations (7 CFR Part 799.4, Subpart G); and USDA-Farm Service Agency *1-EQ, Revision 1, Environmental Quality Programs*, dated November 19, 2004.

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EXECUTIVE SUMMARY

The Commodity Credit Corporation, Farm Service Agency, and the State of Delaware propose to improve the water quality of the Chesapeake Bay, Delaware Bay, and Inland Bays basin watersheds by continuing a joint Federal-State agricultural land conservation program aimed at retiring marginal cropland and pastureland from further production. This program, known as the Conservation Reserve Enhancement Program (CREP), would use the authorities of the Federal Conservation Reserve Program in combination with State resources to target specific lands to meet conservation and environmental objectives. In response to this proposed Federal action, the Farm Service Agency is preparing a programmatic environmental assessment, in compliance with the National Environmental Policy Act of 1969 (NEPA), to evaluate alternatives to this action and the potential benefits and environmental consequences of these alternatives.

In compliance with 40 CFR §1501.7 of the Council on Environmental Quality's regulations implementing NEPA, FSA initiated scoping by notifying Federal, State, and local agencies, and other interested parties about its intent to prepare a programmatic environmental assessment (PEA) on the Delaware CREP. In addition to the scoping letters, FSA also publicly announced its intent to prepare a PEA in the *Delaware State News* on January 29, 2006, and the *Delmarva Farmer* on January 31, 2006. Comments were accepted on the proposed action until February 9, 2006. In response to these announcements, six comments were received. A summary of the comments and responses is presented in Chapter 2.

The proposed Delaware CREP would consist of a special continuous sign-up CRP component and a State incentive program, and would target up to 10,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas for enrollment into the program. The *purpose* of the Delaware CREP is to improve water quality and enhance wildlife habitat in the coastal plain of the Chesapeake Bay, Delaware Bay, and Inland Bays basin watersheds. To accomplish this *purpose*, CREP implements conservation measures designed to minimize drainage and reduce the sedimentation and nutrient runoff from agricultural lands into sensitive waterbodies. The *need* for this program is to improve water quality and thereby further the goal of restoring designated uses of Delaware's waterbodies and enhance wildlife habitat for the State's declining species.

This programmatic environmental assessment evaluates two alternatives to the proposed action: Alternative 1-No Action (Existing Program) and Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative). Alternative 1 considers the No Action option, which evaluates the effects of maintaining the existing program and its components. Alternative 1 would continue until December 31, 2007, would allow up to 6,000 acres to be enrolled into the Delaware CREP, and would continue to offer the same conservation practices:

- CP3A-Hardwood Tree Planting
- CP4D-Permanent Wildlife Habitat
- CP21-Filter Strips
- CP22-Riparian Buffers
- CP23-Wetland Restoration

Alternative2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative), expands the area for enrollment into the program from 6,000 acres to 10,000 acres. It consists of a special continuous sign-up CRP component and a State incentive program. The area includes acreage in the Chesapeake, Delaware and Inland Bays basin adjoining drainage ditches, streams, and other waterbodies identified as Category I and II impaired segments in *Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List* (Oct. 1,

1998). In addition to the CRP practices identified for Alternative 1, Alternative 2 proposes to add the following CRP practices:

- CP9-Shallow Water Areas for Wildlife, and
- CP23A-Wetland Restoration, Non-Floodplain.

Alternative 2 also proposes to amend CP4D by increasing the acreage allowed from 5 acres to 10 acres per tract or 10 percent of a tract, whichever is greater and to allow the county committee to approve larger enrollments on a case-by-case basis. Alternative 2 is the FSA's preferred alternative and the environmentally preferred alternative.

The Delaware CREP was established in 1999 with a designated goal of improving water quality and enhancing wildlife habitat in the coastal plain geographic areas of the Chesapeake Bay, Delaware Bay, and Inland Bays basin watersheds. Delaware CREP is a voluntary, incentive-based Federal program that pays farmers and landowners' payments and incentives in exchange for installing certain conservation practices on environmentally sensitive land. These conservation practices are designed to improve water quality, enhance wildlife habitat, and conserve soil.

Delaware CREP allows farm owners and operators to enroll lower productive acreage into the program under 10- to 15-year contracts. Landowners can choose to plant trees, native warm-season grasses, or cool season grasses in sensitive areas where crops were once cultivated. In return, landowners would receive cost-share, annual rental payments, and generous incentive payments from the Federal and State governments.

CCC and the State of Delaware signed the initial Delaware CREP Agreement on June 2, 1999. An addendum to this agreement followed a year later and was signed in July 2000. In September 2000, the Delaware CREP Agreement was revised and signed in December 2002 by CCC and DNREC. Amendment 1 to this agreement is currently being proposed to add two CRP practices as eligible, allow larger enrollments per tract for one practice, expand the areas eligible, and increase the overall acreage goal from 6,000 acres to 10,000 acres. Cooperating agencies supporting Delaware CREP include:

- the Department of Natural Resources and Environmental Control, Division of Soil & Water Conservation;
- the Delaware Department of Agriculture, Forest Service;
- the conservation districts from Kent, New Castle, and Sussex Counties; and
- USDA-Natural Resources Conservation Service

The goals established by the Delaware CREP are to--

- reduce nutrient and sediment loadings to impaired streams;
- meet temperature and dissolved oxygen criteria necessary to support biology and wildlife; and
- increase upland wildlife habitat and create wildlife corridors.

In August 2006, a Notice of Availability of the draft PEA was published in local newspapers and on the FSA website announcing the availability of the document and inviting agency and public comments until October 12, 2006. Letters were also mailed to agencies advising them of the availability of the draft PEA. The Delaware Coastal Management Program submitted a determination that the Delaware CREP was consistent with Federal and State coastal zone policies. No other comments were received. A Finding of No Significant Impact (FONSI) was issued for the DECREP in October 2006.

Table ES-1: Comparison of Delaware CREP Alternatives, 2006

Program Component	Alternative 1-No Action (Existing Conditions)	Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)
Program Expiration	December 31, 2007	December 31, 2007
Contract Term	10-15 years; maintenance and management activity plans, as applicable	10-15 years; maintenance and management activity plans
Total CREP Acreage	Allows up to 6,000 acres; currently 5,151.2 acres are under contract, allowing an additional 848.8 acres for CREP enrollment	Allows up to 10,000 acres, which would provide for an additional 4,848.8 acres for CREP enrollment
Targeted Lands for CREP	Delaware Bay, Chesapeake Bay and Inland Bays basin areas adjoining drainage ditches, streams, and other waterbodies identified as Category I impaired segments or areas adjoining drainage ditches contributing to Category I impaired segments.	Includes Category II impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (Oct. 1, 1998). Exception: Acres enrolled under CP9-Shallow Water Areas for Wildlife do not need to adjoin drainage ditches or other waterbodies.
CRP Practices	▪ CP3A-Hardwood Tree Planting ▪ CP4D-Permanent Wildlife Habitat, provided that practice acres for an individual contract will be limited to 5 acres per tract or 5 percent of a tract, whichever is greater ▪ CP21-Filter Strips ▪ CP22-Riparian Buffer ▪ CP23-Wetland Restoration	▪ CP3A-Hardwood Tree Planting ▪ CP4D-Permanent Wildlife Habitat, provided that practice acres for an individual contract will be limited to 10 acres per tract or 10 percent of a tract, whichever is greater. Exception: Enrollment of additional acreage under CP4D may be approved by the FSA County Committee on case-by-case basis. ▪ CP9-Shallow Water Areas for Wildlife. Acres enrolled under practice CP9 may not exceed 20 acres per tract. More than one CRP-1 may be approved under this agreement for acres devoted to CP9. ▪ CP21-Filter Strips ▪ CP22-Riparian Buffer ▪ CP23-Wetland Restoration ▪ CP23A-Wetland Restoration, Non-Floodplain

Source: Agreement between CCC and State of Delaware for Implementation of the Conservation Reserve Enhancement Program, rev. July 2005.

LIST OF ACRONYMS

AFOs	Animal Feeding Operations
BMPs	Best Management Practices
CBA	Chesapeake Bay Agreement
CCC	Commodity Credit Corporation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CP	Conservation Practice
CRP	Conservation Reserve Program
CREP	Conservation Reserve Enhancement Program
CWA	Clean Water Act
CWRF	Clean Water Revolving Fund
DCMP	Delaware Coastal Management Program
DECREP	Delaware Conservation Reserve Enhancement Program
DELIP	Delaware Landowner Incentive Program
DFS	Delaware Forest Service
DGS	Delaware Geological Survey
DNERR	Delaware National Estuarine Research Reserve
DNHESP	Delaware Natural Heritage and Endangered Species Program
DNREC	Delaware Department of Natural Resources and Environmental Control
ECP	Emergency Conservation Program
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FLEP	Forest Land Enhancement Program
FONSI	Finding of No Significant Impact
FRPP	Farm and Ranch Lands Protection Program
FSA	Farm Service Agency
FWS	U.S. Fish & Wildlife Service
GRP	Grassland Reserve Program
HEL	Highly Erodible Land
LAWCON	Land and Water Conservation Program
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act of 1969
NNL	National Natural Landmark
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCS	Pollution Control Strategy
PDRs	Purchase of Development Rights
PEA	Programmatic Environmental Assessment
P.L.	Public Law
RC&D	Resource Conservation and Development Program
SHPO	State Historic Preservation Office
TDRs	Transfer of Development Rights
TMDL	Total Maximum Daily Load
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
WHEP	Wildlife Habitat Enhancement Program
WHIP	Wildlife Habitat Incentive Program
WRP	Wetlands Reserve Program

CONTENTS

CHAPTER 1.0 INTRODUCTION

1.1 BACKGROUND

1.1.1 CONSERVATION RESERVE PROGRAM

The Conservation Reserve Program (CRP) was initially authorized by Congress in Title XII of the Food Security Act of 1985, as amended (16 U.S.C. 3830 *et seq*.), and was reauthorized by the Farm Security and Rural Investment Act (2002 Farm Bill) through calendar year 2007. Administered by the U.S. Department of Agriculture's Farm Service Agency (FSA) through the Commodity Credit Corporation (CCC), CRP is the largest and most comprehensive conservation program ever undertaken by the Federal Government. The program authorizes a maximum enrollment of 39.2 million acres nationwide.

The purpose of CRP is to assist landowners and farm operators through implementation of conservation practices designed to minimize soil erosion, improve water quality and enhance wildlife habitat on eligible cropland. Eligible cropland includes cropland that is both of the following:

- Planted or considered planted to an agricultural commodity during four of the six crop years from 1996 through 2001, and
- Physically and legally capable of being planted in a normal manner to an agricultural commodity.

CRP is a voluntary, agricultural conservation program that offers participants an annual, per-acre rent, plus reimbursement for half the eligible cost of establishing permanent vegetative cover, such as grasses or trees. In exchange, the participant agrees to enroll eligible cropland into the program for 10 to 15 years. Highly erodible and other environmentally sensitive land is converted to a long-term resource conservation cover, such as native grasses, trees and riparian buffers. These covers help stabilize soils and minimize erosion, reduce runoff into streams and improve water quality, provide important wildlife benefits and improve air quality.

To facilitate enrollment of areas and acreages offering the greatest environmental benefits through general signups, an Environmental Benefits Index (EBI) was developed. The EBI consists of the following factors:

- Wildlife habitat benefits
- Water quality benefits from reduced erosion, runoff and leacheate
- On-farm benefits of reduced erosion and long-term soils retention
- Air quality benefits from reduced wind erosion
- Location in a Conservation Priority Area, if applicable[1]
- Cost of enrollment per acre

For certain high-priority conservation practices on eligible land yielding highly desirable environmental benefits, producers may sign up for the program at any time without waiting for an announced sign-up period. Continuous sign-up offers farmers the flexibility to implement certain conservation practices on their cropland. These practices are designed to achieve significant environmental benefits, giving program participants a chance to help protect and enhance wildlife habitat, improve air quality and improve the condition of water resources. These conservation

[1] Conservation Priority Areas are regions targeted for enrollment, such as the Chesapeake Bay and other valuable designated areas. In addition, FSA may designate up to 10 percent of its remaining cropland in any given State as a Conservation Priority Area.

practices (CPs) include, but are not limited to, hardwood tree plantings, establishing grass filter strips, riparian buffers, shelter belts, grass waterways, and shallow-water areas for wildlife.

Of the total acres enrolled in the CRP nationwide, 2.5 million have been planted to trees and 2 million acres have been converted to wildlife habitat and shallow-water areas. In addition, there are approximately 8,500 miles of CRP filter strips along waterbodies and 32.3 million acres planted in grass cover.[2]

1.1.2 CONSERVATION RESERVE ENHANCEMENT PROGRAM

The Conservation Reserve Enhancement Program (CREP) became a part of CRP in 1997, as CCC and FSA agreed to partner with States to meet specific conservation and environmental objectives. Each CREP agreement is a results-oriented, community-based conservation partnership between the FSA and interested States that aims to address specific State and nationally significant water quality, soil erosion, and wildlife habitat issues related to agriculture. CREP differs from CRP in the following ways:

- CREP is a negotiated agreement and joint undertaking among Federal government, States, private and local stakeholders;
- CREP focuses conservation practices on specific environmental issues of concern to the State;
- CREP requires States to establish measurable objectives and conduct monitoring; and
- CREP offers more flexibility regarding financial incentives and certain practice eligibility standards.

Like CRP, CREP is administered by the FSA and funded through the CCC. The program often provides additional Federal and State incentives to enroll eligible cropland and/or marginal pastureland and to develop conservation practices (CPs) that achieve goals according to the negotiated agreement. Farmers voluntarily enroll in 10- 15-year contracts with FSA and the State, and agree to convert cropland to vegetative cover and establish other conservation measures, such as riparian buffer zones, trees and grasses, wetland restoration and wildlife habitat enhancement. CREP is part of the CRP and is otherwise administered under the same rules except as set forth in a CREP agreement.

1.1.3 DELAWARE CONSERVATION RESERVE ENHANCEMENT PROGRAM

The initial Delaware CREP (DECREP) was signed on June 2, 1999, by USDA and the Governor of Delaware. The primary goals of the program were to improve water quality and enhance wildlife habitat in the coastal plain geographic areas of the Chesapeake Bay, Delaware Bay, and Inland Bays basin watersheds. DECREP is a voluntary, incentive-based Federal program that pays farmers and landowners incentives for putting environmentally sensitive land into conservation practices that benefit wildlife, improve water quality, and conserve soil.

DECREP addresses high-priority conservation issues, such as water quality and loss of critical habitat for wildlife species of concern. DECREP is a community-based, results-oriented effort centered on local participation and leadership.

[2] "History of The CRP,"http://www.fsa.usda.gov/dafp/cepd/12crplogo/history.htm

Under DECREP, landowners place environmentally sensitive farmland under a 10- to 15-year contract that requires the land to be converted to an eligible conservation cover. Landowners can establish forest, native warm-season grasses, or cool season grasses. In return, the landowner receives cost-share, annual rental payments, and bonus payments.

There are three counties in Delaware: New Castle, Kent and Sussex. Streams and artificially constructed channels in New Castle and Kent Counties drain into the Chesapeake and Delaware Bays. Sussex County streams drain into the same bays plus the Inland Bays. Nearly all the streams and channels in Delaware are classified as impaired waters. The primary goals of the DECREP are to—

1. reduce nutrient and sediment loadings to impaired streams;
2. meet temperature and dissolved oxygen criteria necessary to support biology and wildlife; and
3. increase wildlife habitat and create wildlife corridors.

The USDA Farm Service Agency (FSA) and the State of Delaware were the principal signatories of the DECREP Agreement in 1999. Cooperating agencies include the Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Soil & Water Conservation, and the Delaware Department of Agriculture, Delaware Forest Service. In addition, the CREP Program is assisted by the three conservation districts in Delaware, as well as the Natural Resources Conservation Service (NRCS), and the U.S. Fish and Wildlife Service (FWS).

The initial program provided incentives for landowners to remove environmentally sensitive land from agricultural production and to enroll up to 6,000 acres into the program. Targeted acreages for five eligible CRP practices were identified for the following:

- CP3A-Hardwood Tree Planting-500 acres
- CP4D-Permanent Wildlife Habitat-1,000 acres
- CP21-Filter Strips-3,000 acres
- CP22-Riparian Buffers-1,000 acres in certain watersheds; and
- CP23-Wetland Restoration-500 acres

USDA provided 80 percent of the required funding and the State provided the remaining 20 percent. The initial DECREP agreement authorized eligible enrollments into CRP through December 31, 2002. On July 25, 2000, an addendum to the DECREP agreement was signed by CCC and DNREC that identified specific conservation practices (CPs) and their respective acreages. Additions to the agreement concerning CP21 and CP22 were presented in accordance with *Handbook 2-CRP*. In addition, the Federal and State commitments outlined in the 1999 agreement were clarified.

On December 18, 2002, CCC joined with the State of Delaware to extend the DECREP through December 31, 2007. The eligible CRP practices remained the same, but the targeted acreages for each CRP practice were removed. In addition, the CPs could be used in conjunction with each other. The total amount of acreage for enrollment remained unchanged at 6,000 acres. Eligible areas included those adjoining drainage ditches, streams, and other waterbodies identified as Category I impaired segments in Delaware's *Unified Watershed Assessment and Watershed Restoration Priorities List* (October 1, 1998), or areas adjoining drainage ditches contributing to Category I impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas.

DECREP consists of a special Federal continuous sign-up CRP component accompanied by a State incentive program. Federal annual incentive payments are offered for all five CPs. In addition, one-time incentive payments are offered for CP21 and CP22. State incentive payments for all five practices are paid in one lump sum during the first year. The term for continuous sign-up CRP contracts for acres enrolled in the DECREP is a minimum of 10 years and a maximum of 15 years.

The proposed DECREP agreement would continue the program through December 31, 2007. Specifically, Amendment 1 would add two eligible CRP practices to the program, would allow larger enrollments per tract for one practice, would expand the areas eligible for inclusion into the program and would increase the overall acreage goal from 6,000 acres to 10,000 acres. See **Appendix A** for a complete copy of the existing CREP addendums and Amendment 1.

The 2002 Farm Bill provides continued Federal authorization for the DECREP. In order to prevent any program interruption, the State of Delaware also needed to allocate additional matching funds. To date, $1.4 million has been allocated ($700,000 in FY 2004 and 2005). **Table 1-1** shows the funding allocations for Delaware from FY 2003 through FY 2006.

Table 1-1: Capital Funding for Delaware CREP, FY 2003-2006

Fiscal Year	State Funding	Federal Funding
2003	$0	*$6.4 mil.
2004	$700,000	
2005	$700,000	
2006	$600,000	
Total	**$2 mil.**	**$6.4 mil.**

*The 2002 Farm Bill authorizes the CREP. Funding through CCC is subject to annual appropriations process.
Source: USDA-FSA. "Agriculture Project Summary Chart."

1.1.4 THE STATE OF DELAWARE AND THE CHESAPEAKE BAY AGREEMENT

The Chesapeake Bay Watershed is a large ecosystem, covering all or parts of New York, Pennsylvania, Maryland, Delaware, Virginia, West Virginia, and the District of Columbia (**Figure 1-1**). Many "subwatersheds," which are smaller systems that drain into streams and rivers that eventually flow into the Chesapeake Bay, are scattered throughout the Bay's watershed. More than 100,000 rivers and streams drain into the Chesapeake Bay. In Delaware, about 28 percent of the State's land area drains into the Chesapeake Bay system, mostly from agricultural sources[3] (**Figure 1-2)**.

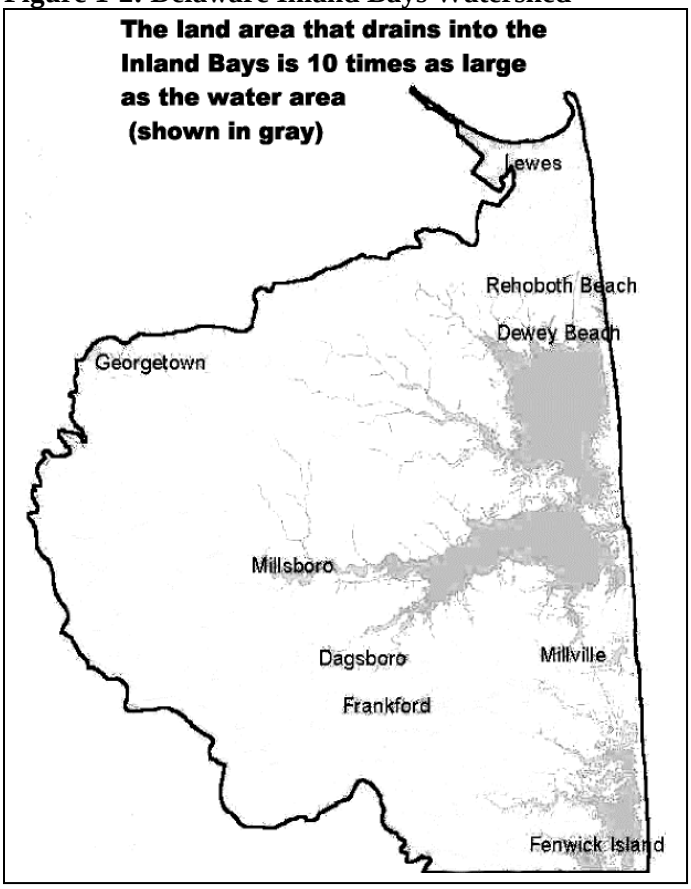
Delaware also has about 42 miles of tidal shoreline.[4] Its contributing portion of the Chesapeake Bay Watershed is wholly comprised of five subwatersheds: Chester-Sassafras, Choptank River, Nanticoke River, Blackwater-Wicomico and Pocomoke. Each of these is distinct in soil types, physical description, land uses, social composition, and agricultural production. Because of their distinctiveness, Delaware's contributing portion of the Chesapeake Bay is more complex in natural resources, environmental factors, and land uses.

[3]U.S. EPA, Chesapeake Bay Program, State of Delaware. http://www.chesapeakebay.net/info/delaware.cfm
[4] Ibid.

Figure 1-1: Chesapeake Bay Watershed

Source: U.S. EPA, Chesapeake Bay Program, 2006.

Figure 1-2: Delaware Inland Bays Watershed



Source: Delaware Inland Bays Issue Book, "Public Talk, Real Choices."

In 1998, the Federal partners, including USDA, signed the *Chesapeake Ecosystem Unified Plan*, which targeted CREP funds to the Bay's watershed States to support protecting farmland and forestland and to help reduce nutrients into the Chesapeake Bay. As part of this agreement, NRCS agreed to integrate the Environmental Quality Incentives Program (EQIP) and the Wetlands Reserve Program (WRP) to benefit the health of the Bay.

The States of Delaware, New York, and West Virginia did not sign the 1998 Chesapeake Bay Agreement or the reauthorization agreement known as *Chesapeake 2000*. However, Delaware joined the Chesapeake Bay Program as a headwaters partner in 2000 and, on September 13, 2004, Governor Thomas Carper of Delaware signed a Memorandum of Understanding (MOU) along with the other Chesapeake Bay States and the U.S. Environmental Protection Agency (EPA) pledging to curb the nutrients and sediments that flow from its portion of the Chesapeake Bay basin as part of a watershed-wide effort to clean up the Bay by 2010.

In its 2003 Directive, "Meeting the Nutrient and Sediment Reduction Goals," the Chesapeake Bay Executive Council reaffirmed its pledge to achieve the *Chesapeake 2000* commitment to correct the nutrient and sediment-related problems in the Chesapeake Bay and to implement the Tributary Strategy requirements by 2010. In January 2005, the watershed States agreed to Directive No. 04-2, which addresses the next steps needed to advance implementation of the Tributary Strategy. The Governors of Delaware, New York and West Virginia agreed, through Memoranda of Understanding, to participate fully in the nutrient and sediments reduction initiatives of *Chesapeake 2000*.

Of approximately 284 million pounds of nitrogen estimated to enter the Chesapeake Bay annually, about 11 percent, or 32 million pounds, originate from the three upstream States that were not signatories to the Chesapeake Bay Agreement, according to estimates from the U.S. Environmental Protection Agency's Chesapeake Bay Program. Of that total, about 6 million pounds is estimated to originate in Delaware. Of the 20 million pounds of phosphorus that flow into the Bay annually, Delaware is estimated to contribute about 600,000 pounds.

The 2004 MOU does not make Delaware, New York, and West Virginia members of the Chesapeake Bay Program and, as a result, these States will not be bound to the goals of *Chesapeake 2000* to curb growth, preserve open space, and restore wetlands. The MOU does, however, bind Delaware and the other States to work toward achieving new, State-specific nutrient and sediment reduction goals set by the Chesapeake Bay Program.

Under a court agreement, the Chesapeake Bay will not have a Total Maximum Daily Load (TMDL) written until 2011. A TMDL is the maximum amount of a pollutant that a waterbody can assimilate and still achieve water quality standards. The TMDL also calls for a 20-percent reduction in atmospheric deposition of nitrogen through implementation of the Clean Air Act. A TMDL would allocate nutrient reductions to sources throughout the watershed, which means that the upstream States would be held to these requirements. By accepting allocations from the Chesapeake Bay Program, Delaware and States that signed the 2004 MOU would be able to develop more flexible cleanup strategies. In addition, while Delaware and the upstream States will not be eligible for any of the Chesapeake Bay Program's $20-million-a-year budget, signing the MOU and agreeing to the Chesapeake Bay cleanup goals will help these States obtain funding from other Federal programs, such as CREP, which aids farmers in installing measures to reduce sediment and nutrient runoff.

As part of the action plans that evolved from the Chesapeake Bay Agreement, the signatory watershed States developed restoration plans called Tributary Strategies. These plans outline the

strategies designed to meet the goals of the agreement. The Delaware Tributary Strategy Program was initiated in 1998. In developing its tributary strategy, local stakeholders from industry, agriculture, golf courses, and municipalities were involved from each of the Inland Bays subwatersheds (Rehoboth Bay, Indian River Bay, and Little Assawoman Bay). Tributary Action Teams were created from this diverse citizenry to provide guidance in developing strategies to help reduce nutrients and restore habitat in Delaware's Inland Bays.

These Tributary Action Teams have worked with DNREC to develop a Pollution Control Strategy (PCS) to meet the required TMDLs for nitrogen and phosphorous in the Inland Bays. Although the State of Delaware was not an initial signatory to the Chesapeake Bay Agreement, it developed a PCS that parallels the goals set forth in the Chesapeake Bay Agreement. This strategy is discussed in the following section.

1.1.5 THE STATE OF DELAWARE'S POLLUTION CONTROL STRATEGY

All of Delaware's waters are listed as impaired in section 303(d) of the Clean Water Act due to excess nutrients and bacteria, low-dissolved oxygen, and degradation of biology and habitat. The State of Delaware developed a Pollution Control Strategy (PCS) for watersheds where TMDLs have been determined for the State's rivers and streams. TMDLs for nutrients and dissolved oxygen were established for the Nanticoke River and Broad Creek, for the Indian River, Indian River Bay, and Rehoboth Bay in December 1998 and for the Little Assawoman Bay in January 2005. These TMDLs required the systematic elimination of all point sources of nutrient loading to those waterbodies along with a 40 to 65 percent reduction in nonpoint phosphorous loading and a 40 to 85 percent reduction in nonpoint nitrogen loading. The TMDFL also calls for a 20-percent reduction in atmospheric deposition of nitrogen through implementation of the Clean Air Act.

A PCS is developed by a Tributary Action Team, comprised of citizens and government personal. The PCS addresses point sources of pollution; nonpoint sources, such agriculture, stormwater, and urban runoff; and includes a concurrence from all the participants.[5] The PCS for implementing these TMDLs will also serve as the Tributary Strategies for achieving the goals of the Chesapeake Bay Program. Best Management Practices for the Inland Bays and for the Murderkill Watersheds can be found in **Appendix H**.

The Nanticoke and Broad Creek Pollution Control Strategy was completed in 2004. The remaining TMDLs for the Choptank, Chester, Marshyhope, and Pocomoke Rivers were to be completed by the end of 2005 and the PCSs for these rivers are projected to be completed by the end of 2007.[6] The PCS includes the following pollution-reducing methods:

- The removal of point-source discharges from waterways
- Better management of fertilizer and manure
- Replacement of failing septic systems with environmentally safe systems
- Protective agricultural practices such as the planting of vegetative buffer strips between cropland and waterways.

[5] DNREC and Delaware Tributary Action Teams. Aug. 2006. *Inland Bays Pollution Control Strategy and Proposed Regulations.* Third Workshop Draft.
[6]U.S. EPA, Chesapeake Bay Program. "Delaware Tributary Strategies," http//www.chesapeakebay.net/info/wqcriteriatech/tributary_de.cfm

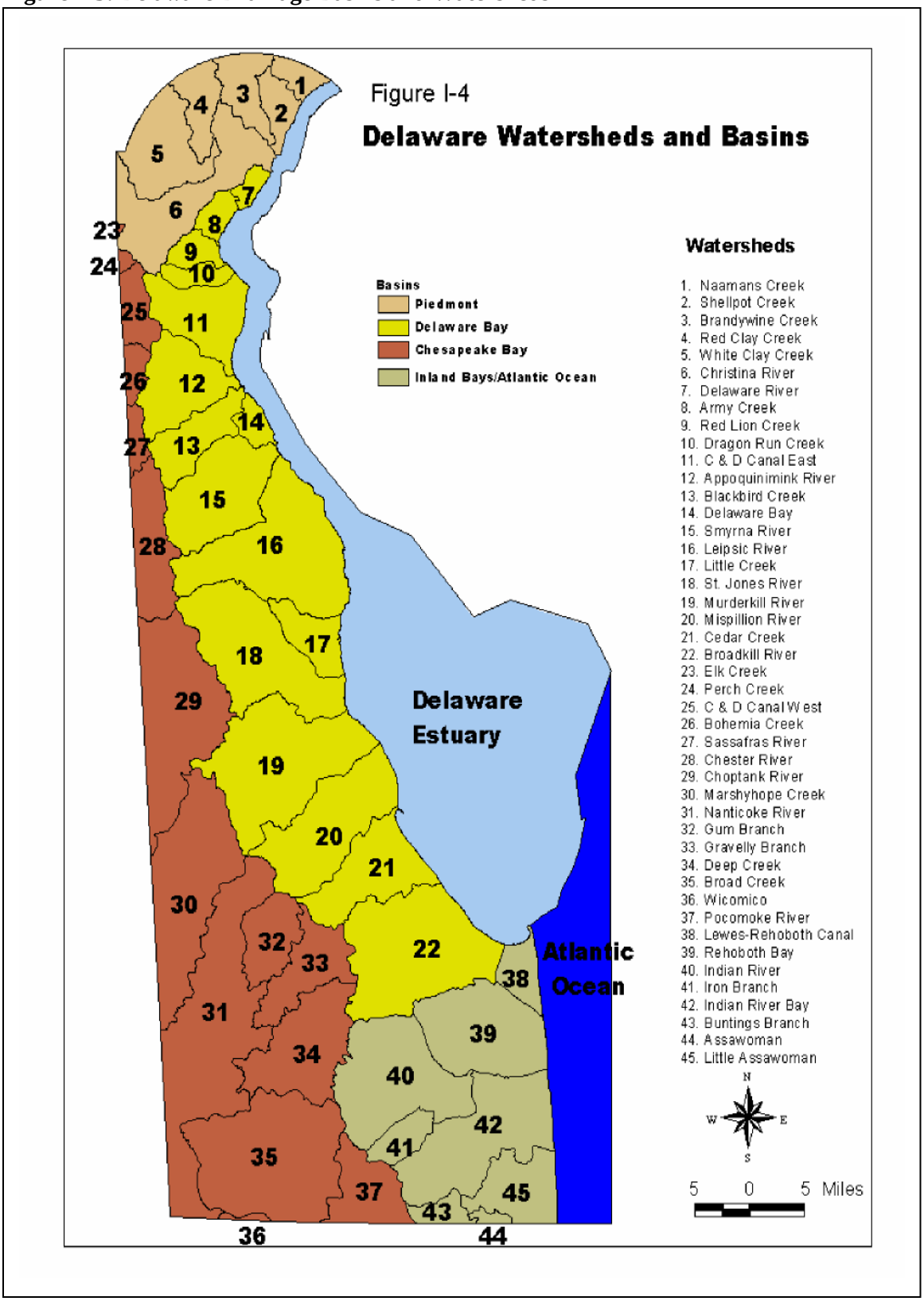
In August 2006, the Inland Bays Tributary Action Team, comprised of local government representatives, businesses, environmentalists, farmers, and residents, published the *Inland Bays Pollution Control Strategy and Proposed Regulations*. The goal of this strategy is to reduce nutrient loading in order to achieve State Water Quality Standards for dissolved oxygen and nutrients (nitrogen and phosphorus) and protect the designated uses of the Inland Bays. This PCS specifically addresses the Indian River, Indian River Bay, Rehoboth Bay, and Little Assawoman Bay and their tributaries.

TMDLs were established for the Indian River, Indian River Bay, and Rehoboth Bay in December 1998 and for the Little Assawoman Bay in January 2005. These TMDLs called for the systematic elimination of all point sources of nutrient loading to those waterbodies along with a 40-65-percent reduction in nonpoint phosphorus loading and a 40-85-percent reduction in nonpoint nitrogen loading. The TMDL also calls for a 20-percent reduction in atmospheric deposition of nitrogen through implementation of the Clean Air Act.

In August 2005, DNREC published the *Delaware Bay and Estuary Assessment Report, Whole Basin Management*. This document focuses on managing Delaware's environmental resources through a comprehensive and coordinated management system, using the State's major drainage basins as the chief management units. The State is composed of four major drainage basins: the Piedmont, the Chesapeake Bay, Inland Bays/Atlantic Ocean, and the Delaware Bay and Estuary (see **Figure 1-3**).

The Delaware Department of Natural Resources and Environmental Control (DNREC) is approaching resource management through a Whole Basin Management process which aims at managing all the biological, chemical, and physical environments by geographic area in Delaware. These geographic areas are based on the State's drainage patterns. The primary objectives of this process are to protect the environment, improve relations within and outside DNREC, maximize wise resource use, and promote environmental education and stewardship. The Whole Basin Management process and its timeline are shown in **Appendix F**.

Figure 1-3: Delaware Drainage Basins and Watersheds



Source: DNREC. Aug. 4, 2005. *State of Delaware 2004 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs.*

1.2 PURPOSE OF AND NEED FOR ACTION

The initial DECREP agreement was signed on June 2, 1999. Addenda to this agreement were made in 2000 and again in 2002 (see **Appendix A** for the existing DECREP agreement, Amendment 1, and all addenda). FSA, CCC, and the State of Delaware propose to extend the agreement through December 31, 2007, and amend the provisions by—

- increasing the overall acreage goal for CREP enrollment from 6,000 acres to 10,000 acres,
- adding two CRP practices—CP9-Shallow Water Areas for Wildlife and CP23A-Wetland Restoration, Non-Floodplain, and
- amending enrollments allowed under CP4D-Permanent Wildlife Habitat from 5 acres or 5 percent of a tract to 10 acres or 10 percent of a tract, whichever is greater (exception enrollment under CP4D may be approved by the FSA County Committee on a case-by-case basis,

DECREP includes a special continuous sign-up CRP component and a State of Delaware incentive program. The proposed amendment would focus on the following areas for enrollment:

- areas adjoining drainage ditches, streams and other waterbodies identified as Category I and II impaired segments in Delaware's *Unified Watershed Assessment and Watershed Restoration Priorities List*, dated October 1, 1998, or
- areas adjoining drainage ditches contributing to Category I and II impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas, with the exception of areas enrolled under CP9-Shallow Water Areas for Wildlife, which do not have to adjoin drainage ditches, streams, or other waterbodies.

Activities proposed in the amended CREP agreement would be authorized by CRP provisions of the Food Security Act of 1985, as amended, and CRP regulations at 7 CFR 1410.

Delaware's waters drain into the Chesapeake Bay, Delaware Bay, and Delaware Inland Bays—all of which are designated National Estuaries. Delaware is located in an area of special environmental sensitivity that is designated a CRP national conservation priority area. This designation makes all cropland within the national CPA eligible to be enrolled in CREP if all other eligibility requirements are met. The *purpose* of the Delaware CREP is to improve water quality and enhance wildlife habitat in the coastal plain geographic areas of the Chesapeake Bay, Delaware Bay, and Inland Bays basins. To accomplish this purpose, CREP implements conservation measures designed to minimize drainage and reduce the sedimentation and nutrient runoff from agricultural lands into these sensitive natural resources. The *need* for this program is to enhance the water quality of these resources and thereby further the goal of restoring designated uses of Delaware's waterbodies and the Chesapeake Bay, and to enhance wildlife habitat.

1.2.1 LEGISLATIVE MANDATES AND COMPLIANCE REQUIREMENTS

The DECREP Programmatic Environmental Assessment (PEA) was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321-4347), the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), the FSA/CCC environmental regulations (**7** CFR Part 799), and *FSA 1-EQ (Rev.1)*, Environmental Quality Programs**.**

Other pertinent statutory requirements include section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470); the Fish and Wildlife Coordination Act (48 Stat. 401), as amended; the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543), and section 307 of the Coastal Zone Management Act of 1972. Section 307 of the Federal Coastal Zone Management Act of 1972, as amended, requires that proposed Federal activities be consistent, to the maximum extent practicable, with the State's federally approved Coastal Zone Management Program (CZMP). The Migratory Bird Treaty Act (16 U.S.C. 703-711) and Executive Order 13186 are also applicable to this proposed action. **Appendix C** summarizes relevant Federal and State laws and regulations related to implementing CREP.

The Food Security Act of 1985 (16 U.S.C. 3830 *et seq.*), as amended by the Federal Agriculture Improvement and Reform Act of 1996 and the Farm Security and Rural Investment Act of 2002, authorizes CCC to perform all activities related to the CRP in Delaware, as specified in the Agreement between CCC and the State of Delaware. The provisions of this Act are codified in 7 CFR Part 1410. CCC is authorized to enter into agreements with States and to use CRP in a cost-effective manner to address specific conservation and environmental objectives of a State and the nation.

Table 1-2 lists other Federal agricultural conservation programs and their respective agency sponsors.

Table 1-2: Federal Agricultural Conservation Programs in Delaware

Federal Agricultural Conservation Program	Agency Sponsor
Conservation Reserve Program (CRP)	USDA-CCC, FSA
Environmental Quality Incentives Program (EQIP)	USDA-NRCS
Wildlife Habitat Incentives Program (WHIP)	USDA-NRCS
Wetlands Reserve Program (WRP)	USDA-NRCS
Emergency Conservation Program (ECP)	USDA-FSA
Conservation Security Program	USDA-NRCS
Emergency Wetlands Reserve Program (EWRP)	USDA-NRCS
Emergency Watershed Protection Program (EWPP)	USDA-NRCS
Farm and Ranch Lands Protection Program (FRPP)	USDA-NRCS
Watershed Protection and Flood Prevention (Small Watershed Program) PL-566 Program	USDA-NRCS
Grassland Reserve Program (GRP)	USDA-FSA and NRCS
Coastal Wetlands Planning, Protection and Restoration Program	USF&WS
Partners in Wildlife	USF&WS

Source: *Emergency Conservation Program, Final Programmatic Environmental Impact Statement*, USDA-FSA, pp. 3-29 to 3-31.

1.3 OBJECTIVES

The primary objective of the DECREP is to enhance the State's water quality by reducing agricultural nutrients and to restore designated uses of Delaware's waterbodies. The second objective is enhancement of wildlife habitat for the State's declining species. It is the intent of USDA, CCC and the State of Delaware that the DECREP will address the following—

A. facilitate nutrient and sediment reduction pursuant to Delaware's goal of restoring designated uses of surface waters;
B. provide conservation buffers on approximately 1,200 miles of Delaware's waterways and drainage systems;
C. increase wildlife habitat acreage and create wildlife corridors in the targeted areas; and

D. restore natural conditions for water temperature and dissolved oxygen in areas protected by riparian forested buffers.

1.4 ORGANIZATION OF THE PEA

This document follows the organization established by the USDA-FSA guidelines for preparing a PEA and by the standard components for an environmental assessment as prescribed by NEPA.

- **Abstract, Executive Summary and Contents**
- **Chapter 1.0-Introduction**: Presentation of the history and background of CREP, the purpose and need for the action, and the objectives are presented in Chapter I.
- **Chapter 2.0-Alternatives Including the Proposed Action**: This chapter describes the proposed action, summarizes the issues identified during the scoping process and evaluates alternatives to the proposed action, including the No Action alternative.
- **Chapter 3.0-Affected Environment**: This chapter describes the area affected by CREP, including the natural and cultural resources, and the social and economic profiles of the area.
- **Chapter 4.0-Environmental Consequences**: This chapter evaluates the potential benefits and consequences of the alternatives to the natural, cultural and social and economic resources described in Chapter III.
- **Chapter 5.0-Cumulative Effects**: The cumulative effects--the past, present, and reasonably foreseeable future actions of the proposal--are assessed in this chapter.
- **Chapter 6.0-Mitigation Measures**. This chapter addresses commitments to avoid, minimize and mitigate any potential adverse effects that could occur to other natural, cultural and social resources.
- **Chapter 7.0-References**. A listing of all references used in developing this report is provided.
- **Chapter 8.0-List of Preparers, Contributors, and Reviewers**. The names of all persons who significantly contributed to and who prepared and reviewed this document are provided.
- **Chapter 9.0-Agencies and Persons Contacted.** Agencies and other persons consulted during the preparation of this document are listed.
- **Appendices**. Technical background data supporting the conclusions in this document are provided in the appendices.

CHAPTER 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Chapter 2.0 describes the proposed Federal action, discusses alternatives initially considered, provides reasons for dismissing any alternative because it was not determined feasible, and more fully evaluates the alternatives that were considered reasonable for further evaluation.

2.1 PROPOSED FEDERAL ACTION

CCC, FSA, and the State of Delaware propose to enhance the water quality of the State's rivers and streams by reducing sedimentation and nutrient runoff through implementation of a joint Federal-State land retirement conservation program, referred to as CREP. This program would use the authorities of the CRP in combination with State resources to target specific conservation and environmental objectives. The Delaware CREP would consist of a special continuous sign-up CRP component and a State of Delaware incentive program, and would target up to 10,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas for enrollment into the program.

Under the Delaware CREP, landowners place environmentally sensitive farmland under a 10- to 15-year contract that requires the land to be converted to an eligible conservation cover. Landowners can establish forest, wetlands, shallow wildlife ponds, native warm-season grasses, or cool season grasses. In return, the landowner receives cost-share, annual rental payments, and bonus payments. The Delaware CREP addresses high-priority conservation issues, such as water quality impacts and loss of critical habitat for wildlife species of concern.

The primary goals of the Delaware CREP are to—

- reduce nutrient and sediment loadings to impaired streams;
- meet temperature and dissolved oxygen criteria necessary to support biology and wildlife; and
- increase wildlife habitat and create wildlife corridors.

The proposed amendment to the Delaware CREP agreement would continue to be effective through December 31, 2007. Proposed Amendment 1 to the Delaware CREP agreement adds two eligible CRP practices to the program, allows larger enrollments per tract for one practice, expands the areas eligible for inclusion into the program, and increases the overall acreage goal from 6,000 acres to 10,000 acres. The following CRP practices were selected in Delaware to achieve these goals:

(1) CP21 Filter Strips
(2) CP22 Riparian Buffer
(3) CP23 Wetlands Restoration
(4) CP3A Hardwood Tree Planting
(5) CP4D Permanent Wildlife Habitat

2.2 SCOPING

2.2.1. DISCUSSION

To comply with 40 CFR §1501.7 of the Council on Environmental Quality's regulations regarding scoping and to provide agencies and the public with an early opportunity to comment on the proposed action, FSA notified Federal, State, and local agencies, and other interested parties about its intent to prepare a programmatic environmental assessment on the DECREP.

FSA identified the DECREP area, the program goals and objectives, and described the alternatives under consideration. In addition to the scoping letters, FSA also publicly announced its intent to prepare a PEA in the *Delaware State News* on January 29, 2006, and the *Delmarva Farmer* on January 31, 2006. Comments were accepted on the proposed action until February 9, 2006.

In response to these announcements, six comments were received. A summary of comments and FSA responses is presented in **Table 2-1**. **Appendix D** contains the scoping comments received from agencies during the scoping period.

Table 2-1: Delaware CREP Scoping Comments and Responses, 2006

Commenter	Scoping Comment	FSA Response
Delaware State Fire Prevention Commission	*No comments. Agricultural operations are not under the purview of the Delaware State Fire Prevention Regulations.*	Comments noted.
Delaware Forest Service	*DFS participates in CREP by arranging for tree plantings and producing a forest management plan. DFS receives information from NRCS and coordinates with them for the actual plantings.*	The process that has been utilized in the past with the DFS will remain the same unless changes are warranted by the findings in the PEA.
Delaware Geological Survey	*The DGS provided information on recently completed studies that have direct bearing on water resources and other environmental efforts that could assist FSA in evaluating projects or areas proposed for CREP.*	FSA appreciates the resource material noted.
U.S. Fish and Wildlife Service, Chesapeake Bay Field Office	*FWS fully supports the goals of the DECREP. The federally endangered Delmarva fox squirrel is known to occur in Sussex County in forested habitat within the Lewes, Milton, Sharptown, and Laurel USGS quad maps. Recommend that FSA consult with FWS on CREP enrollments in these areas of Sussex County for which forest clearing is proposed.* *Federally threatened bog turtle is known to occur in New Castle County in palustrine wetlands comprised of a muddy bottom or shallow water and tussocks of vegetation. Recommend*	DECREP occurs only on actively managed cropland and clearing of forestland is currently not a CREP practice nor would it be proposed or approved in the future. Hardwood tree planting is an approved CREP practice and could eventually enhance habitat for the Delmarva fox squirrel. In addition, an environmental checklist is prepared for each new conservation plan or plan. FSA does not believe there is a need for further consultation with FWS for this species under CREP. FSA has responded to FWS (see **Appendix D**). DECREP is only approved in the coastal plain region of Delaware and does not occur in the drainage basins mentioned. FSA does not believe there is a need for

Commenter	Scoping Comment	FSA Response
	that projects occurring in Brandywine Creek, Red Clay Creek, White Clay Creek, Christina River, Elk Creek, Red Lion Creek, Dragon Run Creek, Chesapeake Delaware Canal, Chesapeake Drainage System and Appoquinimink River watersheds be screened through DNHESP. If a potential bog turtle wetland is identified within the project area, further section 7consultation with FWS may be required.	consultation to occur on the bog turtle at this time.
	Recommended including seasonal restrictions on project construction and project design to protect the quality of habitat.	CREP is a conservation program designed to enhance habitat and improve water quality. During conservation planning, FSA and NRCS use an environmental evaluation checklist (**Appendix H**) to assess potential beneficial and adverse impacts of conservation practices, systems, or other activities that a farmer may want to implement.
	Federally threatened swamp pink occurs through the State in a variety of freshwater wetlands, including spring seepages, swamps, bogs, wet meadows and margins of small streams. Targeted enrollment of CREP acres within watersheds occupied by swamp pink may provide conservation benefit to species. Recommend that projects occurring in the following watersheds be screened through DNHESP: Barlow Branch of Blackbird Creek, (Middletown USGS quad); Muddy run of Christina River, (Saint George's USGS quad);Killen Pond-Murderkill River, Tantrough Branch of Mispillion River, (Harrington USGS quad);Tantrough Branch, Beaverdam Branch and Johnson branch of Mispillion River (Milford USGS quad); Church Branch of Cedar Creek, Cedar Creek (Ellendale USGS quad); Chapel branch of Herring Creek (Fairmount USGS quad);	In Delaware, CREP is practiced in actively cultivated cropland and not in wetlands. DNHESP has advised FSA that there should be no need to consult on CREP projects in the watersheds listed in the comment.

Commenter	Scoping Comment	FSA Response
	Dutton Ditch, Ingram Branch and Round Pole Branch of Broadkill River (Harbeson USGS quad); Lednum Branch, Beaverdam Branch, Tantrough Branch, and Johnson Branch of Mispillion River (Milford USGS quad); North Prong, Sowbridge Branch and Piney Branch of Primebook Creek, Brittingham Branch, Pemberton Branch and Round Pole Branch of Broadkill River (Milton USGS quad); Beaverdam Branch of Cedar Creek and Cedar Creek (Mispillion River USGS quad).	
	Federally threatened bald eagle nests throughout the State. Recommend FSA contact DNHESP to determine if a CREP enrollment is located in the vicinity of a bald eagle's nest. Propose FSA works with DNHESP to obtain maps showing bald eagle nest locations. If a nest is within one-quarter mile of a project area, further section 7 consultation with FWS would be required. Recommend adhering to seasonal restrictions on project construction.	If a bald eagle nest is found within one-quarter mile of a proposed project, FSA will consult with FWS to ensure that nesting sites are protected and are not disturbed. FSA responded to FWS (see **Appendix D**) and will consult with DNHESP regarding the occurrence of bald eagle nesting sites and the potential for other rare and protected species.
Delaware Coastal Programs	*Delaware Coastal Programs commented that the Delaware National Estuarine Research Reserve (DNERR) system consists of the Blackbird Creek and St. Jones River. Where possible CREP should help meet the conservation goals of the DNERR.*	Various DNREC staffpersons closely monitor the Delaware CREP project. FSA will work to ensure that the Delaware Coastal Programs receives any required information, as well as a copy of the draft PEA.
	Specific concerns were expressed regarding the conservation and preservation of non-tidal freshwater wetlands. No specific Delaware statewide law exists that prohibits filling, excavation or disturbance of non-tidal freshwater wetlands. Consideration should be given to protecting isolated freshwater wetlands and the PEA should evaluate strategies to ensure inclusion of freshwater wetland protection.	DECREP is practiced in actively cultivated cropland and not in wetlands. CREP preserves wetlands and restores wetlands under CP23-Wetland Restoration.

Commenter	Scoping Comment	FSA Response
	Many of coastal management projects will require Federal consistency certification because they are a direct Federal program potentially affecting Delaware's resources or because they receive Federal funds.	The Delaware Coastal Programs office will be provided the necessary time to review the draft PEA.
Division of Historical and Cultural Affairs	*The SHPO met with FSA and NRCS and reviewed and concurred with the draft MOU between FSA and NRCS on procedures for conducting cultural resource reviews for CREP practices. The SHPO would like FSA to develop a programmatic agreement between FSA and the SHPO, tailored after the NRCS/SHPO agreement.*	FSA concurred.

Source: Delaware CREP Scoping Letters, February 2006.

2.3 RESOURCES CONSIDERED BUT ELIMINATED FROM ANALYSIS

The following resources were not evaluated as they did not occur in the State or the alternatives under consideration would cause no effect to them:

- Architectural Resources
- National Natural Landmarks
- Wilderness

There are no federally recognized tribal lands, no National Natural Landmarks, and no wilderness areas that would be affected within the State of Delaware by CREP. However, the Nanticoke Indian community, a State-recognized tribe, is located in Millsboro, Sussex County. This community has a school and an archeological site listed in the National Register of Historic Places.

As shown in **Appendix G**, numerous farm buildings and other architectural structures are listed in the National Register of Historic Places throughout the State. DECREP is an agricultural conservation program that would not affect any of these architectural resources.

2.4 ALTERNATIVES ELIMINATED FROM ANALYSIS

Consideration was initially given to shifting acreages from various other agricultural programs into conservation easements. However, this alternative was eliminated from further analysis because administration of many of these other programs is beyond the authority of FSA and under the purview of other agencies, and because the stability of other programs cannot be reasonably predicted. Therefore, no further evaluation of this alternative was conducted.

2.5 ALTERNATIVES SELECTED FOR ANALYSIS

2.5.1 ALTERNATIVE 1-NO ACTION (EXISTING PROGRAM)

Alternative 1 addresses the existing DECREP, which was established through a Memorandum of Agreement (MOA) between USDA-CCC and the State of Delaware in December 2002. The

purpose of this agreement was to enhance water quality through reduction of agricultural nutrients to further the goal of restoring designated uses of Delaware's waterbodies. The secondary goal of the existing DECREP is enhancement of wildlife habitat. The agreement shall remain in effect until December 31, 2007.

Program Objectives

The primary objective of the DECREP is to enhance the State's water quality by reducing agricultural nutrients and to restore designated uses of Delaware's waterbodies. The secondary objective is enhancement of wildlife habitat, especially for the State's declining species. The DECREP strives to meet the following program goals—

- facilitate nutrient and sediment reduction pursuant to Delaware's goal of restoring designated uses of surface waters;
- provide conservation buffers on approximately 1,200 miles of Delaware's waterways and drainage systems;
- increase wildlife habitat acreage and create wildlife corridors in the targeted areas; and
- restore natural conditions for water temperature and dissolved oxygen in areas protected by riparian forested buffers.

Acreage and Targeted Land for Enrollment

Under Alternative 1, the DECREP would enroll up to 6,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas adjoining drainage ditches, streams and other waterbodies identified as Category I impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (October 1, 1998), or areas adjoining drainage ditches contributing to Category I impaired segments in the Chesapeake, Delaware, and Inland Bays basin areas.

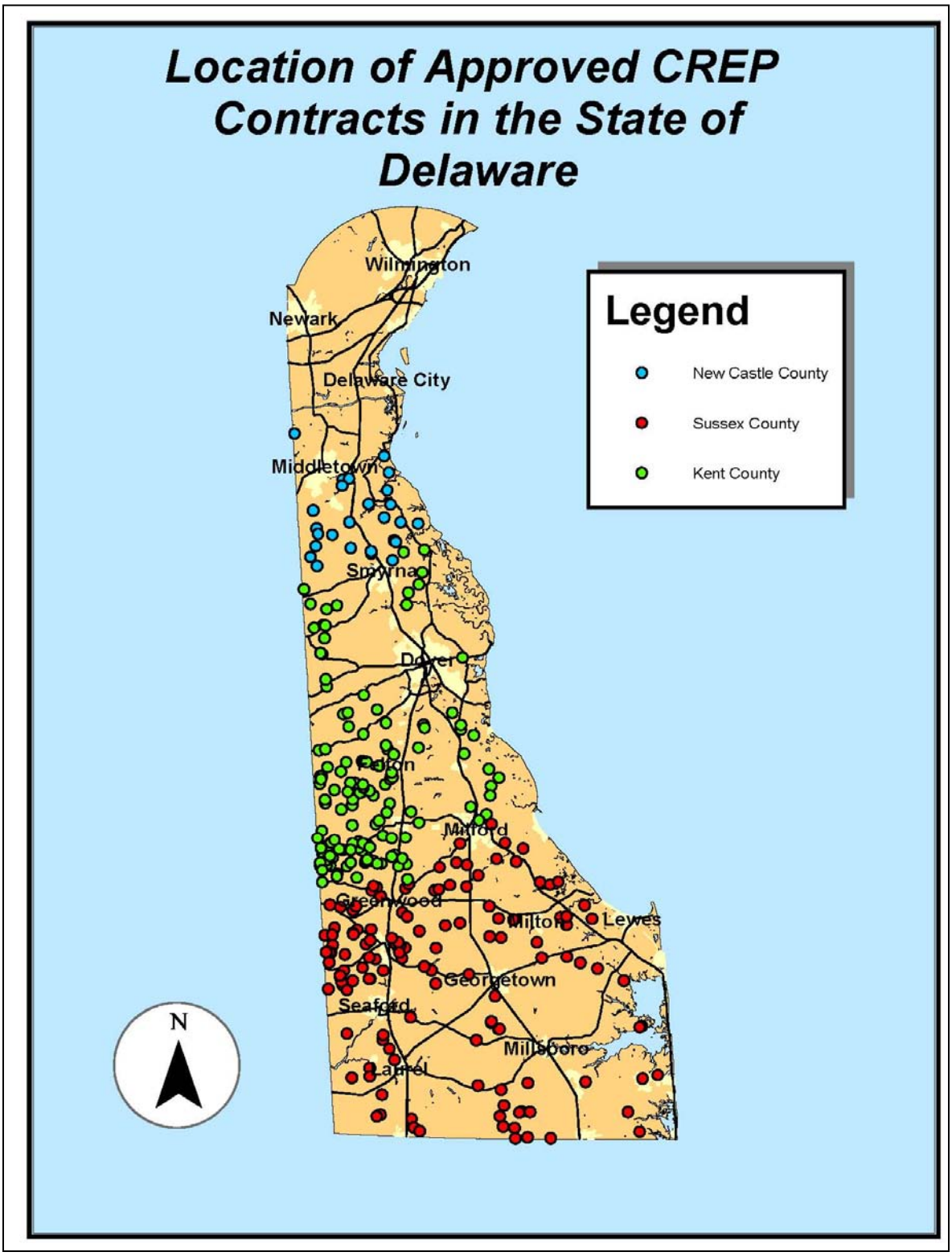
Figure 2-1 shows the location of the approved CREP contracts in Delaware. As shown, the concentration of CREP lands is in Kent and Sussex Counties. **Table 2.2** shows that as of January 2006, there were 456 CREP, comprising 5,151.2 acres, in Delaware. Selection of Alternative 1 would allow for an additional 848.8 acres to be enrolled into the DECREP.

Table 2-2: Delaware CREP Contracts and Acreages as of January 2006

County	No. of Contracts	Acres
Kent	208	2,258.3
New Castle[1]	39	225.2
Sussex	209	2,667.7
Total	**456**	**5,151.2**

[1]Telecon, Rosemary Cali, Jan. 27, 2006.

Figure 2-1: Location of Approved Delaware CREP Contracts by County



Source: USDA-NRCS, Paul Petrichenko, 2006.

Table 2.3 shows where the existing conservation practices (CPs) and respective acreages are distributed for the three counties and the State.

Table 2-3: Delaware CREP Conservation Practices by County 1998-2006

County	Avg. Cost-Share ($ per Acre)	Conservation Practice (CP)	Practice Acres in County	Avg. CP Cost-Share
Kent	$367	CP3A	1,123.1	$351
		CP4D	295.5	$363
		CP21	674.4	$298
		CP22	33.4	$372
		CP23	131.9	$874
New Castle	$253	CP3A	32.3	$276
		CP4D	77.2	$255
		CP21	85.4	$224
		CP22	3.3	$308
		CP23	14.2	$458
Sussex	$373	CP3A	1,855.0	$346
		CP4D	297.3	$364
		CP21	235.0	$354
		CP22	105.7	$360
		CP23	173.6	$704
TOTAL STATE	$366	CP3A	3,010.4	$347
		CP4D	670.0	$351
		CP21	994.8	$305
		CP22	142.4	$361
		CP23	319.7	$763

CP=Conservation Practice. These practices are defined in the next section.
Source: USDA-FSA, Practice Summary for Active CREP Contracts for All Program Years: 1998-2006. Prepared Dec. 30, 2005.

Contract Term

The term for continuous sign-up CRP contracts for acres enrolled in DECREP must be at least 10 years, but no more than 15 years. All CREP contracts are required to have a maintenance plan for the duration of the agreement. The initial CREP agreement, signed on June 2, 1999, authorized contracts through December 31, 2002. This agreement was amended on December 12, 2002, extending the authorization for existing DECREP through December 31, 2007.

Eligible Conservation Practices

The following are eligible conservation practices for enrollment under DECREP and may be used in conjunction with each other:

- CP3A (Hardwood Tree Planting)
- CP4D (Permanent Wildlife Habitat), provided that practice acres for a contract will be limited to 5 acres per tract or 5 percent of a tract, whichever is greater
- CP21 (Filter Strips)
- CP22 (Riparian Buffer)
- CP23 (Wetland Restoration)

The Delaware Forest Service, in cooperation with USDA, offers a limited amount of cost shares to private landowners for such activities as tree planting and timber stand improvement. These

cost-share programs include the Forest Land Enhancement Program (FLEP), CREP, and the State of Delaware Forestry Cost-Share Program. Delaware Forest Service staff work with interested landowners and USDA to ensure the funds are properly spent for tree plantings. Forest management plans are prepared to describe and map the area to be planted, provide species recommendations, detail the appropriate planting methods, and include information about maintenance procedures. During FY 2005, 15 forestry management plans covering 141.3 acres of tree plantings were prepared, and for FY 2006, 14 plans have been written for 120.2 acres of tree plantings.[7]

Cost-Share and Incentive Payments

Under Alternative 1, CCC pays 50 percent of the reimbursable costs of CP establishment and the State of Delaware pays 37.5 percent for a total of 87.5 percent cost-share assistance. For CP21 and CP4D, CCC pays 64 percent and the incentive payments and Delaware pays 36 percent. For CP22, CP23, and CP3A, CCC pays 73 percent and Delaware pays 27 percent.

Annual rental payments are based on the soil rental rate, calculated by FSA. In addition to the rental payment, CCC agrees to make a special incentive payment as a percentage of the base CRP maximum annual rental rate otherwise normally applicable to the land enrolled in CREP, based on the following amounts:

(1) 130 percent of the county rental rate for land established to riparian buffers, hardwood trees and wetland restoration, not to exceed $150 per acre, plus a maintenance payment; or

(2) 50 percent of the county rental rate for land established to wildlife habitat and filter strips not to exceed $110 per acre, plus a maintenance payment. The State cost-share and incentive payment is calculated for the length of the contract and paid in the first year of the contract after practice establishment.

To encourage the planting of filter strips (CP21) and riparian buffers (CP22), an additional "practice incentive payment" equal to 40 percent of eligible establishment costs of these two practices will be made by CCC, subject to the availability of funds. CCC will also pay a one-time "signing incentive payment" for CP21 and CP22 equal to $10 for each eligible acre enrolled for each full year of the CRP contract in accordance with FSA CRP National Directives, currently limited to a maximum of $100 per acre. These payments are made in addition to the 87.5 percent cost-share, annual rental and special incentive payments.

To encourage restoration of wetlands, CCC pays a separate, one-time incentive payment equal to 25 percent of the cost of restoring the hydrology of the site for practice CP23, Wetland Restoration. This payment is also made in addition to the cost-share, annual rental and special incentive payments.

2.5.2 ALTERNATIVE 2-EXPANDED AND ENHANCED DELAWARE CREP AGREEMENT (AGENCY'S PREFERRED ALTERNATIVE)

In July 2005, CCC and the State of Delaware proposed to implement and expand CREP in Delaware by allowing up to 10,000 eligible acres to be enrolled into the DECREP. DECREP would consist of a special continuous sign-up CRP component and a State of Delaware incentive program through December 31, 2007. The proposed DECREP would expand enrollment of

[7] Data provided by James W. Olson, CF, Forest Stewardship Coordinator. Aug. 23, 2006. Delaware Forest Service.

eligible land from 6,000 acres to 10,000 acres. As shown in **Table 2.2** under Alternative 1, Delaware currently has 5,151.2 acres in CREP contracts. Selection of Alternative 2 would allow for enrollment of an additional 4,848.8 acres into the program.

Eligible acreage would be those areas adjoining drainage ditches, streams, and other waterbodies identified as Category I and II impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas and in Delaware's *Unified Watershed Assessment and Watershed Restoration Priorities List* (October 1, 1998). The exception involves CP9-Shallow Water Areas for Wildlife, which does not have to adjoin drainage ditches, streams, or other waterbodies.

Program Objectives

The primary objectives of the proposed DECREP would not change and would remain as they are presented in Alternative 1.

Acreage and Targeted Land for Enrollment

Under Alternative 2, the DECREP would expand enrollment from 6,000 acres to 10,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas adjoining drainage ditches, streams and other waterbodies identified as Categories I and II impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (October 1, 1998), or areas adjoining drainage ditches contributing to Categories I and II impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas. Exceptions to these areas are land enrolled under CP9-Shallow Water Areas for Wildlife that is not adjoining drainage ditches, streams or other waterbodies.

Contract Term

The term for continuous sign-up for the DECREP would be at least 10 years and would not exceed 15 years. The proposed authorization for CREP in Delaware would continue through December 31, 2007.

Eligible Conservation Practices

The following are eligible CPs for enrollment under Alternative 2, which may also be used in conjunction with each other:

- CP3A-Hardwood Tree Planting
- CP4D-Permanent Wildlife Habitat provided that practice acres for an individual contract will be limited to 10 acres per tract or 10 percent of a tract, whichever is greater. Enrollment of additional acreage under CP4D may be approved by the FSA County Committee on a case-by-case basis.
- CP9-Shallow Water Areas for Wildlife. Acres enrolled under CP9 may not exceed 20 acres per tract. More than one CRP-1 may be approved under this agreement for acres devoted to CP9.
- CP21- Filter Strips
- CP22-Riparian Buffer
- CP23-Wetland Restoration
- CP23A-Wetland Restoration, Non-Floodplain

As with Alternative 1, the Delaware Forest Service would continue to write plans for all CREP contracts involving tree plantings for Alternative 2.

Cost-Share and Incentive Payments

Under Alternative 2, CCC would pay 50 percent of the reimbursable costs of CPs and the State of Delaware would pay 37.5 percent. Annual rental payments would be based on the soil rental rate. In addition to the rental payment, CCC would make an annual incentive payment as follows:

(1) for land established to CP22, Riparian Buffer, CP3A, Hardwood Tree Planting, CP23, Wetland Restoration and CP23A, Wetland Restoration, Non-Floodplain: 95 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130 percent of the special CCC/State incentive payments exceed $150 per acre, then the Federal incentive shall be 73 percent of the difference between $150 less the base annual rental rate, and the State incentive payment shall be 27 percent of the difference.

(2) for land established to practices CP9, Shallow Water Areas for Wildlife; CP21, Filter Strips; and CP4D, Permanent Wildlife Habitat: 32 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50 percent of special Federal/State CREP incentive payments exceed $110 per acre, then the CCC incentive shall be 64 percent of the difference between $110 and the base annual rental rate, and the State incentive payment shall be 36 percent of the difference.

The State of Delaware would contribute not less than 20 percent of the overall Federal program costs, pursuant to continued annual program appropriations from the Delaware General Assembly. The State would be responsible for making an incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise applicable to the land enrolled in the CREP in the following amounts. State incentive payments would be accelerated to be paid in a lump sum within the first year of the contract:

a) for land established to practices CP3A, Hardwood Tree Planting, CP22, Riparian Buffer, CP23, Wetland Restoration and CP23A, Wetland Restoration, Non-Floodplain: 35 percent provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130 percent of special Federal/State CREP incentive payments provided for in this agreement exceed $150 per acre, then the Federal incentive shall be 73 percent of the difference of $150 less the base annual rental rate, and the State incentive payment shall be 27 percent of the difference;

b) for land established to CP9, Shallow Water Areas for Wildlife; CP21, Filter Strips; and CP4D, Permanent Wildlife Habitat: 18 percent provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50 percent of special Federal/State CREP incentive payments exceed $110 per acre, the Federal incentive shall be 64 percent of the difference between $110 the base annual rental rate, and the State incentive payment shall be 36 percent of the difference;

c) paying all costs associated with the annual monitoring program;

d) providing technical assistance through the local soil and water conservation districts in the development of conservation plans, including installation of the identified practices. Development of conservation plans will be coordinated with the USDA Natural Resources Conservation Service for producers offering to enroll eligible acreage in the CREP; and

e) providing conservation planning assistance for the entire farm to enroll participants on a voluntary basis.

2.6 COMPARISON OF ALTERNATIVES

Table 2-4 compares the existing and proposed components of Alternatives 1 and 2.

Table 2-4: Comparison of Delaware CREP Alternatives, 2006

Program Component	Alternative 1-No Action (Existing Program)	Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)
Program Expiration	December 31, 2007	December 31, 2007
Contract Term	10-15 years; maintenance and management activity plans, as applicable	10-15 years; maintenance and management activity plans
Total CREP Acreage	Allows up to 6,000 acres; currently 5,151.2 acres are under contract, allowing an additional 848.8 acres for CREP enrollment	Would expand enrollment to allow up to 10,000 acres, providing for an additional 4,848.8 acres for CREP enrollment
Targeted Lands for CREP	Chesapeake Bay, Delaware Bay, and Inland Bays basin areas adjoining drainage ditches, streams, and other waterbodies identified as Category I impaired segments or areas adjoining drainage ditches contributing to Category I impaired segments.	Includes Category II impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (Oct. 1, 1998). Exception: Acres enrolled under CP9 do not need to adjoin drainage ditches or other waterbodies.
Eligible Conservation Practices	--CP3A-Hardwood Tree Planting --CP4D-Permanent Wildlife Habitat, provided that practice acres for an individual contract will be limited to 5 acres per tract or 5 percent of a tract, whichever is greater) --CP21-Filter Strips --CP22-Riparian Buffer --CP23-Wetland Restoration	--CP3A-Hardwood Tree Planting. --CP4D-Permanent Wildlife Habitat-provided that practice acres for an individual contract will be limited to 10 acres per tract or 10 percent of a tract, whichever is greater (except enrollment of additional acreage under CP4D may be approved by the FSA County Committee on case-by-case basis). --CP9-Shallow Water Areas for Wildlife. Acres enrolled under CP9 cannot exceed 20 acres per tract. More than one CRP-1 may be approved under this agreement for acres devoted to CP9. --CP21-Filter Strips --CP22-Riparian Buffer --CP23-Wetland Restoration --CP23A-Wetland Restoration, Non-Floodplain

Source: Agreement between CCC and State of Delaware for Implementation of the Conservation Reserve Enhancement Program, revised July 2005.

CHAPTER 3.0 AFFECTED ENVIRONMENT

Chapter 3.0 describes of the project area and its resources. As a part of the Delmarva Peninsula *(land that includes parts of Maryland and Virginia)*, Delaware is bordered by the Delaware Bay, Delaware River, and Atlantic Ocean. Most of the State is very flat, averaging only 60 feet above sea level. The only exceptions are the green, rolling hills that cover the northern tip, fronting the Pennsylvania border. There are only three counties in Delaware. From north to south, the counties are New Castle, Kent, and Sussex (see **Figure 3-1**).

The shorelines of Delaware Bay retain some of the best tidal creeks and marshes in America, and are home to a large variety of migrating waterfowl. The Delaware Canal was artificially constructed in 1834. Originally 60 miles in length, and used for the delivery of coal and freight, nearly 36 miles of the original structure still exists today and those remnants are a popular recreational corridor.

The FSA and the Delaware Forest Service planted its millionth tree, an American Holly, for the DECREP in the summer of 2003.

3.1 BIOLOGICAL RESOURCES

3.1.1 WILDLIFE AND FISHERIES

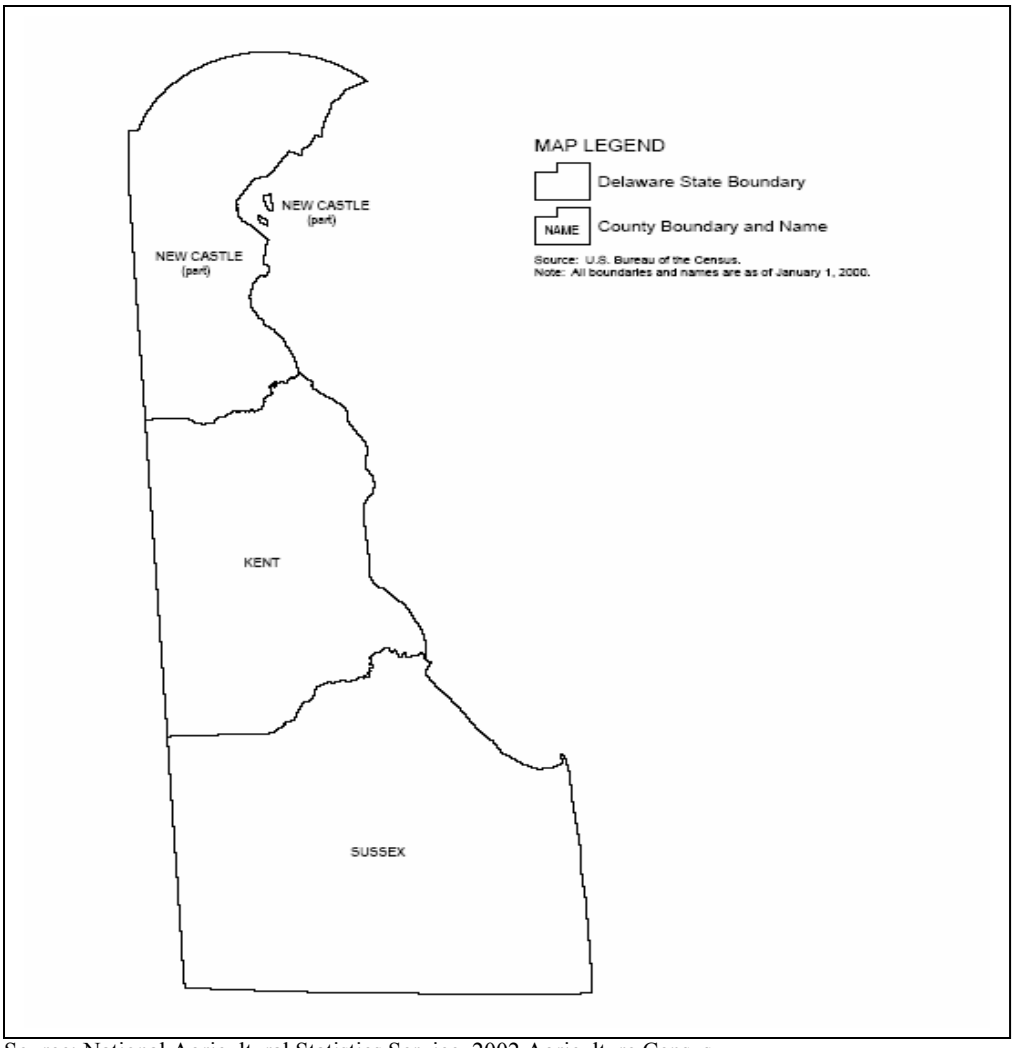
Delaware is a biologically diverse State composed of hardwood forests, swamps, estuaries, and coastal marshes. Despite its small land size, the State is rich in wildlife from coastal waters and beaches to forested slopes and flatlands.

Much of the State's wildlife exists around waterbodies. The Nanticoke watershed, for example, is brimming with a wide diversity of plant and animal life. The watershed is also home to significant numbers of rare and endangered plant species including box huckleberry, Parker's pipewort, seaside alder, and reversed bladderwort.[8] The 1990 *North American Waterfowl Management Plan* states that the Nanticoke is "…among the most pristine habitats remaining in Delaware."[9] The Nanticoke River also provides valuable commercial and recreational fisheries for catches such as white and yellow perch, pickerel, catfish, largemouth bass, bluefish, sea trout, weakfish, and striped bass.

More than 1,000 species of wildlife are known to occur or have occurred in Delaware and more than 125 different habitat types have been identified.[10] The Inland Bay's warm, shallow mix of fresh and salt water creates a variety of habitats that support many species, including bald eagles, ospreys, waterfowl, blue crabs, clams and finfish. White-tailed deer, wild turkey, and beaver are once again common inhabitants throughout the watershed. However, for other species, their future is less certain due to habitat loss, poor water quality, and human development.

[8] Nanticoke River Fact Sheet. "The Nanticoke Watershed." http://members.tripod.com/~imblackeagle/index-8.html
[9] Ibid.
[10] DNREC, Div. of Fish & Wildlife. *Delaware Wildlife Action Plan*. Chp.3, sec. 3.1.

Figure 3-1: Delaware Counties



Source: National Agricultural Statistics Service. 2002 Agriculture Census.

In 1995, the State of Delaware implemented a unique program called the Delaware Reef Program, which is part of a comprehensive fisheries management effort to enhance fisheries habitat, benefit structure-oriented fish and provide fishing opportunities for anglers. Approximately 11artificial reef sites in Delaware Bay and along the Atlantic Coast have been permitted. Reef construction is especially important in the Mid-Atlantic Region, where nearshore bottom is usually sand or mud. These artificially constructed reefs can establish an invertebrate community that is richer than found on the bottom and provide food and shelter for reef fish such as tautog, sea bass, scup, spadefish, and triggerfish. In addition, gamefish, such as bluefish, striped bass, and weakfish, are attracted to baitfish, which congregate around reef structures.

Despite significant strides in wildlife conservation, much of Delaware's habitat remains isolated, degraded, and unprotected as more land is developed. Based on DNREC's Landowner Incentive Programs in Delaware, more than 80 percent of the available or restorable wildlife habitat in Delaware exists on private lands.[11]

[11] DNREC. "Landowner Initiative," www.dnrec.state.de.us/Fw/landowner/landowner%20inactive%20Rev30.pdf

3.1.2 VEGETATION

Table 3-1 presents EPA's priority management issues within the Delaware Inland Bays area and the major habitat types.

Table 3-1: Delaware Inland Bays EPA Priority Management Issues and Habitat Types

Priority Management Issues	--nutrients --habitat loss/alteration --species loss/decline --red/brown tides --harmful algal blooms (such as Pfiesteria)
Major Habitat Types	--submerged aquatic vegetation (sea grass) --barrier islands/sand bars --lagoon/shallow open water --rocky intertidal/subtidal --shellfish growing areas --beach/dune (vegetated) --sand/mud/salt flats --tidal pools --salt/brackish marsh --freshwater marsh (tidal) --forested wetland --seasonal wetland --salt ponds --freshwater lakes/ponds --grass/open field --scrub/shrub --non-wetland forest --riparian/riverine (tidal, forested, floodplain) --abandoned agricultural land

Source: U.S. EPA National Estuary Program. http://www.epa.gov/owow/estuaries/programs/dib.htm

Historically, the Inland Bays have had healthy populations of submerged aquatic vegetation, such as algae and eel grass that provide habitat for aquatic life. Due to hurricanes, coastal storms and declining water quality, eelgrass in the Bays was all but eliminated by the early 1970s. There has been a resurgence of gasses along the Delmarva Peninsula during the past two decades, prompting Delaware to transplant and restore eelgrass in Rehoboth Bay and Indian River Bay.[12]

3.1.3 INVASIVE AND EXOTIC SPECIES

Delaware wildlife habitats are threatened by a wide range of invasive species. The Global Invasive Species Data Base lists 67 invasive species in the State of Delaware. DNREC's Division of Fish and Wildlife offers financial assistance to landowners in controlling invasive species in areas where a threatened, endangered, or species-at-risk will directly benefit. Japanese honeysuckle, mile-a-minute weed, purple loosestrife, reed canary grass, and phragmites are a few examples of invasive species that can be found in wildlife habitats.[13]

[12] DNREC. "Living Resources of the Inland Bays."
http://www.dnrec.state.de.us/DNREC2000/Library/Misc/InlandBays.pdf
[13] DNREC, Div. of Fish & Wildlife. Delaware Private Lands Assistance Program.
http://www.dnrec.state.de.us/dplap/information/Invasive.shtml

Phragmites is a reed that is both fast growing and extremely hardy and has taken over large areas of Delaware wetlands by displacing native plants that provide better wildlife food and cover. Its extensive root system holds dormant reeds in place during the winter, which causes a fire hazard. DNREC's Division of Fish and Wildlife is partnering with NRCS to offer cost-share assistance to improve wildlife habitat in private wetlands that have been degraded by phragmites. This partnership enables the financial assistance to be increased to the extent that State and Federal funds will cover 88 percent of the cost, with the landowner chipping in the remaining 12 percent. Eligible landowners must have a minimum of 5 acres and a maximum of 200 acres infested with phragmites to be spray-treated with herbicide, and they must agree to have their property treated for 3 consecutive years.

The phragmites cost-share program is intended to treat the problem in undeveloped wetlands, such as tidal or non-tidal freshwater and brackish marshes, ponds and impoundments. Drainage ditches are not eligible; landowners with phragmites problems in agricultural ditches should contact their county conservation districts. The Division also may exclude areas adjacent to development for safety reasons.

Four plant species are designated as noxious weeds under the State of Delaware Noxious Weed Program:

1. Johnsongrass (*sorghum halepense*) was listed as a noxious weed in 1970;
2. Canada thistle (*Cirsium arvense*) was listed in 1982;
3. burcucumber (*Sicyos angulatus*), listed in 1986; and
4. giant ragweed (*Ambrosia trifida*) listed in 1986.[14]

Delaware law requires that these weeds not be allowed to exceed 24 inches in height or be allowed to produce seed.

Other invasive pests in Delaware include daylily rust (*Puccinia hemerocallidis*), imported fire ants (*Solenopsis invicta*), small hive beetle (*Aethina tumida*), soybean rust (*Phakopsora pachyrhizi*), Japanese beetle *(Popillia japonica Newman)* and sudden oak death (*Phytothphora ramorum*).[15] **Table 3-2** identifies some of the worst existing and potential invasive species in Delaware. **Table 3-3** identifies non-native aquatic species known to occur within Delaware's water.

The Delaware Noxious Weed Program provides information and management assistance to farmers, landowners, and homeowners in the control of these noxious weeds. The Delaware Department of Agriculture offers farmers and other qualified individuals use of herbicide application equipment, free of charge, to aid in the control of noxious weeds.

The Delaware Department of Agriculture, Plant Industries, surveys and provides suppression services for gypsy-moth infested areas. The Delaware Gypsy Moth Program is a cooperative cost-share program among the Delaware Department of Agriculture, the USDA-Forest Service, and affected landowners. Landowners must apply each year by September 15 to have their wooded area surveyed for gypsy moths.

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[14] Delaware Dept. of Agriculture, Plant Industries, Noxious Weed Program. http://www.state.de.us/deptagri/plantind/noxious.shtml

[15] The Center for Environmental and Regulatory Information Systems, Purdue University
 http://ceris.purdue.edu/napis/maps/stsurvey.html

Table 3-2: Current and Potential Invasive Species in Delaware

Name	Type	Origin	Extent	Damage
Chestnut blight	Fungus	China; fungus was first detected in New York City in 1904.	By 1926, the blight had devastated chestnuts from Maine to Alabama	Chestnuts once comprised one-fourth to one-half of eastern U.S. forests and were valued for its durable wood and for food for humans, livestock, and wildlife. Today, only stump-sprouts from killed trees remain.
Dutch elm disease	Fungus	Asia; one strain of the disease arrived in the 1930s in Cleveland, OH on infected elm logs from Europe; a more virulent strain arrived in 1940s.	American elm originally ranged in all States east of Rockies	Elms, once the nation's most popular urban street tree, have largely disappeared from both urban and forested landscapes. It is estimated that "Dutch" elm disease has killed more than 100 million trees.
Hemlock woolly adelgid	Aphid-like insect	Japan and China, introduced accidentally around 1924	Found from Maine to Georgia, including all of Delaware	Causes up to 90% mortality in eastern hemlock species, which are important for shading trout streams, and providing habitat for about 90 species of birds and mammals.
Nutria	Mammal	South America; introduced to US in 1943 for fur farming.	Widespread in Delmarva area. Found throughout New England and beyond.	Depredation on crops and burrowing actions affect flood control mechanisms.
Multiflora rose	Weed	Japan & China; promoted in 1900s as a "living fence"		Forms dense thickets that crowd out native species, also a weed in crop and pasture lands.
Garlic mustard	Weed	Europe; brought by settlers as a vitamin-rich winter herb	Throughout Piedmont and Coastal Plain	Grows earlier in spring than native plants, allowing it to dominate forest understory and crowd out natives
Hydrilla	Wetland herb	Imported via aquarium trade from Asia	Found in most southern Delaware waterways	Out-competes native aquatic vegetation and chokes off waterway for boating, swimming, fishing, etc.

Source: The Biodiversity Partnership. http://www.biodiversitypartners.org/state/de/invasive.shtml

Table 3-3: Non-Native Aquatic Species in Delaware

Common Name	Scientific Name	Native Habitat	Exotic/ Native Transplant
freshwater jellyfish	*Craspedacusta sowerbyi*	Freshwater	Exotic
green crab	*Carcinus maenas*	Marine	Exotic
Asian shore crab	*Hemigrapsus sanguineus*	Marine	Exotic
rock bass	*Ambloplites rupestris*	Freshwater	Native Transplant
Goldfish	*Carassius auratus*	Freshwater	Exotic
grass carp	*Ctenopharyngodon idella*	Freshwater	Exotic
common carp	*Cyprinus carpio*	Freshwater	Exotic
threadfin shad	*Dorosoma petenense*	Freshwater-Marine	Native Transplant
tiger muskellunge	*Esox lucius x masquinongy*	Freshwater	Native Transplant
Muskellunge	*Esox masquinongy*	Freshwater	Native Transplant
channel catfish, graceful catfish	*Ictalurus punctatus*	Freshwater	Native Transplant
green sunfish	*Lepomis cyanellus*	Freshwater	Native Transplant
green sunfish x bluegill	*Lepomis cyanellus x macrochirus*	Freshwater	Native Transplant
Warmouth	*Lepomis gulosus*	Freshwater	Native Transplant
Bluegill	*Lepomis macrochirus*	Freshwater	Native Transplant
Red ear sunfish	*Lepomis microlophus*	Freshwater	Native Transplant
smallmouth bass	*Micropterus dolomieu*	Freshwater	Native Transplant
largemouth bass	*Micropterus salmoides*	Freshwater	Native Transplant
white perch x striped bass	*Morone americana x saxatilis*	Freshwater	Native Transplant
white bass	*Morone chrysops*	Freshwater-Marine	Native Transplant
Wiper	*Morone chrysops x saxatilis*	Freshwater-Marine	Native Transplant
coho salmon	*Oncorhynchus kisutch*	Freshwater-Marine	Native Transplant
rainbow trout	*Oncorhynchus mykiss*	Freshwater-Marine	Native Transplant
Chinook salmon	*Oncorhynchus tshawytscha*	Freshwater-Marine	Native Transplant
fathead minnow	*Pimephales promelas*	Freshwater	Native Transplant
white crappie	*Pomoxis annularis*	Freshwater	Native Transplant

Common Name	Scientific Name	Native Habitat	Exotic/ Native Transplant
black crappie	*Pomoxis nigromaculatus*	Freshwater	Native Transplant
brown trout	*Salmo trutta*	Freshwater-Marine	Exotic
tiger trout	*Salmo x Salvelinus trutta x fontinalis*	Freshwater	Exotic Hybrid
brook trout	*Salvelinus fontinalis*	Freshwater	Native Transplant
lake trout	*Salvelinus namaycush*	Freshwater	Native Transplant
Walleye	*Sander vitreus*	Freshwater	Native Transplant
Tench	*Tinca tinca*	Freshwater	Exotic
Asian clam	*Corbicula fluminea*	Freshwater	Exotic
Chinese mysterysnail	*Cipangopaludina chinensis malleata*	Freshwater	Exotic
common periwinkle	*Littorina littorea*	Marine	

Source: U.S. Geological Survey. Nonindigenous Aquatic Species in Delaware. http://nas.er.usgs.gov/queries/SpeciesList.asp?

3.1.4 PROTECTED SPECIES AND HABITAT

Delaware is home to an estimated 1,096 species, of which more than 457 are listed as species in need of conservation. Of the 457 in need of conservation, 49 are listed as threatened or endangered. [16] The most notable are the Delmarva fox squirrel, the bog turtle, and the piping plover. **Table 3-4** lists Delaware's wildlife by classification and status. **Appendix E** provides a listing of federally and State threatened and endangered species, as well as identifies those species in need of conservation in Delaware.

Table 3-4: Delaware Wildlife by Classification and Protection Status

Classification	Number of Species	Species in Need of Conservation	Threatened/Endangered Species
Mussels	14	10	6
Snails	27	18	0
Crustaceans	6	1	0
Arachnids	1	1	0
Insects	405	207	9
Fish	99	23	1
Amphibians	27	9	2
Reptiles	43	24	6
Birds	408	146	24
Mammals	66	18	1
TOTAL	**1,096**	**457**	**49**

Source: *Delaware Wildlife Action Plan*. http://www.teaming.com/summary_reports/Delaware.pdf

[16] Delaware Wildlife Action Plan. http://www.teaming.com/summary_reports/Delaware.pdf.

Consultation pursuant to NEPA and to Section 7 of the Endangered Species Act was initiated in January 2006. FWS responded with comments, which are summarized in Chapter 2, **Table 2-1**. A copy of the FWS letter is provided in **Appendix D**.

3.2 CULTURAL RESOURCES

Consultation with the State Historic Preservation Officer (SHPO), Delaware Division of Historical and Cultural Affairs, Delaware Department of State, was initiated in January 2006 pursuant to Section 106 of the National Historic Preservation Act. At a meeting conducted with NRCS, FSA, and SHPO representatives, there was agreement that the current process is working and that FSA would work to develop an official agreement or MOU with SHPO similar to that currently being utilized by NRCS and SHPO. Refer to **Table 2-1** and **Appendix D** for scoping comments.

According to the National Park Service, Delaware has a total of 670 sites listed in the National Register of Historic Places. **Table 3-5** lists the number of these sites by county and **Appendix G** identifies these sites by county.

Table 3-5: Number of National Historic Register Sites by County, Delaware, 2006

County	Number of Sites Listed in the National Register of Historic Places
Kent	151
New Castle	381
Sussex	138
Total	**670**

Source: National Park Service; http://www.cr.nps.gov/places.htm

Delaware is home to 12 National Historic Landmarks, two of which are located in Kent County and 10 in New Castle County. These sites are listed in **Table 3-6** along with their listing dates.

Table 3-6: National Historic Landmarks by County, Delaware

County	National Historic Landmark	Date Listed
Kent	Aspendale	4/15/70
Kent	John Dickinson House	1/20/61
New Castle	Jacob Broom House	12/2/74
New Castle	Corbit-Sharp House	12/24/67
New Castle	Eleutherian Mills	11/13/66
New Castle	Fort Christina	11/5/61
New Castle	Holy Trinity (Old Swedes) Church	11/5/61
New Castle	Howard High School	4/5/05
New Castle	Lombardy Hall	12/2/74
New Castle	New Castle Court House (Old Courthouse)	11/28/72
New Castle	New Castle Historic District	12/24/67
New Castle	Stonum	11/7/73

Source: National Historic Landmarks Survey, National Park Service; http://www.cr.nps.gov/landmarks.htm.

Indigenous People of Delaware

At the time of the arrival of Europeans to America, there were numerous Native American communities living within the Mid-Atlantic region and on the Delmarva Peninsula. Among the tribes that were present in the area now known as the State of Delaware were the Nanticoke and the Lenape.

Archaeologists from Temple University and other institutions have been working in the State of Delaware for more than 50 years, documenting thousands of sites that have been found throughout the State. These archaeologists have studied adaptations of native peoples to changing environments.

The Delaware Indians lived mainly along the banks of the Delaware River on lands that are now delineated as Delaware, New Jersey, New York, and Pennsylvania. The Delaware tribe lived mostly around the Wilmington area prior to the arrival of whites. Two tribes of the Algonquian Indians, the Accokeek tribe and the Askequeson, inhabited the Delaware region when white explorers arrived. The Accokeek tribe inhabited the area in about 1640, and the Askequeson lived in the area between 1705 and 1742.

The Nanticoke were known as "People of the Tide Water." They were called Wenekto by the Delaware Indians. The Nanticoke and their descendants were not of ancient descent in the region. They were discovered by John Smith in 1608. By 1748, most of the Nanticoke had moved up the Susquehanna River to join the Iroquois. Still others became affiliated with the Delaware, and others continued north into Canada. The Nanticoke who stayed in the Maryland and Delaware region later assimilated into the mainstream culture.[17]

There are no federally recognized tribal lands in Delaware today.[18] However, the State of Delaware does recognize the Nanticoke tribe, which tribe owns approximately 2 acres of land on which the Nanticoke Indian Center and the Nanticoke Indian Museum are located. These lands are located in Millsboro, Sussex County, Delaware.[19]

3.3 WATER RESOURCES

Table 3-7 summarizes the State's water resources, based on a Geographic Information System data layer that was developed to index States' stream waters with the U.S. EPA's Reach File 3 network of streams. This information was presented in the State Atlas and was obtained from *State of Delaware 2004 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs.*

Table 3-7: Estimated Water Resources by Area in Delaware, 2004

Delaware Water Resource	Number/Area
State Surface Area	1,981 square miles
Number of Basins	5
Number of Watersheds	45
Total Number of Stream and River Miles	2,509
Number of Perennial River Miles	1778
Number of Intermittent Stream Miles	405
Number of Ditches and Canals	326
Number of Border Miles	87

[17] "History of the Nanticoke." http://members.tripod.com/~imblackeagle/index-2.html
[18] Mauser, Linda. ©2006. *Delaware History*. http://www.delawareindians.com/delawarehistory.htm
[19] Nanticoke Indian Association, "The Nanticoke Indian Tribe." http://www.nanticokeindians.org/

Delaware Water Resource	Number/Area
Acres of Lakes/Reservoirs/Ponds	2,954
Square Miles of Estuarine Waters	841
Number of Ocean Coastal Miles	25
Acres of Freshwater Wetlands	226,530
Acres of Tidal Wetlands	127,338

Source: DNREC. Aug. 2005. *State of Delaware 2004 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs.* Prepared for the State Atlas.

Delaware has four basins (Piedmont, Delaware Bay, Chesapeake Bay, and Inland Bays/Atlantic Ocean) and 45 watersheds. These areas are shown on **Figure 1-3**.

3.3.1 SURFACE WATERS

Delaware has 32 square miles of inland coastal bays in southeastern Sussex County. These bays include:

- Rehoboth Bay,
- Indian River Bay,
- Little Assawoman Bay, and
- the northernmost tip of Assawoman Bay.

In 1988, Delaware's Inland Bays were designated an estuary of national significance. These bays drain a 300-square-mile watershed and formed behind Atlantic barrier beaches along the eastern edge of the Delmarva coastal plain. The watershed's wide array of habitats is home to a large diversity of species that live and breed in the area.[20] Because they are so shallow, with an average depth ranging from 3 to 8 feet, and because they are poorly flushed by tidal movement, they are especially sensitive to environmental changes. Increases in pollutants, changes in salinity and fluctuations in water temperature, for example, can have dramatic effects on water quality and on the plants, fish, shellfish, and microscopic creatures that live in the bays.[21]

Indian River Bay is a shallow drowned river valley system with freshwater inflow and a direct connection to the ocean through the Indian River Inlet. Rehoboth Bay is a shallow coastal lagoon system behind a narrow barrier island. It connects to the ocean by the Lewes and Rehoboth Canal and the Indian River Bay. The smallest and shallowest is Little Assawoman Bay which connects to the ocean via the Ocean City Inlet.[22] **Figure 3-1** shows the relation of the Chesapeake Bay, Delaware Bay, and Inland Bays to the land area.

[20] Association of National Estuary Programs. "Delaware Inland Bays" http://www.nationalestuaries.org/publications/factcards/delewareinland.htm and Center for the Inland Bays, http://www.inlandbays.org/
[21] Center for Inland Bays, http://www.inlandbays.org/
[22] Ibid.

Figure 3-1: Map of Delaware in Relation to the Delaware Bay, Chesapeake Bay, and Inland Bays

Source: ©GraphicMaps.com http://worldatlas.com/webimage/countrys/namerica/usstates/de.htm

The Inland Bays region is defined as the land area draining into these bays plus the Lewes-Rehoboth Canal/coast area immediately to the north. This region supports intensive corn, soybean, and poultry production, as well as a large coastal tourism industry. Thousands of visitors enjoy the beaches, boating, sailing, windsurfing, fishing, clamming, hiking, and wildlife watching in the Inland Bays watershed. Agriculture appears to be a significant contributor to nitrogen leachate and phosphorus runoff into the Inland Bays. Poultry litter is the principal source of nitrogen and phosphorus from agricultural sources.[23]

The Delaware River is the longest "free-flowing" river in the eastern United States. It originates on the western slopes of the Catskill Mountains in eastern New York and extends 330 miles from the confluence of its East and West branches at Hancock, N.Y. to the mouth of the Delaware Bay. The Delaware River is fed by 216 tributaries, the largest being the Schuylkill and Lehigh Rivers in Pennsylvania. The Delaware River basin contains 13,539 square miles, draining parts of Pennsylvania (6,422 square miles or 50.3 percent of the basin's total land area); New Jersey (2,969 square miles, or 23.3 percent); New York (2,362 square miles, 18.5 percent); and Delaware (1,002 square miles, 7.9 percent).

Almost 10 percent of the nation's population relies on the waters of the Delaware River basin for drinking and industrial use, yet the basin drains only four-tenths of 1 percent of the total continental U.S. land area. The Delaware River is navigable by large, oceangoing vessels as far inland as Philadelphia and by smaller vessels to Trenton, New Jersey. The Chesapeake and Delaware Canal connects the Delaware River below Wilmington Delaware, with Chesapeake Bay. The canal is navigable by oceangoing vessels. Through the Delaware River basin Commission, created in 1961, the Federal Government and the four basin States--New York,

[23] University of Delaware. "Delaware Inland Bays Watershed Nutrient Management Project."

Pennsylvania, New Jersey, and Delaware--jointly manage the Delaware River basin. The Nanticoke River is the only river that drains into this basin that is located within Delaware.

The Nanticoke River flows southwest from the central portion of Delaware through the Eastern Shore of Maryland to Tangier Sound and the Chesapeake Bay. The Nanticoke River extends about 25 miles from the headwaters to the Delaware-Maryland line, a distance approximately half of its overall length. The watershed which encompasses this natural community is quite extensive. The upper portion of the Nanticoke is the largest watershed in Delaware and occupies nearly 250,000 acres in Kent and Sussex Counties, which is about one-third of Delaware's land surface.[24]

About 43 percent of the land in the Nanticoke watershed is utilized by agriculture, which supports about 1,300 animal production farms consisting of almost entirely poultry. One result of this high level of livestock density is huge quantities of manure, a potent source of nutrients. To reduce nutrient pollution, farmers are increasingly implementing Best Management Practices (BMP). Conservation tillage and no-till farming, the most widely used BMPs along the Nanticoke, limit how frequently the soil is laid bare by planting directly into crop residue with limited plowing or none at all.

Other BMPs practiced include cover crops and animal waste storage facilities, important for the poultry industry. Nearly all of the farmland in the Critical Area within 1,000 feet of the shoreline, as well as much of the land beyond, is enrolled in nutrient management plans. These plans aid farmers in retaining nutrients by identifying the appropriate times, conditions and quantities for application of fertilizer, planting and harvest.

3.3.2 GROUNDWATER

Groundwater is the sole source of drinking water within the Delaware Bay and Estuary basin. It is supplied from the water table, confined aquifers, and semi-confined aquifers. Groundwater moves more slowly than surface water and follows specific flow paths. Velocity of groundwater is highly variable and dependent upon the linearity or tortuosity of the flow path, hydraulic gradient and aquifer characteristics such as permeability and sediment composition.

The Inland Bays Watershed encompasses approximately 32 square miles of water area and drains a land area of about 320 square miles. The Inland Bays area a shallow estuarine ecosystem, with an average depth of 3 to 8 feet and are poorly flushed by tidal movement (Cerco et al., 1994), which makes them especially sensitive to environmental changes. Freshwater enters the tributaries and bays through ground and surface water discharges and atmospheric deposition (Andres, 1992; Horsley and Witten, 1998; Scudlark and Church, 1999). Saltwater enters the Bays mainly through the Indian River inlet.

The Lewes and Rehoboth Canal at the northern end, and Assawoman Canal at the southern end of the Bays provide additional sources of saltwater to the Bays. The Bays are highly enriched with the nutrients nitrogen and phosphorus, which are contaminants having the greatest impact on the surface water and groundwater of the Inland Bays Watershed. When excess amounts enter the Bays, water quality can deteriorate as aquatic plant growth accelerates and the level of oxygen declines (Boesch et al., 2001; EPA, 2002). This process of overenrichment is called

[24] Alliance for the Chesapeake Bay and Friends of the Nanticoke River. "Nanticoke River Fact Sheet."

eutrophication. The primary activities accelerating eutrophication in the Inland Bays are agriculture and urbanization.[25]

The watershed's groundwater, generally available within 10 feet below the surface, is an invaluable asset to development and commerce. However, its continual movement through the dynamic water cycle makes this resource extremely vulnerable to nutrient contamination, especially nitrogen. The Columbia, Pocomoke, and Manokin aquifers provide nearly all of the region's drinking and irrigation water supplies. The Pocomoke and Manokin aquifers tend to act as confined aquifers throughout the Inland Bays Watershed. However, there are locations where the aquifers can be interconnected with the overlying unconfined Columbia aquifer. The Columbia aquifer also supplies base-flow to the streams, rivers, and the bays in the Watershed (Andres, 1992).[26]

Land use has a significant influence on the area's groundwater quality. As water runs over the landscape, it picks up pollutants that are discharged into the streams through runoff. Likewise, water runs through the soils, carrying pollutants with it into the groundwater. The polluted groundwater then seeps into the surface water providing another conduit for nonpoint source pollution (Fetter, 1994). Thus, changes in land use, development, and paving all impact the quality of groundwater.

Nonpoint source pollution derives from both overland runoff and groundwater discharges. In the Inland Bays Watershed, approximately 80 percent of the watershed runoff is estimated to come from groundwater discharging into streams and rivers feeding the Bays. Thus, much of the nonpoint source pollution occurs from groundwater discharges. Because of the types of land uses and the physiographic characteristics of the watershed, nonpoint source pollution accounts for a majority of the total nutrient load within the Inland Bays Watershed. As a result of multiple land uses within the Inland Bays Watershed, nonpoint source nutrient loading comes from several sources, including:

- Agriculture
- Urban Land Use
- Onsite Wastewater Treatment and Disposal Systems
- Stormwater

In addition, atmospheric deposition is also a contributor to nonpoint source pollution affecting groundwater.

3.3.3 SOLE SOURCE AQUIFERS

The preceding section on groundwater addresses some of the aquifers in the Inland Bays Watershed. Within the Delaware Bay and Estuary basin, the water table, aquifer is contained within gravelly sands of the Columbia Formation in the northern portion of the basin, and the Beaverdam Formation is in the southern portion of the basin below Milton. In all but the southernmost part of the basin south of Milford-Milton, the water-table aquifer is unconfined. The thickness of the Columbia-Beaverdam Aquifer ranges from several feet in New Castle County north of the C&D Canal, to up to 140 feet in Sussex County, with thicker channel sand deposits in sections of New Castle and Kent Counties.

[25] DNREC, Aug. 2006. *Inland Bays Pollution Control Strategy and Proposed Regulation,* pp. 9-13.
[26] Ibid. p. 10.

The water-table aquifer is undoubtedly the most productive aquifer in the Delaware Bay and Estuary basin, with little to no volumetric constraints on its use at this time. It presently supplies much of the potable and public water needs for most of the State and can continue to be developed, although with some caution in areas where saltwater intrusion may be a concern.

Other aquifer systems include—

- the Potomac aquifer system, which is used in the northern part of the basin for domestic, public, and industrial purposes;
- the Magothy aquifer, which is limited in Delaware generally to small-scale domestic and agricultural wells, but is extensively developed to the southwest in Maryland;
- the Englishtown-Mt. Laurel aquifer system, which is not well developed but is considered sufficient for local domestic, agricultural and public uses;
- the Rancocas aquifer, which is extensively used in New Castle County south of the C&D Canal;
- the Piney Point aquifer, which is an important aquifer for the Smyrna-Clayton-Dover area , but not considered productive much farther south than Greenwood or Milford;
- the Chesapeake Group aquifers, which is subdivided into the Calvert, Choptank, and the St. Mary's Formations, the first two of which are productive aquifers;
- the Cheswold aquifer, which has been used by the City of Dover since 1893, the Dover Air Force Base, and the Town of Smyrna;
- the Federalsburg aquifer, a minor sandy, shelly unit within the Choptank Formation;
- the Frederica aquifer, which is the youngest regionally recognized aquifer that provides water for public, domestic, irrigation and food processing in the Milford area;
- the Choptank aquifers, which can be considered locally productive and important for small irrigation or domestic uses.

The Manokin formation overlies the sediments of the St. Mary's Formation. This formation represents a locally important water bearing zone in Sussex County, particularly along the coast where it provides water to public suppliers. The Manokin is generally absent east of Delaware Route 1.

3.3.4 COASTAL ZONES

For the purposes of the federally approved coastal management program, Delaware has defined its Coastal Management Area as the entire State. The State of Delaware promulgated the Delaware Coastal Zone Act (7 Delaware Code, Chapter 70) in the early 1970s, and designated DNREC as the lead State agency for coast zone management. The State law requires a permit from DNREC prior to allowing industrial development to occur in the State's "Coastal Zone," a strip of land bordering the Delaware River and Bay, the C&D Canal, Delaware's Inland Bays and the Atlantic Ocean. In August 2004, the Delaware Coastal Management Program published, "Delaware Coastal Management Program, Comprehensive Update and Routine Program Implementation," which was a programmatic supplement to the initial 1979 programmatic document. The Federal consistency policies related to Agricultural Land Policies are as follows[27]:

[27] Delaware Coastal Management Program. "Delaware Coastal Management Program Comprehensive Update and Routine Program Implementation." Aug. 2004.

CMP Agricultural Land Policies

1. Agricultural practices should be conducted in a manner which reduces pesticides and sediment loads to estuaries, bays, and other waterbodies.

2. All public and private entities whose actions may substantially affect agricultural lands in Delaware, or the agricultural productivity of such lands, should consider the need to preserve and protect such lands prior to taking such actions, and should preserve and protect agricultural lands whenever practicable. State agencies shall protect and preserve agricultural lands to the maximum extent practical.

3. The development of scattered rural residential settlements should be discouraged as long as there are reasonable alternative locations for such development, such as in or immediately adjacent to existing communities or areas where underutilized sewer systems, water systems, police and fire facilities, and other community facilities and services are available.

4. The use of farmlands for non-agricultural purposes should be discouraged by the Farmers Home Administration and all other public financing programs. Instead, development should be directed to the numerous smaller communities which have adequate in-place public services and facilities, as well as adequate land area to accommodate new development.

The Federal Coastal Zone Management Act of 1972 (P.L. 92-583) requires that any applicant for a Federal license or permit, or authorization, certification, or other form of Federal approval shall provide in the application to the approving Federal agency a certification that the proposed activity complies with the enforceable policies of the State's approved CZM program and that such activity will be conducted in a manner consistent with that program. At the same time, the applicant shall furnish to the State or its designated agency a copy of the certification, with all necessary information and data. Refer to **Appendix I** for Federal coastal management consistency certification.

The Delaware National Estuarine Research Reserve (DNERR) system is administered by the Delaware Coastal Programs. The goal of DNERR is to establish, protect and manage natural estuarine habitats for research and education. The DNERR consists of the Blackbird Creek and the St. Jones River, sites that include both brackish and freshwater estuaries and represent the diverse estuarine ecosystems found throughout the Mid-Atlantic. Special emphasis has been placed on permanently protecting lands adjacent to the Blackbird Creek, a relatively pristine river and important link in the Blackbird Millington Conservation Corridor. Between 2003 and 2005, approximately 220 acres along Blackbird Creek have been added to the reserve's holdings.[28]

3.3.5 WETLANDS

Wetlands comprise about 300,000 acres (about 470 square miles), or 23 percent of the State's land area.[29] Tidal wetlands include salt marshes, brackish marshes, scrub-shrub wetlands, and riverine wetlands. Non-tidal wetlands include freshwater marshes, forested wetlands, Delmarva

[28] Letter to Norma Collins, FSA, from Susan Love, DNREC, Delaware Coastal Programs, dated Feb. 6, 2006.

[29] DNREC, 2005. State of Delaware 2004 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs. Feb. 25, 2005, rev. Aug. 4, 2005.

bays, riverine wetlands, and lake-pond wetlands. Five major wetland systems are recognized: marine, estuarine, riverine, palustrine, and lacustrine. These comprise 100 percent of the total wetland acreage and about 29 percent of the basin's total land area.[30] **Table 3-8** shows the percentage of each of these wetland types within the Delaware Bay basin.

Table 3-8: Percentage of Wetland Types within Delaware Bay and Estuary Basin

Wetland Type	Percentage
Palustrine	93 percent
Riparian	25 percent
Estuarine	59 percent
Lacustrine	2 percent
Riverine	<1 percent

Source: DNREC and U.S. Environmental Protection Agency. August 2005. *Delaware Bay and Estuary Assessment Report, Whole Basin, pp. 96-98.*

Wetlands control flooding, improve water quality, and act as natural purifiers and rechargers for the aquifers. In 1992, wetlands covered approximately 150,000 acres in the Delaware Bay basin. Within this area, 444 acres of palustrine wetlands were lost, 198 acres of palustrine scrub shrub declined, 80 acres of estuarine emergent wetlands were lost, and 36 acres of palustrine emergent were lost between 1981 and 1992.[31]

The Delaware Bay and Estuary basin also contains about 39 tax ditch organizations. The network of ditches impairs to some extent the natural functions of wetlands. As a result, large acreages of wetlands have been lost or irrevocably impacted by channelization.

The Northern Delaware Wetlands Rehabilitation Program, coordinated by DNREC's Divisions of Fish and Wildlife and Soil and Water Conservation, is a collaborative partnership among civic and business leaders, scientists, resource managers, and property owners to develop strategies to restore nearly 10,000 acres of wetlands along the Christina and Delaware Rivers in New Castle County. These marshes once contained some of the State's richest waterfowl populations and were important nursery grounds and breeding habitat for a wide variety of fish and other wildlife. They also helped filter pollutants and sediments out of river water and provided a buffer zone during storms, protecting properties from flooding. The Northern Delaware Wetlands Rehabilitation Program seeks to achieve the following goals:

- Improve water quality by re-establishing their hydrology and controlling pollution into the marsh;
- Increase wildlife populations by constructing duck and songbird boxes, establishing preferred food and cover plants, adjusting water levels to accommodate the needs of aquatic mammals, water birds, and endangered species, and increasing the diversity of shallow water habitats-ponds, ditches, and islands;
- Control invasive species, such as phragmites, which can overtake a wetlands and form dense stands that are of little value to wildlife.

[30] DNREC and U.S. Environmental Protection Agency. August 2005. *Delaware Bay and Estuary Assessment Report, Whole Basin, pp. 96-100.*
[31] Ibid. p. 98.

Four northern marshes are proposed for rehabilitation under the Wetlands Rehabilitation Program: Gambacorta and Broad Dyke marshes in New Castle County, Augustine Marsh near Port Penn, and Old Wilmington Marsh.[32]
The Delaware Bay and Estuary basin contains five unique and threatened wetland community types:

- Bald cypress (*Taxodium distichum*)
- Atlantic white cedar (*Chamaecyparis thyoides*)
- Coastal plain ponds (i.e., Carolina bays/Delmarva bays)
- Acidic sea-level fens
- Inter-dunal swales

The State has given these communities priority for protection due to the rare species they support, their growth form, and/or their unusual geomorphic setting or geologic origin (McAvoy and Clancy, 1993).

3.3.6 WATER QUALITY

Based on a rating system prescribed by the Clean Water Act, Delaware has classified more than 2,509 miles of rivers and streams and 2,954 acres of lakes and ponds. The classification system is keyed to a management program designed to protect uses of the waters (referred to as "designated uses") for such purposes as drinking water, recreation, and fish, aquatic life, and wildlife. These designated uses serve as Delaware's water quality goals for specific watersheds. In order to protect those uses, a comprehensive set of chemical, biological, and habitat standards have been promulgated. Designated uses and standards are embodied in the *State of Delaware Surface Water Quality Standards*, as amended.

Approximately 94 percent of Delaware's rivers and streams do not fully support the swimming use and 65 percent do not fully support fish and wildlife use. Most of these waters do not meet EPA's standards because of nonpoint source pollution impacts.[33]

Ponds and lakes in Delaware exhibit many of the same problems as rivers and streams. However, ponds and lakes also serve as "catch basins" for a variety of pollutants that are washed from the land and the air into these waterbodies. Two indicators which show the tendency for lakes and ponds to accumulate pollutants are fish consumption advisories due to toxic substances in the fish, and the extent of nutrient enrichment. Nutrient enrichment can lead to excessive weed and algae growth, reduced water clarity, and decreases in population of aquatic life and wildlife. Approximately 68 percent of Delaware's fresh water ponds and lakes do not fully support the swimming use and 24 percent do not fully support the fish and wildlife use.

After intensive surveying in 2000, DNREC reported that a significant percentage of Delaware's waterways were impaired. Reasons cited included nutrient enrichment, high levels of bacteria, low dissolved oxygen, toxic substances, insufficient habitat quality, lack of riparian vegetation, and habitat degradation. **Figure 3-2** shows the percentage of impaired waters in each of Delaware's watershed. **Table 3-9** shows the total number of waterbodies listed on the Section 303(d) impaired waters listing. **Table 3-10** shows the number of impaired waterbodies by watershed and **Table 3-11** identifies the various causes reported of impairment.

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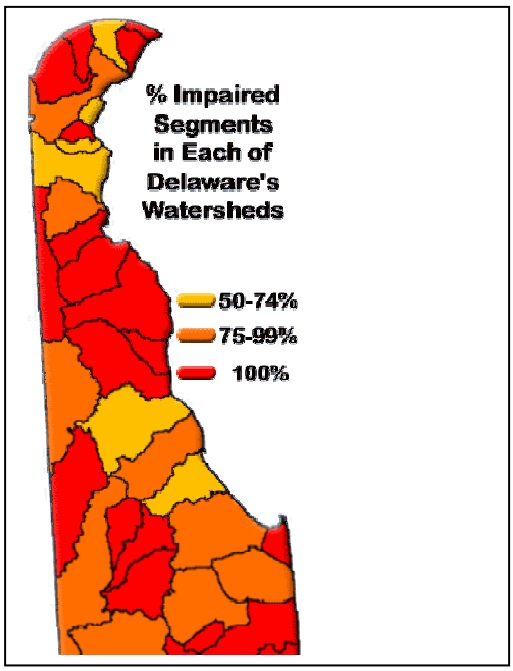
[32] DNREC. "The Northern Delaware Wetlands Rehabilitation Program." http://www.dnrec.state.de.us/fw/intmrmt.htm

[33] DNREC, "State of Delaware Surface Water Quality Standards."

Figure 3-2: Percentage of Impaired Waters in Delaware



Source: DNREC. Delaware's Pollution Control Strategy.
http://www.dnrec.state.de.us/water2000/Sections/Watershed/ws/impaired.htm

Table 3-9: Section 303(d) List of Impaired Waters by Waterbody Type, 2004

Waterbody Type	Number of Waters on List of Impaired Waters
Stream/Creek/River	300
Lake/Reservoir/Pond	72
Bay/Estuary	2
Creek	2
Estuary	2
Pond	1
TOTAL	**379**

Source: U.S. Environmental Protection Agency, Total Maximum Daily Loads, 2004 Sec. 303(d) Waters. Listed approved Nov. 11, 2005. http://oaspub.epa.gov/waters/state_rept.control?p_state=DE#APRTMDLS

Table 3-10: Number of Impaired Waters by Delaware Watershed

Watershed Name	Number of Waters on Sec. 303(d) List	Percent of Reported
Brandywine-Christina	77	20.32
Broadkill-Smyrna	63	16.62
Nanticoke	52	13.72
Chincoteague	29	7.65
Choptank	21	5.54
Chester-Sassafras	12	3.17
Pocomoke	3	0.79
Not Reported	123	32.45
TOTAL	379	

Source: U.S. Environmental Protection Agency, Total Maximum Daily Loads, 2004 Sec. 303(d) Waters. Listed approved Nov. 11, 2005. http://oaspub.epa.gov/waters/state_rept.control?p_state=DE#APRTMDLS

Table 3-11: Causes of Waterway Impairment in Delaware

Cause of Impairment	Causes of Impairment Reported	Percent of Reported
Habitat Alteration	176	25.77
Pathogens	149	21.82
Cause Unknown - Biological Integrity	114	16.69
Nutrients	93	13.62
Oxygen Depletion	86	12.59
PCBs	24	3.51
Dioxins	12	1.76
Pesticides	10	1.46
Temperature	8	1.17
Mercury	6	0.88
Metals (other than mercury)	4	0.59
Turbidity	1	0.15
Total Number of Causes Reported	683	

Source: U.S. Environmental Protection Agency, Total Maximum Daily Loads, 2004 Sec. 303(d) Waters List approved Nov. 11, 2005. http://oaspub.epa.gov/waters/state_rept.control?p_state=DE#APRTMDLS

The State of Delaware's Watershed Assessment Report fulfilled requirements of reporting required by Section 305 (b) of the 1972 Federal Clean Water Act and the State's subsequently published Section 303(d) list fulfilled the Act's requirement of States to develop a list of waterbodies that needed additional pollution reduction beyond that provided by the application of existing controls. Additional pollution reduction would result by developing and implementing total maximum daily loads (TMDLs) for each segment. A total maximum daily load sets a limit on the amount of a pollutant that can be discharged into a water body while still supporting the designated uses of the water body.

Table 3-12 shows the number of approved TMDLs by pollutants since 1996 and **Table 3-13** shows the number and percentage of approved TMDLs by EPA since 1995.

Table 3-12: Approved TMDLs by Pollutant since January 1, 1996

Pollutant	Number of TMDLs Approved	Percent Reported
Phosphorus	97	43.50
Nitrogen	49	21.97
Dissolved Oxygen	49	21.97
Bacteria	19	8.52
Zinc	2	0.90
Temperature	2	0.90
Nutrients	2	0.90
PCBs	1	0.45
Habitat	1	0.45
Ammonia	1	0.45
Total Number of TMDLs Reported to EPA Since 1996	**223**	

Source: U.S. Environmental Protection Agency, Total Maximum Daily Loads, 2004 Sec. 303(d) Waters. Listed approved Nov. 11, 2005. http://oaspub.epa.gov/waters/state_rept.control?p_state=DE#APRTMDLS

Table 3-13: Approved TMDLs by EPA Fiscal Year since October 1, 1995

Fiscal Year	Number of TMDLs Approved	Percent Approved
1998	3	1.35
1999	10	4.48
2000	2	0.90
2001	40	17.94
2003	17	7.62
2004	14	6.28
2005	49	21.97
2006	88	39.46
TMDLs Approved Since 1995	**223**	

Source: U.S. Environmental Protection Agency, Total Maximum Daily Loads, 2004 Sec. 303(d) Waters. Listed approved Nov. 11, 2005. http://oaspub.epa.gov/waters/state_rept.control?p_state=DE#APRTMDLS

As shown in the data, agricultural operations contribute to these pollutants. The Delaware Nutrient Management Program was established in June 1999 through the Delaware Nutrient Management Law (Del. Laws c. 22) and the Delaware Administrative Code, Title 3, Agriculture. This program was established under the Delaware Department of Agriculture to manage those activities involving the generation and application of nutrients, to help maintain and improve Delaware's ground and surface water quality and to help meet or exceed federally mandated water quality standards established by the U.S. Environmental Protection Agency (EPA).

As part of the Delaware Nutrient Management Program, the Nutrient Management Relocation Program was established to assist in the transport of manure from areas of excess manure to areas in need. The Delaware Manure Matching Program is a cost-assistance program that supports nutrient management by providing operators with the information on manure providers, receivers, and brokers. The Nutrient Management Planning Program is also a cost-assistance program for the implementation of a Nutrient Management Plan, designed to control the application of nutrients to areas 10 acres or greater and for those managing animal feeding operations (AFOs).[34]

Delaware's Clean Water Revolving Fund (CWRF) principally assists poultry and dairy producers. After individual producers have designed BMPs for feeding operations, these operators are eligible to receive low-interest loans from the CWRF for project implementation. Delaware has funded more than 340 agricultural projects for more than $2.89 million.[35]

3.4 SOIL RESOURCES

Soil controls the distribution of rainfall or irrigation water to runoff, infiltration, storage, or deep drainage. Its regulation of water flow affects the movement of soluble materials, such as nitrate nitrogen and pesticides. Soil acts as a filter to protect the quality of water, air, and to other resources. Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

[34] State of Delaware, Department of Agriculture, Nutrient Management. http://www.state.de.us/deptagri/nutrients/

[35] U.S. Environmental Protection Agency. "Fund Agricultural Best Management Practices with the Clean Water State Revolving Fund."

The Greenwich series consists of very deep, well-drained, moderately rapidly permeable soils that formed in sandy marine and old alluvial sediments overlain by a thin mantle of sediments that have a high silt content. These soils are found primarily in the uplands on the coastal plain of Delaware and adjacent States. They are among the most productive soils in Delaware for agriculture and forestry and are considered prime farmland. Greenwich loam (a course, loamy, mixed, semiactive, mesic, Typic Hapludult) is commonly found in all counties in Delaware and enhances water quality, agriculture, wildlife habitat, and natural landscape beauty. It was adopted as the Delaware State soil on April 20, 2000.[36] **Figure 3-3** is a soils map of the Delaware Bay and Estuary basin.

3.5 AIR QUALITY

Because Delaware's land surface is relatively flat, outdoor or ambient air moves fairly smoothly through and is generally well mixed across the entire State. The predominant air currents flow from west to east, and in the summer, southwesterly winds prevail, while northwesterly winds are dominant during the winter.

Based on the *Delaware Bay and Estuary Basin Assessment*, air quality in Delaware currently meets all standards except for ozone, with $PM_{2.5}$ status yet to be determined. Ozone is a highly reactive gas that is the main component of smog. While ozone in the upper atmosphere is beneficial because it absorbs ultraviolet light, it is a pollutant in the lower atmosphere. Ozone is a strong respiratory irritant that affects healthy individuals as well as people with impaired respiratory systems. Ozone also adversely affects trees, crops and other vegetation. New Castle and Kent Counties are classified as serious non-attainment areas for ozone whereas Sussex County meets the one-hour standard, but not the new eight-hour standard. The acid rain monitor shows precipitation to average around pH 4.2 to 4.3 (acidic).[37] Non-attainment refers to areas that exceed air pollution levels considered safe by EPA, and therefore poses serious health threats.[38]

A PCS for Delaware's Inland Bays was published in August 2006 and TMDLs were established for the Indian River, Indian River Bay, Rehoboth Bay, and for the Little Assawoman Bay. These TMDLs not only called for the elimination of all point sources of nutrient loading to those waterbodies, but they also called for a 20-percent reduction in atmospheric deposition of nitrogen through implementation of the Clean Air Act.

The Clean Air Act Amendments of 1990 required Delaware to inventory baseline air emissions and subsequently inventory air emissions every 3 years in order to show reasonable progress toward attainment of the National Ambient Air Quality Standards. These inventories are conducted on a countywide basis. Source categories of air emission within the Delaware Bay and Estuary basin include stationary point sources, stationary area sources, mobile sources, and biogenic sources.

DNREC operates ozone monitors at six locations around the State of Delaware: three in New Castle County, one in Kent County and two in Sussex County. The locations of the monitors are Brandywine, Bellefonte, Summit Bridge, Felton, Seaford and Lewes. Based on data from the *Delaware Bay and Estuary Basin Assessment,* **Table 3-14** shows the following distribution of peak ozone emissions by county.

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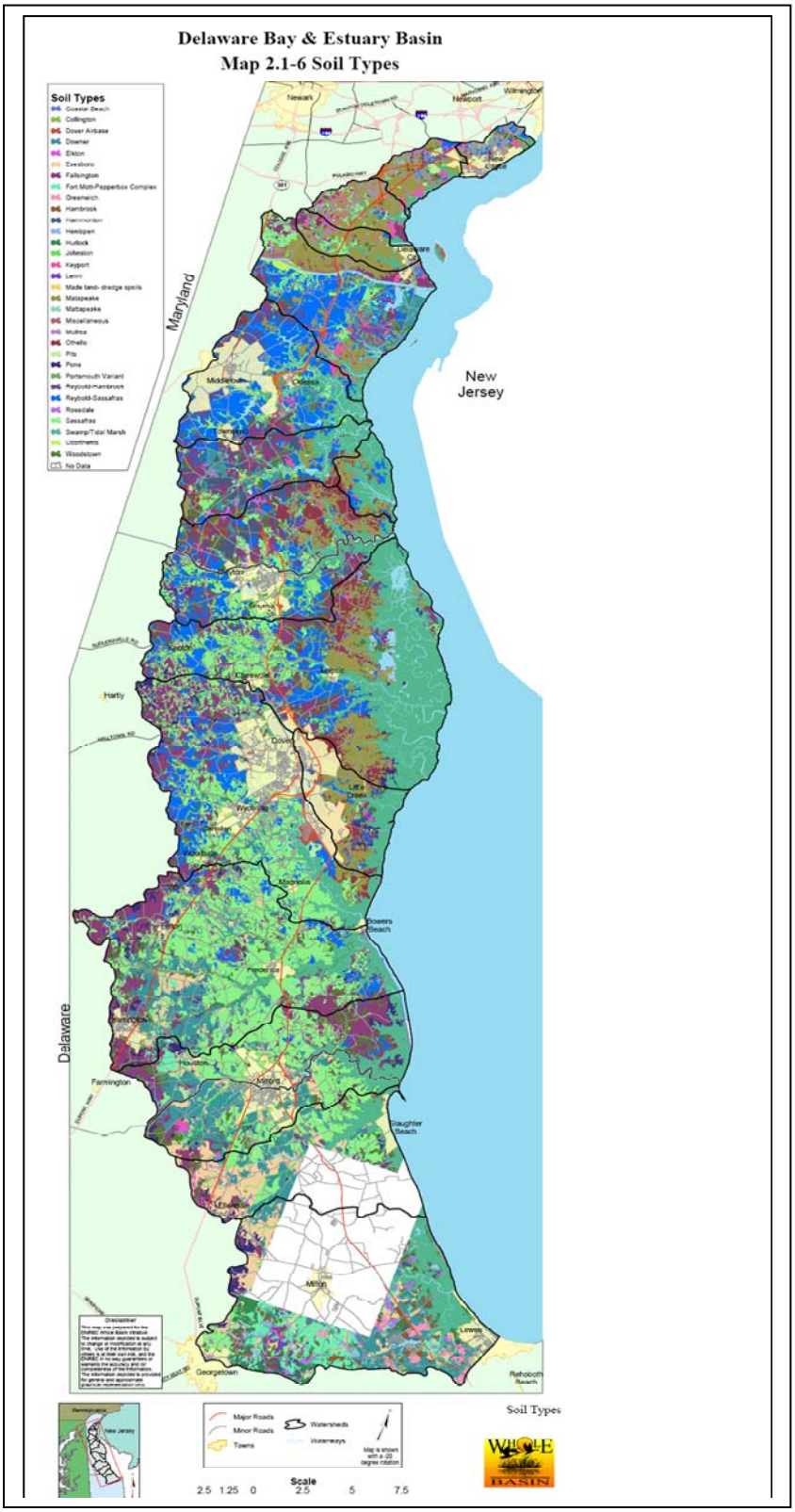
[36] Delaware Geological Survey and Delaware Facts and Symbols, Delaware State Portal.
[37] DNREC and USEPA. Aug. 2005. *Delaware Bay and Estuary Assessment Report*, p. 59.
[38] *Delaware Air Toxics Assessment Study, (Data). Phase-1*. August 2005. Prepared for the Division of Air and Waste Management

Figure 3-3: Delaware Bay and Estuary Basin Soils Map



Source: DNREC and USEPA. Aug. 2005. *Delaware Bay and Estuary Assessment Report, Whole Basin.*

Table 3-14: Distribution of Peak Ozone Season Daily Emissions by County

County	VOC	NO_x	CO
Kent	60.7 tons/day	26.1 tons/day	109.0 tons/day
New Castle	125.0 tons/day	146.7 tons/day	380.4 tons/day
Sussex	84.3 tons/day	85.2 tons/day	152.9 tons/day

Source: DNREC and USEPA. Aug. 2005. *Delaware Bay and Estuary Basin Assessment*, pp. 61-62.

3.6 RECREATION

3.6.1 PARKS AND RECREATION AREAS

There are no national parks or national recreation areas in Delaware. DNREC, Division of Parks and Recreation lists 17 State parks and other State-operated attractions. **Table 3-15** identifies the Delaware State Parks by County. Historic sites and sites listed in the National Register are found in **section 3.2**. National wildlife refuges and rivers in the National Wild and Scenic systems and the Nationwide Rivers Inventory (NRI) are identified in **Section 3.10**.

Table 3-15: Delaware State Parks by County

County	State Park
New Castle	• White Clay Creek State Park • Brandywine Creek State Park • Wilmington State Park • Fox Point State Park • Bellevue State Park • Lums Pond State Park • Fort Delaware State Park • Fort DuPont State Park
Kent	• First Heritage Park at Dover • Killens Pond State Park
Sussex	• Cape Henlopen State Park • Delaware Seashore State Park • Holts Landing State Park • Fenwick Island State Park • Trap Pond State Park

Source: DNREC, Division of Parks and Recreation. Updated Aug. 17, 2006. Delaware State Parks, http://www.destateparks.com

3.6.2 GREENWAYS AND TRAILS

Delaware's Greenway and Trail Program, administered by DNREC, Division of Parks and Recreation, is a statewide initiative to preserve and protect open space corridors. This program develops connections among parks, wildlife areas, and other open spaces through which wildlife can migrate and people can travel, exercise, and enjoy nature. In many communities, greenways are enhanced with biking and hiking trails, canoeing trails, and educational and interpretive exhibits.

Throughout Delaware, greenways are growing as new lands are protected, creating natural areas of unbroken vegetation. In 1990, the Delaware Nature Society began a stream corridor greenway protection program as a means of improving water quality and protecting wildlife migration corridors. A series of open space/natural resource based greenway corridors have been delineated and landownership identified along waterways in northern Delaware. Riparian landowners are

contacted and encouraged to become stewards of the greenway corridor by managing their lands in an environmentally sensitive manner and to consider taking permanent measures to protect their property through conservation easement or other strategies. The following summarizes some of the State's major greenways.

Northern Delaware Greenway – East Link

The East Link of the Northern Delaware Greenway spans 10 miles of northern New Castle County from Fox Point State Park on the Delaware River to Brandywine Creek and the City of Wilmington. This urban trail connects with Wilmington's Walkway system and links together residential communities, schools, businesses, parks, and cultural sites. Eventually, the Northern Delaware Greenway will connect with the trail network in Middle Run Natural Area and White Clay Creek State Park.

Northern Delaware Greenway - West Link

The West Link of the Northern Delaware Greenway extends from White Clay Creek State Park, north of Newark, to the Mill Creek Hundred, taking in Middle Run Valley Natural Area, Carousel Farms, and Delcastle Recreation Area.

Christina River

Efforts to preserve the Christina River corridor and enhance it with recreational trails and pathways are underway from the City of Wilmington to the river's upper reaches.

East Coast Greenway

The East Coast Greenway is proposed as a city-to-city multi-use trail system that connects existing and planned trails with new corridors using waterfronts, park paths, abandoned railroads, rails with trails, canal towpaths, and parkway corridors. It will mostly serve as an off-road route for cyclists, hikers, and other users and will be a more urban alternative to the Appalachian Trail. Several routes for the East Coast Greenway through Delaware are being evaluated and must be approved by the East Coast Greenway Alliance Board.

C&D Canal

The C&D Canal connects the Delaware River just south of Delaware City to the Chesapeake Bay. The north and south banks of the canal include more than 5,100 acres of protected lands, managed by the Divisions of Fish and Wildlife and Parks and Recreation.

White Clay/Middle Run (Northern Delaware Greenway - West Link)

The greenway begins at the western terminus of the Mill Creek Greenway near the Middle Run Natural Area northeast of Newark. Several trails have been constructed throughout the Middle Run Natural Area County Park that extend westward to the Possum Hill Area of White Clay Creek State Park. The Hopkins Trail will be constructed through "the Land Bridge" in White Clay Creek State Park linking the Mason-Dixon Trail, the White Clay Creek Preserve, the City of Newark, the University of Delaware, and eventually the Fairhill Natural Area near Elkton, Maryland.

Upper Christina River

This joint project of the Christina Conservancy and the Delaware Nature Society strives to improve water quality through education of private landowners in the upper reaches of the Christina River in northwestern New Castle County, Delaware, and parts of Maryland and Pennsylvania.

Lower Christina River Greenway
New Castle County Department of Parks & Recreation, Christina River Development Corporation, City of Wilmington, Christina Conservancy, DNS, and Kalmar Nyckel Foundation are all contributing to protection in this portion of the river. These efforts include creating pathways and revitalizing the Christina Riverfront in Wilmington.

Pencader Hundred
New Castle County's Department of Parks & Recreation is planning a greenway corridor and trail development from Beck's Pond to Lums Pond State Park. The greenway will include a new regional park near Glasgow, former Frenchtown Rail Road lands, suburban streets through the Mansion Farms area, and a new district park.

Smyrna Trails
The Town of Smyrna is creating a paved bicycle/pedestrian trail along Green's Branch in northern Smyrna which will provide off-road access for pedestrians and cyclists to Memorial Park, schools, ball fields, residential, and commercial areas.

St. Jones River Greenway
Within the St. Jones River watershed three public agencies are working to preserve and enhance the cultural, historic, and recreational resources of the area. The St. Jones River Greenway Commission was created as an umbrella organization to coordinate greenway efforts of the City of Dover, Kent County, and DNREC in the area.

Murderkill River Greenway
The Division of Parks & Recreation has protected more than 2,028 acres and 3 miles of river corridor along the Murderkill River between Route 13 and Frederica. The pathway is part of State Bicycle Route 1 and links Lake Forest High School and Killens Pond State Park. A 3.5-mile canoe trail was established from Route 13 to the Coursey Pond spillway.

Mispillion Riverwalk
The City of Milford has created a riverfront gem in its Mispillion Riverwalk. The Riverwalk connects the downtown business area, a newly constructed library, amphitheater, community theater, University of Delaware Milford Campus, and recreational areas.

Mispillion River Greenway (East & West of Milford)
The Nature Conservancy, Delaware Wildlands, and FWS have preserved 2,600 acres at Milford Neck. The Delaware Nature Society at Abbott's Mill Nature Center and DNREC are working to create a greenway west of Milford from Abbotts Pond to Blairs Pond to connect the Milford chain of lakes.

Broadkill River
The town of Milton has undertaken a plan to create the Governor's Walk along the Broadkill River, which will commemorate the birthplace of four Delaware Governor's and a Wyoming Governor. The Nature Conservancy has begun a new effort of protecting land both upstream and downstream of Milton.

Nanticoke River
The City of Seaford is planning a riverfront walkway. A main street gateway adjacent to the river is under construction. The Redevelopment Corporation for the Town of Blades is working with the State and local agencies to create open space and new recreational opportunities on the Nanticoke.

Assawoman Canal
The Division of Parks & Recreation holds 66 acres paralleling the Assawoman Canal stretching 3 miles. A pathway with connections to residential developments along the canal, water access points, and other amenities is planned. The town of Bethany Beach has planned a system of pathways for pedestrians and bicyclists that link with the Assawoman Canal lands and provide recreation and transportation opportunities.

Broad Creek Greenway
The town of Laurel and the Laurel Redevelopment Corporation have partnered to create the greenway. Plans call for the greenway to begin at Records Pond extending west to Riverfront Park linking the downtown area and the river.

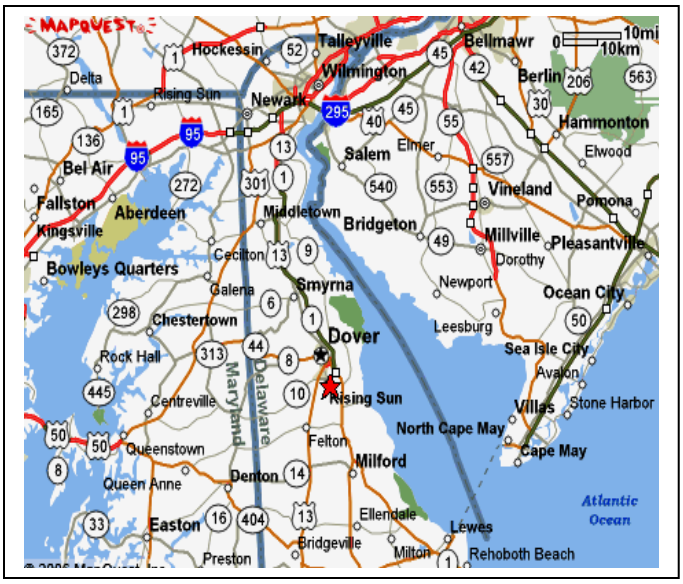
American Discovery Trail
The American Discovery Trail will be a continuous multi-use hiking path extending across the United States from one coast to another. The eastern trail head is in Cape Henlopen State Park and the route through Delaware travels about 45 miles of sidewalks and rural roads, mostly through open farmland. The trail passes through Redden State Forest and the towns of Lewes, Milton, and Bridgeville. This trail will connect with 6 National Scenic Trails, 10 National Historic Trails, and 23 National Recreational Trails.

Coastal Heritage Greenway
The Coastal Heritage Greenway is a corridor of open space stretching along more than 90 miles of Delaware's coast between Fox Point State Park and the State line at Fenwick Island. Focus areas along the Coastal Heritage Greenway include: Fox Point, New Castle, Delaware City, and Port Penn in New Castle County; Woodland Beach Wildlife Area, Lower St. Jones River, and Milford Neck in Kent County; and Cape Henlopen in Sussex County.

3.7 TRAFFIC AND TRANSPORTATION

A network of transportation systems extends through Delaware, mostly in a north/south aligment. Interstate 95 connects to Wilmington and passes through the northern tip of the State. U.S. Route 1 extends up the east side of the State and Route 13 bisects the middle of the State. Routes 1 and 13 provide access for the poultry producers on the east side of the State, as do Route 24 and Route 9, a major east-west connection to U. S. Route 13. **Figure 3-4** is a map showing the major ground transportation network through the State of Delaware.

Figure 3-4: State of Delaware Ground Transportation Network



Source: www.mapquest.com

3.8 HUMAN HEALTH AND SAFETY

Groundwater throughout the State of Delaware is potentially vulnerable to increased concentrations of pesticides, nitrates, and fecal coliform associated with agricultural operations and runoff. Potential exists for groundwater contamination due to the use of pesticides and fertilizers and due to the runoff from livestock and poultry operations. Pesticides are an integral part of controlling insects, weeds, fungi, and bacteria in both agricultural and urban settings. The use of pesticides and herbicides has increased over the past several decades due to the increase in lawn care services.

Crop production and controlled public health hazards (Larson and others, 1977) have raised concerns about the possible harmful effects of increased pesticide concentrations on the environment and on human health. Nitrite and nitrate are inorganic ions produced during various stages of the nitrogen cycle. Nitrate is the predominant ion in well-oxygenated water because of the rapid oxidation of nitrite.

Concentrations of nitrate greater than 10 mg/L in drinking water can have adverse human-health effects, especially to infants who may experience reduced blood-oxygen levels, as a result of drinking the water, a life-threatening condition termed methemoglobinemia (blue-baby syndrome) (U.S. Environmental Protection Agency, 1999b).

3.9 SOCIOECONOMICS

3.9.1 DEMOGRAPHIC PROFILE

In 2000, Delaware ranked 45th among the 50 States in terms of population, although it showed a 17.6-percent increase in population between 1990 and 2000. **Table 3-16** shows the demographic characteristics of Kent, New Castle and Sussex Counties and compares them to the State of Delaware. **Table 3-17** compares the projected population growth for the three counties through 2020.

Table 3-16: Demographic Characteristics by County Compared to State

Characteristic	Kent Co.	New Castle Co.	Sussex Co.	Delaware
% Change 1990-2000	14.1%	13.2%	38.3%	17.6%
Minority Population	26.5%	26.9%	19.7%	25.4%
Persons below poverty	10.7%	8.4%	10.5%	9.2%
Median Household Income (1999)	$40,950	$52,419	$39,208	$47,381
Housing Units (2002)	52,563	203,226	96,242	352,031

Source: U.S. Census, Delaware QuickFacts. http://quickfacts.census.gov/qfd/states/10000.html

Table 3-17: Existing and Projected Population for Kent, New Castle and Sussex Counties, Delaware, 2005 and 2020

County	2005	2020
Kent	132,964	146,014
New Castle	506,778	533,470
Sussex	153,459	176,744

Source: State of Delaware, Economic Development Office. www.state.de.us/dedo/information/demographic

In 2005, Kent County employed 1,450 people in agricultural work; compared with New Castle which employed 2,000; and Sussex which employed 2,950 in farm-related jobs. Overall, agricultural employment is expected to decline for all three counties by 2020 as follows: 1,400 for Kent County, 1,700 for New Castle County, and 2,700 for Sussex County. **Table 3-18** presents statewide statistics on farming, based on the Census of Agriculture.

Table 3-18: Delaware Selected Statewide Agricultural Statistics, 1997 and 2002

Characteristic	1997	Adjusted 1997	2002
Number of Farms	2,460	2,671	2,391
Full-time Operators	1,497	1,601	1,659
Part-time Operators	963	1,070	732
Total Market Value of Products Sold ($1,000)	$690,794	$767,254	$618,853
% from crops	25%	23%	24%

Source: Farmland Information Center. *Delaware Statistics Sheet*, http://www.farmlandinfo.org/agricultural_statistics/index.cfm?function=statistics_view&stateID=DE

3.9.2 LAND USES

Between 1992 and 1997, Delaware experienced a significant loss in farmland and forestland and gained in "developed" uses (residential, urban, commercial, industrial, transportation, government, and utility). Developed uses grew by almost 14 percent during this period, while the amount of agricultural and forestland declined by nearly 4 percent. **Table 3-19** shows the gross land use changes between 1992 and 1997.

The greatest change, by percentage, was in the "Other" category, which includes brushland, rangeland, barren land, and other uses. The largest portion of this gain occurred in Sussex County. The 1992 and 1997 data also showed a 3-percent growth in water areas, which could indicate a change in interpretation or may be due to differences in the relative wetness of the years in which the aerial photography was taken. There was also a slight decline in wetlands.

Table 3-19 Gross Land Use Changes, State of Delaware, 1992-97

Land Uses	Year		Change	
	1992	1997	Acres	Percent
Developed	188,272.43	214,547.89	26,275.46	13.96%
Agricultural/Forest	776,719.27	746,424.30	-30,294.97	-3.90%
Water	45,898.36	47,380.69	1,482.34	3.23%
Wetlands	245,038.79	242,684.63	-2,354.16	-0.96%
Other	27,886.93	32,729.11	4,842.18	17.36%

Source: Delaware Office of State Planning Coordination, "Gross Land Use Changes in Delaware, 1992 to 1997," prepared by the Delaware Office of State Planning Coordination, August, 1999.

Agriculture and forest cover retained the largest combined share of land use in the State of Delaware even though this combined category dropped from almost 61 percent in 1992 to just over 58 percent in 1997. In 2002, there were 2,391 farms, comprised of 540,080 acres in the State. The average annual rate of rural land converted to developed uses is 4,680 acres and the amount of prime rural land developed is 14,000 acres. The amount of agricultural land protected by State and local programs is 79,955 acres in 2005, compared with 70,667 acres in 2003.

As of June 2005, there were 129,163 acres in 519 Agricultural Preservation Districts and District expansions in Delaware. Of the total acres in approved Agricultural Preservation Districts, Kent County had the largest percentage, 52 percent or 67,566 acres; Sussex County had 35 percent, or 45,492 acres; and New Castle had 13 percent, or 16,105 acres protected. **Table 3-20** shows the number of farms and total acreage permanently protected in Delaware.

Table 3-20: Number of Delaware Farms Permanently Protected by County

County	Number of Farms	Total Acres
Kent	156	35,841
New Castle	42	8,120
Sussex	109	20,869
Delaware	307	64,830

Source: Delaware Department of Agriculture: Farmland Preservation Program. www.state.de.us/deptagri/aglands/Indpres.shtml. Updated June 16, 2005.

High-quality soils, significant agricultural infrastructure, historical and environmental significance are all factors that have been considered in the selection of farms for permanent preservation. Many of these farms are contiguous to already protected land and complement the State's open space preservation efforts by creating natural buffers between development and public open space.

Between 1992 and 1997, a total of 16,000 acres of agricultural land were converted to developed uses. Wetland areas remained the second largest share of land use, changing only slightly over the period. Developed land uses grew from almost 15 percent of the State in 1992 to almost 17 percent in 1997 (see **Table 3-21**).

The percentage of agricultural land converted to developed uses was 3 percent. The average annual rate of agricultural land converted to developed uses in acres was 3,200 acres. Approximately 12,300 acres of prime agricultural land were converted to developed uses between 1992 and 1997.

Table 3-21: Distribution of Land Uses, State of Delaware, 1992 and 1997

Land Uses	1992	1997
Developed	14.67%	16.71%
Agricultural/Forest	60.50%	58.14%
Water	3.58%	3.69%
Wetlands	19.09%	18.90%
Other	2.17%	2.55%

Source: Delaware Office of State Planning Coordination, "Gross Land Use Changes in Delaware, 1992 to 1997," prepared by the Delaware Office of State Planning Coordination, August, 1999.

The trend in Delaware has been toward growth in the unincorporated areas outside of towns. According to the U.S. Census conducted in 1960, more than 39 percent of Delawareans lived in towns and cities and almost 61 percent lived outside of these areas. According to the 2000 Census, the population in incorporated places had declined to less than 28 percent of the State's population. More than 72 percent now live outside town and city limits. **Table 3-22** shows the land use changes that occurred in the Delaware Bay and Estuary basin area between 1992 and 1997.

Table 3-22: Land Use Changes in the Delaware Bay and Estuary Basins, 1992-1997

Land Use	1992 (acres)	1997 (acres)	% Change
Agriculture	241,691	232,737	-3.7
Barren Land	7,279	6,706	-7.9
Forest Land	66,109	64,183	-2.9
Rangeland	4,823	5,097	5.7
Urban	63,636	74,428	17.0
Water	15,134	15,807	4.4
Wetlands	109,057	108,702	-0.3

Source: DNREC and USEPA. Aug. 2005. *Delaware Bay and Estuary Assessment Report, Whole Basin,* p. 31.

More current estimates show that in 2002, the percentage of land uses for the Delaware Bay and Estuary basin were as follows: Urban/Residential, 17.03 percent, Agriculture, 44.05 percent; Brushland/Forestland, 13.17 percent; Water/Wetlands, 24.66 percent; and Barren Land, 1.09 percent.[39] The following discussion summarizes land use changes for each county between 1992 and 1997.

New Castle County

The largest percent gain in land use in New Castle County between 1992 and 1997 was in transportation/government/utility category, which grew by over 10 percent. Commercial/ industrial land uses grew by almost 8 percent. These categories combined to make up about 9 percent of land uses in New Castle County in 1997. This is the largest share of land uses held by these categories among the three counties and reflects New Castle's traditional status as the urban/manufacturing core of the State.

Residential/urban uses, meanwhile, grew by only a little more than 8 percent between 1992 and 1997. The residential/urban category rose from approaching 26 percent to nearly 28 percent of land use, while agricultural uses fell from nearly 31 percent to under 29 percent of land use. Forest areas also saw a decline, dropping by almost 6 percent.

[39] DNREC and USEPA. Aug. 2005. *Delaware Bay and Estuary Assessment Report, Whole Basin,* p. 33.

There are 62 agricultural preservation districts, totaling 16,105 acres in New Castle County. This represents about 13 percent of the State. Total Farmland Protection Program easements amounted to 587 acres.

Kent County
Acreage devoted to residential/urban uses grew by over 21 percent between 1992 and 1997 in Kent County. This category grew from just under 7.5 percent in the county in 1992 to more than 9 percent in Kent County in 1997. A 50-percent growth in residential uses occurred in Kent County between 1984 and 1992.

Commercial/industrial uses grew by almost 9 percent between 1992 and 1997, while the combined category of transportation, governmental, and utility uses grew by over 6 percent. Acreage devoted to agricultural uses in Kent County fell by over 3 percent, though agriculture remained the dominant land use in the county. Agricultural land use fell from nearly a 51-percent share to just under a 49-percent share of land use in Kent County between 1992 and 1997. There are 252 agricultural preservation districts in Kent County, totaling 67,566 acres; this represents 52 percent of the State. Total Farmland Protection Program easements amounted to 5,633 acres.

Sussex County
In Sussex County, aside from an increase in "other" (discussed previously), residential/urban land uses showed the strongest growth, increasing by almost 23 percent between 1992 and 1997. These uses still accounted for only a small share of land uses in Sussex County, however; they increased from over 7 percent in 1992 to just over 9 percent in 1997.

The transportation/government/utility and commercial/industrial categories also showed sharp growth in Sussex County between 1992 and 1997. They grew by over 14 percent and more than 9 percent, respectively. This growth is likely a reflection of the strong residential growth in the County; these uses would have to grow in order to serve the transportation needs and economic needs of an expanding Sussex County population.

There are 205 agricultural preservation districts in Sussex County, totaling 45,492 acres and representing 35 percent of the State. Total Farmland Protection Program easements for Sussex County amounted to 1,906 acres. The total number of FPP easements for the entire State of Delaware is 8,126 acres, which is about 40 percent of the State.[40]

3.10 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* directs all Federal agencies to achieve environmental justice as part of their mission by identifying and addressing disproportionately high and adverse human health or environmental effects of their activities on minority and low-income populations. The purposes of this Executive Order is to ensure that all people, regardless of their race, color, or background, are provided fair treatment and are afforded meaningful involvement with respect to a Federal project; are given the opportunity to participate and express concerns before decisions are made; and are not disproportionately affected by Federal programs, policies or projects.

[40] USDA-NRCS, Farmland Protection Program. Delaware Summary, Dec. 2001. http://www.state.de.us/deptagri/aglands/Indpres.shtml

Table 3-16 shows that both Kent and New Castle Counties have minority populations that exceed the State percentage, and Kent and Sussex Counties exceed the statewide percentage of persons living below poverty level. **Table 3-23** presents the number of farm operators by racial and ethnic characteristic, as well as women farm operators, the number of farms operated by these operators, and the total number of acres for each county. Data were not available for the number of acres for American Indian operators. As shown in the table, Hispanics rank third to white and women operators and hold the largest acreage in farms, especially in Sussex County. African-Americans and Asians follow, and again have established these farms principally in Sussex County.

Table 3-23: Farm Operators by Racial/Ethnic Origin and Women Operators by County

Racial/Ethnic Origin	New Castle		Kent		Sussex	
	No. Operators	No. Farms (Acres)	No. Operators	No. Farms (Acres)	No. Operators	No. Farms (Acres)
American Indian/Alaska [a]	1	1	0	0	9	9
Asian	8	8 (180 ac.)	0	0	21	19 (629 ac.)
Black/African-American	11	7 (180 ac.)	6	4 (262 ac.)	17	14 (891 ac.)
Hispanic/Latino	12	12 (617 ac.)	19	19 (1,092 ac.)	15	15 (1,572 ac.)
Multi-Racial	1	1	3	3	2	2
Woman	172	156 (17,304 ac.)	276	263 (41,922 ac.)	610	569 (67,034 ac.)
White	529	343 (70,888 ac.)	1,064	716 (185,291 ac.)	1,944	1,266 (279,507 ac.)

[a] Data were collected for a maximum of three operators
Source: USDA, NASS, *2002 Census of Agriculture, County Data*.

The Delaware Cooperative Extension reports that limited resource and minority farmers in the State have continued to try to stay on farming, but many have lost their sources of income. The Delaware Cooperative Extension works with these farmers by suggesting ways to add value to normal commodities and by offering farmers new and innovative products to market at roadside stands, supermarkets, and farmers markets.[41]

CREP's landlord-tenant provisions can be found in *Handbook 2-CRP, Rev. 4*, Amendment 1, paragraph 86. These requirements state that landlords must provide tenants who have an interest in the acreage being offered at the time of signup, an opportunity to participate in CRP and not reduce the number of tenants on the farm as a result of or in anticipation of enrollments in CRP. All producers, landlords and tenants are to be fully informed at the time of sign-up and that landlords violating the provisions will be ineligible to earn CRP/CREP payments.

Although CREP contracts provide compensation to farmers for enrolling certain land in CREP, FSA does not monitor whether these funds are being passed on to compensate tenant farmers for the loss of land. COCs are responsible for determining whether landlord tenant provisions have

[41] Delaware State University. Cooperative Extension Service. http://cars.desu.edu/extension/extension/smallfarms.html

been violated before approving CRP-1. The determination shall be made by reviewing the documentation submitted with the CRP-1 and researching the tenant history on the farm. When there is a dispute between a landlord and a tenant, and the COC determines there is insufficient evidence to make a determination, the COC shall not approve the CRP contract until the landlord and tenant resolve the dispute.

A tenant may sign a statement voluntarily relinquishing his/her interest in the farm or CRP benefits allowing the landlord to offer land for CRP that has a history of a tenant if COC determines that the landlord has the "necessary means" to conduct the farming operation. As of February 6, 2002, all CRP participants, landlords and tenants are required to sign a copy of the CRP-1 indicating that they fully understand the provisions relating to Tenants and Landlords.[42]

3.11 OTHER PROTECTED RESOURCES

3.11.1 WILD AND SCENIC RIVERS

In 1978, the Upper Delaware and Delaware Water Gap reaches were designated components of the National Wild and Scenic Rivers System. These two designated river corridors total 124,929 acres and are not within the State of Delaware or the DECREP area. In October 2000, Congress added a section of the Lower Delaware River and the White Clay Creek to the National Wild and Scenic Rivers System. Both bills were signed into law by President Clinton. The Lower Delaware Wild and Scenic Rivers Act added about 65 miles of the Delaware and selected tributaries to the National Wild and Scenic Rivers System, linking the Delaware Water Gap and Washington Crossing, Pennsylvania, just upstream of Trenton, New Jersey. Three-quarters of the non-tidal Delaware River is now included in the national system.

On October 24, 2000, Congress enacted P.L. 106-357, *White Clay Creek Wild and Scenic Rivers System Act*, which designated approximately 190 miles of segments and tributaries of White Clay Creek in Delaware and Pennsylvania as components of the national river system. White Clay Creek is the first wild and scenic river designation in the State of Delaware.

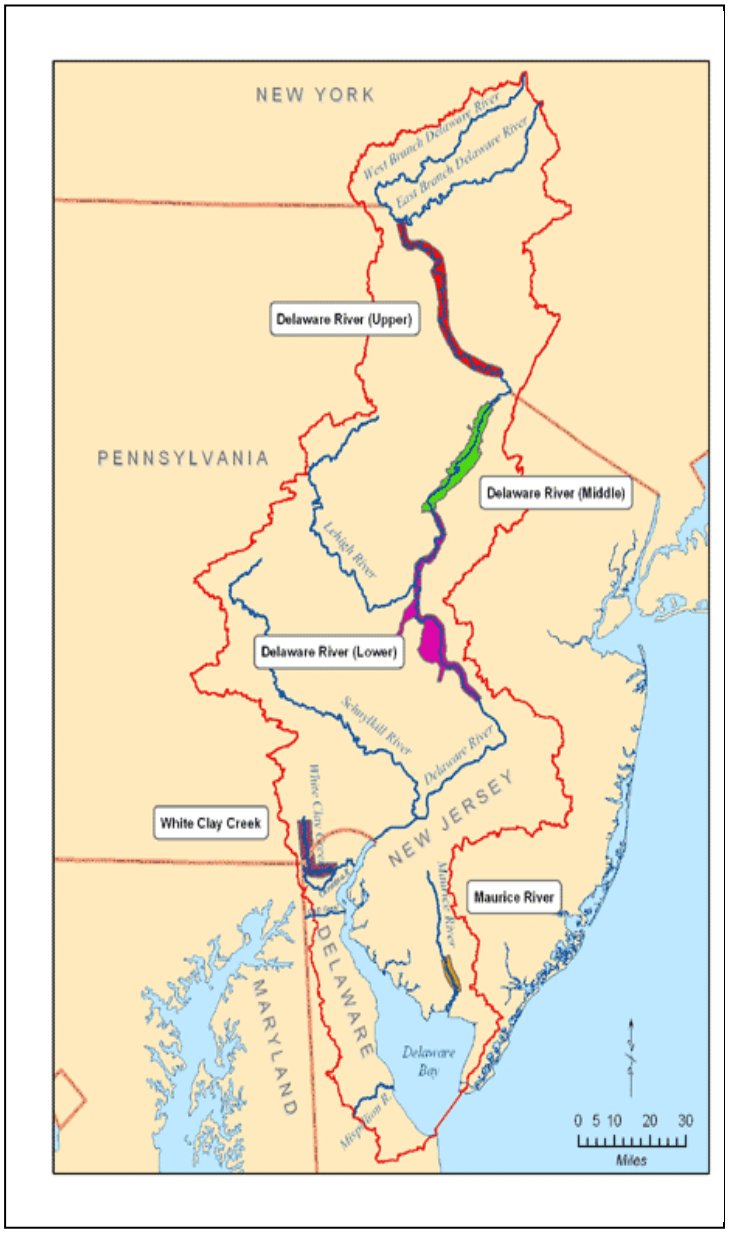
The segments of the White Clay Creek listed in the NRI flow through southwestern Chester County, Pennsylvania, and northwestern New Castle County, Delaware, where they eventually join the Christina River, a tributary to the Delaware River (**Figure 3-5**). Sections of White Clay Creek and their designations that flow through the State of Delaware are:

- 12.7 miles of the mainstem, excluding Lamborn Run, that flow through the boundaries of the White Clay Creek Preserve, Pennsylvania and Delaware, and White Clay Creek State Park, Delaware, beginning at the confluence of the east and middle branches in London Britain township, Pennsylvania, downstream to the northern boundary line of the city of Newark, Delaware, as a scenic river.
- 5.4 miles of the mainstem (including all second order tributaries outside the boundaries of the White Clay Creek Preserve and White Clay Creek State Park), beginning at the confluence of the east and middle branches in London Britain township, Pennsylvania, downstream to the northern boundary of Newark, Delaware, as a recreational river.
- 16.8 miles of the mainstem beginning at Paper Mill Road downstream to the Old Route 4 bridge, as a recreational river.

[42] USDA-FSA Memorandum, Subject: CRP Landlord and Tenant Provisions. February 6, 2002.

- 4.4 miles of the mainstem beginning at the southern boundary of the property of the corporation known as United Water Delaware downstream to the confluence of White Clay Creek with the Christina River, as a recreational river.
- 1.3 miles of Middle Run outside the boundaries of the Middle Run Natural Area, as a recreational river.
- 5.2 miles of the Middle Run that flow within the boundaries of Middle Run Natural Area, as a scenic river.
- 15.6 miles of Pike Creek, as a recreational river.
- 38.7 miles of Mill Creek, as a recreational river.

Figure 3-5: Segments of White Clay Creek Included in the National Wild and Scenic Rivers System



Source: http://www.state.nj.us/drbc/wild_scenic_map.htm

Segments of the Nanticoke River are also listed in the Nationwide Rivers Inventory (NRI) because of its undeveloped nature. The Nanticoke River flows southwest from the central portion of Delaware through the Eastern Shore of Maryland to Tangier Sound and the Chesapeake Bay. From the headwaters to the Delaware-Maryland border, the Nanticoke River is about 25 miles long, which is about half of its overall length. The upper portion of the Nanticoke is the largest watershed in Delaware. The river occupies nearly 250,000 acres in Kent and Sussex Counties, or about one-third of Delaware's land surface. The 1990 North American Waterfowl Management Plan stated that the Nanticoke is "…among the most pristine habitats remaining in Delaware."[43]

The Nature Conservancy, Delaware Wildlands, and FWS have preserved 2600 acres at Milford Neck. A section of the Mispillion River listed in the NRI extends through this area, which is shown on **Figure 3-3**.

3.11.2 NATIONAL WILDLIFE REFUGES AND NATIONAL ESTUARIES

Delaware's Bombay Hook and Prime Hook National Wildlife Refuges (NWR) contain almost 30,000 acres of marsh, brush, water, timber, grasslands, and croplands. Bombay Hook NWR, located on the western shore of Delaware Bay (see **Figure 3-2**) was established in 1937 to conserve an important segment of the Delaware Bay marshes and to protect migrating and wintering waterfowl habitat. Prime Hook National Wildlife Refuge is located near the western shore of Delaware Bay was established for migratory waterfowl. Activities include auto touring, hiking, historic/cultural sites, hunting, museum/visitor center, and wildlife viewing.

Prime Hook NWR is located 22 miles southeast of Dover, near the western shore of Delaware Bay. The wildlife refuge was established in 1963 to conserve an important segment of the Delaware Bay marshes and to protect migratory waterfowl habitat. The refuge is considered to have one of the best existing wetland habitat areas along the Atlantic Coast. These cover types provide habitat for approximately 267 species of birds, 35 species of reptiles and amphibians, and 36 different mammals, including the Delmarva fox squirrel, bald eagles, and peregrine falcons, as well as neotropical bird species during the fall and spring. The 10,000-acre refuge features freshwater and salt marshes, woodlands, grasslands, scrub-brush habitats, ponds, bottomland forested areas, a 7-mile long creek, and agricultural lands. Activities include fishing, hiking, hunting, museum/visitor center, and wildlife viewing.

The Delaware National Estuarine Research Reserve (DNERR) consists of two components: one on Blackbird Creek in southern New Castle County and the other on the St. Jones River southeast of Dover. The Blackbird Creek component is dominated by freshwater wetlands, ponds, and forested habitats. The St. Jones component is dominated by salt marshes and open water habitats of the Delaware Bay. Both components are surrounded by farmlands, meadows, and impending development pressures. The reserve is examining the effect that nonpoint source pollution has on the marsh and bay ecosystems. Key species of the Delaware Reserve include the horseshoe crab, migratory shorebirds, snowy egret, great blue heron, bald eagle, black duck, blue crab, fiddler crab, and American oyster. Activities include a museum/visitor center and wildlife viewing.

DNREC has protected 431 acres along the St. Jones River as part of the National Estuarine Research Reserve system. Construction of an interpretive center will begin in summer 1996. When completed, this center will be open for formal educational programs designed to enhance public awareness, understanding, and wise use of estuarine resources in the Mid-Atlantic region.

[43] Alliance for the Chesapeake Bay, Inc. Aug. 1995. "Nanticoke River Fact Sheet."

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CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 assesses the direct, indirect and cumulative effects of two alternatives designed to enhance the water quality of the State's rivers and streams by reducing sedimentation and runoff through implementation of a joint Federal-State land retirement conservation program, referred to as the Conservation Reserve Enhancement Program (CREP). This program would use the authorities of the CRP in combination with State resources to target specific conservation and environmental objectives. The DECREP would consist of a special continuous sign-up CRP component and a State of Delaware incentive program, and would target up to 10,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas for enrollment into the program.

The alternatives analyses will be conducted by the following impact category:

- Biological Resources
- Cultural Resources
- Water Resources
- Soil Resources
- Air Quality
- Recreation
- Traffic and Transportation
- Human Health and Safety
- Socioeconomic Impacts
- Environmental Justice
- Other Protected Resources
- Cumulative Effects

Due to the programmatic nature of this evaluation, the impact analyses may not always be quantifiable. Information is presented in a broad, programmatic manner to enable decisionmakers to understand the effects and benefits of CREP on the resources within the State of Delaware. Site-specific environmental reviews will be completed for each CREP contract by FSA to determine if any protected species is known to occur in the area or if any resources would be affected by the actions proposed in the CREP contract. An environmental checklist (DE-CPA-052) will be prepared by NRCS and FSA, addressing the potential occurrence of most of these resources. This checklist can be found under **Appendix H**.

4.1 BIOLOGICAL RESOURCES

4.1.1 WILDLIFE AND FISHERIES

Degradation, fragmentation and loss of upland, wetland, and aquatic habitat have significantly contributed to the decline of many of Delaware's species. Habitat loss is the principal cause of the decline in many animal and plant communities, and is the major reason that many of these species are protected. Other factors leading to species decline include poaching, illegal plant harvesting, pesticide application, pollution, and disease. Competition for limited habitat and food, as well as predation, contributes to the decline of certain species. Rapid, uncontrolled development, acid rain, traffic and a host of other human influences further contribute to the decline in species populations and their habitat.

Loss of undisturbed herbaceous cover in agricultural areas has been a major factor in the decline of grassland birds. Once a mainstay for upland game bird enthusiasts in much of the State, northern bobwhite (often referred to as bobwhite quail) have declined regionally over the past few

decades. The *Breeding Bird Survey* estimates that the quail population has declined nearly 5 percent per year since the mid-1960s.

4.1.1.1 Alternative 1-No Action (Existing Conditions)

CREP provides participants with financial incentives to remove agricultural lands from production and to establish conservation practices, such as the planting of trees, establishing riparian forest and grass buffers, restoring wetlands and constructing shallow wildlife ponds. Warm season grasses are native grasses that grow during the summer months and provide much better wildlife habitat than turf-forming cool season grasses. Warm season grasses provide a critical wildlife habitat for many species, such as bobwhite quail, grasshopper sparrows and other grassland birds. These grasses provide abundant nesting and brood-rearing habitat for upland birds.

Under Alternative 1, the eligible CPs that would enhance wildlife habitat are—

- CP3A (hardwood trees)-restoration of forested areas would provide important terrestrial habitat for species, such as raptors, hawks, migratory birds, and woodland species. Improvements in water quality are expected to enhance habitat adjacent to those waterbodies.
- CP4D (permanent wildlife habitat)-establishing permanent wildlife habitat cover to enhance environmental benefits for wildlife habitat of the designated or surrounding areas. A wildlife conservation plan must be developed for acreage under CRP-1 devoted to CP4D.
- CP21 (grass filter strips)-benefits to aquatic, as well as terrestrial species and habitat, in the area are expected to result from this practice due to improved water quality.
- CP22 (riparian buffers)-riparian vegetation buffers would create shade to lower water temperatures and thus improve aquatic habitat. This practice would also provide a source of detritus and large woody debris for aquatic organisms. Buffers are important in preventing streambank erosion and slowing runoff, as well as providing wildlife habitat and migratory corridors.
- CP23 (wetland restoration)-re-establishes native vegetation; provides breeding, nesting and resting areas for waterfowl; reduces flooding and streambank erosion; filters pollutants and improves water quality; enhances threatened and endangered and other wildlife species habitat; and provides recreational and education opportunities.

For all CREP contracts under Alternative 1, conservation plans are developed that prescribe how the resources will be managed to ensure plant diversity and wildlife benefits, while protecting the soil and water resources. The conservation plans also address maintenance for weed, insect, and pest control for the life of the contract. Management activities are site-specific and are used to enhance the wildlife benefits for the site.

Approximately 320 acres of wetlands (CP23) have been restored under DECREP, as of December 2005, and 670 acres (CP4D) of permanent wildlife habitat have been enhanced, thus providing improved habitat for waterfowl, wading birds and amphibians, as well as many wildlife species that utilize the edges of the wetlands.

More than 142 acres of riparian buffers have been planted, creating vital links for wildlife species to travel from one area to another as well as for food and shelter. The streamside plantings will also improve the conditions of the stream for fish. Shade from trees will keep waters cooler and vegetation falling in the stream provides structure and food sources for the aquatic invertebrates on which fish feed.

4.1.1.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

FSA would continue to implement the conservation practices discussed in Alternative 1. Alternative 2 proposes to modify CP4D-Permanent Wildlife Habitat by increasing the number of acres per tract to 10 acres per tract, or 10 percent of a tract, whichever is greater. Exception to the acreage limit under CP4D may be approved by the FSA County Committee on a case-by-case basis. Alternative 2 also proposes a new practice, CP9-Shallow Water Areas for Wildlife. Acres enrolled under CP9 may not exceed 20 acres per tract. However, more than one CRP-1 may be approved under this agreement for acreage dedicated to CP9. The purpose of CP9 is to develop or restore shallow water areas to an average depth of 6 to 18 inches. The shallow water area must provide a source of water for wildlife for most of the year.

Habitat loss and fragmentation are the principal reasons for species decline, and habitat improvement through agricultural conservation programs is essential for the survival of many species. However, to establish functional habitat, contiguous tracts are necessary for wildlife migration and movement corridors, breeding, and nesting. Alternative 2 would allow up to a total of 10,000 acres to be enrolled to achieve water quality benefits and to enhance wildlife habitat.

Selection of Alternative 2 would enable the continuation of conservation benefits by allowing up to a total of 10,000 acres to be enrolled in the program. In conjunction with these contracts, conservation and maintenance plans would be required that explain how the resources will be managed. These management activities must be designed to ensure plant diversity and wildlife benefits, while ensuring protection of the soil and water resources. The conservation plan must also address maintenance for weed, insect and pest control for the life of the contract. Management activities are site-specific and are used to enhance the wildlife benefits for the site. NRCS completes an environmental checklist prior to implementing any ground disturbance or CREP practices (see **Appendix H**).

4.1.1.3 Conclusion

Under Alternative 1, approximately 848 acres are remaining in the program for enrollment. The following conservation practices would enhance wildlife habitat:

- CP3A (hardwood trees)
- CP4D (wildlife habitat)
- CP21 (grass filter strips)
- CP22 (riparian buffers)
- CP23 (wetland restoration)

Alternative 2 would modify CP4D-Permanent Wildlife Habitat and would allow for 10 acres per tract or 10 percent of a tract to be used for habitat enhancement. Alternative 2 further proposes to add two new practices, CP9-Shallow Water Areas for Wildlife and CP23A-Wetland Restoration, Non-Floodplain. CP23A would provide for the restoration of wetland areas, thus enhancing habitat for waterfowl and other wetland-dependent species, as well as providing other benefits in terms of flood control and water quality improvements. Approximately 4,848.4 additional acres would be available for enrollment into DECREP under Alternative 2.

4.1.2. PROTECTED SPECIES, INVASIVE SPECIES, AND HABITAT

FSA has consulted with FWS in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.). The comments submitted to FSA addressing CREP in Delaware can be found in **Appendix D**. Essentially, FWS acknowledged that except for occasional transient individuals, no other federally protected or listed endangered or threatened species are known to occur within the DECREP area. These comments are also summarized in Chapter 2, **Table 2-1**.

For both alternatives, FSA will comply with E. O. 13112, which prevents the introduction of invasive species and provides for their control. Invasive species include mammals, birds, fishes, plants, trees, insects, and other aquatic species, as well as fungi and bacteria. The probability that these species will occur in riparian areas, farm fields, forest edges, wetlands and woodlands that have previously been cut or disturbed is very high, as such species are opportunistic and generally occur in disturbed areas. Areas that have been cultivated or have lain fallow provide prime opportunities for invasive species to thrive. All CREP contracts stipulate that noxious weeds and other undesirable plants, insects and pests must be controlled to avoid adverse impacts on surrounding land. Conversion of cropland to grasslands, riparian areas, forestlands and wetlands can provide opportunities for invasive species to establish. Monitoring converted farmland for these species to prevent and eradicate these species is encouraged.

Weed control is eligible for cost-share as provided in FSA *Handbook 2-CRP, Rev. 4.* After planting, cost-share may be authorized for one post-planting weed control application if it is applied within the first year after planting the cover.

FSA had initially considered introduction of CP33-Wildlife Habitat for Upland Birds, but upon further review, it was determined that CP33, though a CRP practice, is not an eligible CREP practice. Alternative 2 would allow up to 10,000 acres, including previous acreage enrolled, to achieve environmental benefits and enhancement of wildlife habitat.

4.1.2.1 Alternative 1-No Action (Existing Conditions)

The existing DECREP agreement does not specify the protection of any declining species, but as one of its goals, CREP will increase wildlife habitat acreage and create wildlife corridors. Alternative 1 provides for enrollment of up to 6,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas adjoining drainage ditches, streams and other waterbodies identified as Category I impaired segments in *Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List* (October 1, 1998), or areas adjoining draining ditches contributing to Category I impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas.

Although wildlife benefits have been realized under this alternative, much work remains to be conducted in establishing areas of wildlife habitat to support terrestrial and aquatic species. Selection of this alternative would not meet the goals of the Chesapeake Bay Agreement, nor would it meet the goals established under CREP to enhance wildlife habitat for declining species.

Under Alternative 1, provisions to manage noxious weeds and other invasive species were incorporated into CREP agreements and in conservation plans and are further supported by State requirements to prevent, manage and control invasive species. These provisions can be found in *Handbook 2-CRP, Rev. 4.* All CREP contracts must stipulate that noxious weeds and other

undesirable plants, insects and pests will be controlled to avoid adverse impacts on surrounding land.

4.1.2.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

DECREP conservation practices provide many potential wildlife benefits that enhance habitat for declining species. CPs that provide these valuable wildlife benefits are—

- CP3A (Hardwood Tree Planting), which establishes a stand of predominantly hardwood trees in a timber planting to provide wildlife habitat diversity to the area.
- CP4D (Permanent Wildlife Habitat) and provides that practice acres for an individual contract will be limited to 10 acres per tract or 10 percent of a tract, whichever is greater.
- CP9 (Shallow Water Areas for Wildlife) is new for DECREP under this alternative. Acres enrolled under CP9 may not exceed 20 acres per tract.
- CP21 (Filter Strips) provide excellent habitat for grassland bird species and small mammals.
- CP22 (Riparian Buffer) provides a source of detritus and large woody debris for aquatic organisms and habitat for wildlife.
- CP23 (Wetland Restoration) restores the functions and values of wetland ecosystems that have been devoted to agricultural use and provides waterfowl and other wildlife habitat.

For all land enrolled under CREP contracts, landowners are required to perform management activities as part of their approved conservation plan. These management activities must be designed to ensure plant diversity and wildlife benefits, while ensuring protection of the soil and water resources. The conservation plan must also address maintenance for weed, insect and pest control for the life of the contract. Management activities are site specific and are used to enhance the wildlife benefits for the site. In exchange for approved management activities, the landowner may receive up to 50 percent cost-share for the management practices.

For all CREP contracts, landowners would be required to perform management activities as part of their approved conservation plan. These management activities shall be designed to ensure plant diversity and wildlife benefits, while ensuring protection of the soil and water resources. The conservation plan must also address maintenance for weed, insect and pest control for the life of the contract. Management activities are site-specific and are used to enhance the wildlife benefits for the site. In exchange for approved management activities, the landowner may receive up to 50 percent cost-share for the management practices.

Under Alternative 2, weed control would be eligible for cost-share as provided in FSA Handbook *2-CRP, Rev. 4*. After planting, cost-share may be authorized for one post-planting weed control application if it is applied within the first year after planting the cover. All CREP contracts must stipulate that noxious weeds and other undesirable plants, insects and pests will be controlled to avoid adverse impacts on surrounding land.

4.1.2.3 Conclusion

To date, the DECREP has restored approximately 320 acres of wetlands (CP23), and enhanced 670 acres (CP4D) of permanent wildlife habitat, thus providing improved habitat for the State's declining species, as well as other flourishing species. More than 142 acres of riparian buffers

have been planted, creating vital links for wildlife species to travel from one area to another as well as for food and shelter.

Alternative 1 would allow for 848.4 additional acres to be enrolled into the program. Alternative 2 would add two conservation practices to the program: CP9-Shallow Water Areas for Wildlife and CP23A-Wetland Restoration, Non-Floodplain. These two practices would enhance habitat for wetland and water-dependent species. Alternative 2 would also enable 4,848.4 additional acres to be enrolled into DECREP.

NRCS completes an environmental checklist prior to implementing any CREP practices (see **Appendix H**).

4.2 CULTURAL RESOURCES

Because of the abundance of archaeological resources known to occur throughout Delaware, these resources could be significantly impacted by certain practices under either alternative. The SHPO, FSA, and NRCS have agreed to a MOU outlining the procedures for conducting cultural resource reviews for CREP practices. The SHPO would like FSA to develop a programmatic agreement between FSA and the SHPO, tailored after the NRCS/SHPO agreement. FSA has concurred.

During consultation with the SHPO, the FSA must submit the following information for those actions that have a potential to affect historic properties or cultural resources:

a) a description of the proposed project,
b) a map (preferably a section of a USGS topographic quadrangle) or a site plan that clearly delineates the project area's limits,
c) labeled photographs, and
d) an undertaking review sheet (see **Appendix G**)

All necessary archaeological investigations will be carried out by a qualified professional archaeologist and performed in accordance with the Secretary of the Interior's *Professional Qualifications Standards as Architectural Historian or Historian* (FR 44738-9 or 36 CFR Part 61). Upon review by the Delaware SHPO, additional investigations of identified resources may be requested.

Chapter 3 and **Appendix G** identify sites listed in the National Historic Landmarks (NHLs) and the National Register of Historic Places (NR) in Delaware.

4.2.1 Alternative 1-No Action (Existing Conditions)

As native tribes once inhabited the Delaware area, especially along the coastline, rivers, and floodplains, these areas should be carefully evaluated prior to any construction or excavation. The potential for encountering archeological resources during implementation of proposed CREP conservation practices may occur during construction or implementation of conservation practices when ground disturbance is required. Implementation of any of the conservation practices identified for Alternative 1 would involve some degree of ground disturbance, particularly tree planting and establishing riparian buffers. Consultation with the Delaware Division of Historical and Cultural Affairs may result in the need to conduct archeological surveys of sites prior to any ground disturbance or excavation.

4.2.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

As with Alternative 1, the potential for encountering archeological resources during implementation of proposed CREP conservation practices may occur during construction or implementation of conservation practices when ground disturbance is required. Consultation with the Delaware Division of Historical and Cultural Affairs (SHPO) may result in the need to conduct archeological surveys of sites prior to any ground disturbance or excavation.

As the amount of land eligible for enrollment into DECREP would be increased from 6,000 to 10,000 acres under Alternative 2, a greater likelihood would occur that artifacts and other archeological resources could be discovered in the area. As with Alternative 1, consultation with the SHPO may result in the need to conduct additional archeological investigations.

As stated in Alternative 1, implementation of any of the conservation practices would involve ground disturbance, and could potential impact artifacts below the surface. CP3A and CP22 would have the greatest potential for disturbance. However, CP23 and 23A could also involve potential impacts to subsurface resources.

4.2.3 Conclusion

Delaware is an area that once was inhabited by indigenous people years before settlers displaced them. Resources from these tribal communities most likely occur in floodplains, near rivers, and around lakes. Consequently, there is a strong likelihood of the occurrence of cultural and archeological resources being discovered, particularly in the vicinity of waterbodies. For both alternatives, all conservation practices will involve ground disturbance and digging, and will have the potential to adversely affect the integrity of subsurface artifacts and cultural resources. If at any time, an archeological or cultural resource is discovered, all digging and ground disturbance will be immediately halted and the SHPO notified.

An environmental checklist will be prepared by FSA and NRCS prior to implementing conservation practices and consultation with the SHPO will be conducted.

FSA, NRCS, and the SHPO have agreed to procedures outlined in a MOU for CREP.

4.3 WATER RESOURCES

4.3.1 SURFACE WATERS AND WATER QUALITY

4.3.1.1 Alternative 1-No Action (Existing Conditions)

Based on calculations developed through the State's Pollution Control Strategy process in 2003, the DECREP reductions in nitrogen, phosphorus and sediment loads were estimated. These reductions are shown in **Table 4-1**.

Table 4-1: Delaware CREP Reductions in Nitrogen, Phosphorous and Sediments Load, as Monitored through the Delaware Inland Bays Pollution Control Strategy, 2003

Pollutant	Reduction	Units
Nitrogen	159,998	Pounds/year
Phosphorus	7,139	Pounds/year
Sediment	28,574	Tons/year

Source: DNREC, 2003

The DECREP currently involves conserving 6,000 acres. Selection of this alternative would allow for only an additional 848.4 acres to be enrolled in the program. Improvements in floodplains and stream corridors would be expected to occur with implementation of CP3A, CP21, CP22, and CP 23. These CRP practices would increase flood storage capacity, minimize erosion, stabilize streambanks, prevent sedimentation, and reduce runoff into surface waters. Hardwood tree planting (CP3A) would help decrease peak flows and sediment loads into streams, as well as reduce the damage riparian buffers and erosion of streambanks during flooding. Filter strips (CP21) would help reduce the amount of pollutants entering surface waters and would provide flood damage protection during major flooding periods. Riparian buffers (CP22) serve as water storage areas that can significantly minimize flooding downstream. Wetland restoration (CP23) re Under this alternative, the improvements shown in **Table 4-1** may increase over time, but would occur more slowly than if the CREP acreage were increased as proposed in Alternative 2.

The DECREP has been monitored through the Inland Bays Pollution Control Strategy Process. **Table 4-2** shows the practices by acreages that CREP has implemented to help reduce levels of nitrogen, phosphorous and sediment loads to date:

Table 4-2: Delaware CREP Practices by Acreage

Conservation Practice	Acres
CP21 Filter Strips	968
CP22 Riparian Buffer	125
CP23 Wetland Restoration	285
CP3A Hardwood Tree Planting	3,038
CP4D Permanent Wildlife Habitat	671
TOTAL	5,087

Source: USDA-Farm Service Agency. "Delaware's Conservation Reserve Enhancement Program, Annual Reports 2001-2005."

4.3.1.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

Alternative 2 involves enrolling up to 10,000 acres into the DECREP. Selection of this alternative would allow for an additional 4,848.8 acres to be enrolled into CREP and continuation of enhancements to the water quality of the Chesapeake Bay, Delaware Bay, and Inland Bays basin. Improvements through the introduction of CP23A-Wetland Restoration will also benefit the water quality of the area.

Other efforts beyond CREP, such as load reductions resulting from the removal of poultry manure, are also important to improving the water quality of this area. The primary problem with the region's water quality is that there are too many nutrients, a condition that causes excessive plant growth, especially algae. When the plants die, they settle to the bottom where they naturally decompose from bacteria. The bacteria uses dissolved oxygen from the Bay's bottom waters, and often removal of dissolved oxygen is substantially increased, resulting in mortality for many organisms.

The low-dissolved oxygen levels caused by excess nutrients are the primary reason large bottom sections of the Bay are unsuitable for bottom-dwelling organisms, such as shellfish. Reduction in the amount of fertilizers applied to agricultural crops and increased planting of trees are agricultural practices that could help improve these conditions.

4.3.1.3 Conclusion

Tables 4-1 and **4-2** show the improvements in the reduction of phosphorus, nitrates, and sediment loads that have occurred with CREP conservation practices. Alternative 1 has made good progress and if selected, this alternative would allow for an additional 848.4 acres to be enrolled into the program, which would provide additional benefits.

Alternative 2 would allow for an additional 4,848.4 acres to be enrolled in the program, nearly twice the acreage that is currently enrolled. From this perspective, it can be surmised that the benefits would double with enrollment of up to 10,000 acres in CREP.

4.3.2 Wetlands, Floodplains, and Coastal Zones

Based on scientific studies, the lack of protected riparian habitat has resulted in increased stream temperatures, accelerated soil erosion, induced loss of fish and wildlife habitat, and increased amounts of nutrients and chemicals running into Delaware's waterways. Small streams, which are often most critical in terms of living resources and downstream water quality, are also the most heavily impacted by farming operations and urbanization.

In agricultural areas, riparian systems can become degraded due to runoff from poultry litter and due to either runoff from livestock operations or livestock accessing streams and other waterways. CREP practices are consistent with Delaware's coastal zone agricultural policies would improve the water quality, return the land to a natural condition, improve air quality, and control runoff and fugitive dust.

On the Delmarva Peninsula, there are many former wetlands within agricultural fields that could be restored to seasonally ponded conditions to provide spring and fall migratory habitat for waterfowl and shorebirds. Although wetlands are often identified with habitat for ducks and geese, other avian species also rely on wetlands and their associated buffers to meet their habitat needs. The American woodcock, for example, is a member of the sandpiper family that utilizes early successional moist-soil habitats where shrubs, sapling trees, and open areas are interspersed. Throughout the range of the woodcock, population estimates have declined sharply at the rate of approximately 2 percent per year during the last 30 years.

To avoid adverse effects to wetlands and floodplains, all Federal agencies are required to comply with the requirements of E.O. 11988 addressing floodplain management and E. O. 11990, *Protection of Wetlands*. CREP only addresses prior converted cropland or farmed wetlands.

As a coastal State, Delaware is included in the Delaware National Estuarine Research Reserve (DNERR) system which is administered by the Delaware Coastal Programs. This program has cited specific concerns regarding the conservation and preservation of non-tidal freshwater wetlands in the State. This office has requested that CREP address isolated freshwater wetlands.

4.3.2.1 Alternative 1-No Action (Existing Conditions)

Under Alternative 1, nearly 320 acres of wetlands have been restored under CP23. If Alternative 1 is selected, the opportunities for restoring wetlands in agricultural fields, establishing riparian buffers along streams and improving floodplain habitat would be limited due to the ceiling (6,000 acres) established under this program. Further, this alternative also does not offer the benefit of enrolling wetland acres in CP23A, non-floodplain wetlands.

4.3.2.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

Alternative 2 would build upon the acreages established in the DECREP, and would focus on enrolling a total of 10,000 acres into CREP. To date, approximately 5,151 acres have been enrolled, of which about 320 acres of wetlands have been restored. Under Alternative 2, CREP has added CP23A, which will restore wetlands in non-floodplain areas, such as freshwater isolated wetlands in agriculture fields. Selection of Alternative 2 would be more consistent with the goals of the DNERR in protecting and enhancing freshwater wetlands with the implementation of CP23A than Alternative 1 which does not implement CP23.

4.3.2.3 Conclusion

Under Alternative 1, 285 acres of wetlands have been restores using CP23. Alternative 2 would include continue use of CP23 and would add a new wetland restoration practice, CP23A, which would allow landowners to restore wetlands in non-floodplain areas. These would include isolated freshwater wetlands.

Alternative 2 would also allow for up to 10,000 acres to be enrolled under CREP. This would enable a remaining 4,848.4 acres to be enrolled in the program, compared with only 848.4 acres for Alternative 1.

4.4 SOIL RESOURCES

Erosion can result in significant changes in surface soil properties affecting the sustainability of production. The organic composition of soil is not only important for good soil fertility, improved soil permeability, resistance to surface soil crusting and other factors related to crop production potential, but it is also important to the soil's ability to resist erosion.[44]

Studies have shown that soil quality has increased due to the retention of more topsoil on the land from the absence of tillage and cultivation activities. Much of this decline has occurred because of implementation and monitoring of BMPs and because Federal and State farm programs, such as CREP, have supported improved cultivation practices, erosion control, and flood control measures.

4.4.1 Alternative 1-No Action (Existing Conditions)

The existing DECREP Agreement does not target specific highly erodible soils or specific slopes. Delaware is primarily a very flat State and though erosion occurs on its agricultural lands, the existing agreement does not target specific soils or soil conditions. However, grass plantings such as CP21and tree plantings (CP3A and CP22) help stabilize soils and control erosion. Alternative 1 would allow for the continuation of CREP practices to occur and would provide for an additional 848.4 acres to be enrolled into DECREP.

[44] Veseth, Roger. Oregon State University, Conservation Tillage Handbook, Chapter 1. "Erosion Makes Soils More Erodible."

4.4.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

As with Alternative 1, the proposed DECREP agreement does not target specific soils or soil conditions. However, CREP practices are designed to stabilize soil, improve water quality, and enhance wildlife habitat. The following practices can be beneficial: CP3A, CP4D, CP21, and CP22. In addition, more land would be converted to conservation practices under this alternative. Alternative 2 allows for up to 10,000 acres to be enrolled into the program. Selection of Alternative 2 would provide for 4,848.4 acres to be enrolled in the program.

4.4.3 Conclusion

DECREP does not target highly erodible soils or slopes, as much of the State is very flat. However, planting of grasses and trees is beneficial to stabilizing soils and preventing erosion. Alternative 1 would allow for a remaining 848.4 acres to be converted to CREP land, whereas Alternative 2 would allow for an additional 4,848.4 acres to be converted to conservation plantings. For both alternatives, CP3A, CP4D, CP21 and CP22 would improve soil conditions.

4.5 AIR QUALITY

Section 176(c) of the Clean Air Act Amendments states, in part, that no Federal agency shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity that does not conform to a State Implementation Plan (SIP) after it has been approved. Any impacts to air quality in ozone attainment areas would be considered significant if pollutant emissions associated with a proposed action caused or contributed to a violation of any national, State or local ambient air quality standard; exposed sensitive receptors to substantially increase pollutant concentration; or exceeded any significance criteria established by the SIP.

Impacts to air quality in nonattainment areas would be considered significant if they net change in proposed pollutant emissions caused or contributed to a violation of any national, State or local ambient air quality standard; increased the frequency or severity of a violation of any ambient air quality standard; or delayed the attainment of any standard or other milestone contained in the SIP.[45]

EPA has developed a nationwide program that offers poultry producers protection from liability for past air-pollution offenses. In exchange for waiving the liability, farmers pay fines ranging from $200 to $100,000 and open themselves up to Federal permit review. None of Delaware's hundreds of broiler farms enrolled in this program.[46]

4.5.1 Alternative 1-No Action (Existing Conditions)

Particulates are emitted through fugitive dist and construction equipment. By retiring marginal cropland from production, enrollment of land into CREP would improve the air quality by reducing tillage and by reducing the time needed for farm equipment to operate. Alternative 1 involves the existing implementation of conservation practices, such as hardwood tree planting and grass filter strips, and establishing riparian areas. Long-term air quality benefits would occur as a result of planting trees and other vegetation through the implementation of approved conservation practices.

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[45] USDA, FSA. *Programmatic Environmental Assessment for Implementation of the Conservation Reserve Enhancement Program Agreement for Pennsylvania. p. 4-6.*

[46] Montgomery, Jeff, The News Journal. Aug. 26, 2006. "No Del. Poultry Farms Enrolled in Clean-Air Program."

4.5.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

By expanding the CREP area up to 10,000 acres and increasing enrollment in the program, less tillage and use of farm machinery would occur. In addition to improving water quality and reducing sediments and nutrients from entering waterways, planting trees and grasses would reduce the amount of exposed soils and would have long-term benefits on local air quality.

Under this alternative, approximately 4,849 acres of land would be eligible for enrollment into the program. This additional acreage would minimize dust and air emissions from crop machinery, and would contribute to improved air quality through plantings rather than plowings.

4.5.3 Conclusion

Implementation of CREP practices would help control and curtail fugitive dust emissions by planting grasses and trees. CREP would also help reduce off-road vehicle emission, particulate matter (PM) caused by agricultural machinery, and would minimize VOCs from fuel. The decrease in cultivation activities and the increase in plantings will improve the quality of the air in the region and will also contribute to the goals of the Chesapeake Bay Agreement. However, for both alternatives, short-term emissions and dust would be generated during tree plantings and establishment of certain CRP practices, such as CP9 where digging of shallow wildlife ponds would occur.

4.6 RECREATION

Restoring cropland to a natural condition invites a wide range of recreational activities from wildlife viewing and photography, to passive hiking and bicycle riding on rural roads, to hunting and fishing. As more people desire a rural and quiet country experience from their hectic lifestyles, and as more people are aging, many recreationalists are seeking the calm less populated areas of the State for more passive recreation.

4.6.1 Alternative 1-No Action (Existing Conditions)

Alternative 1 currently has 5,152.2 acres enrolled in CREP, with about 848.4 acres remaining in the 6,000-acre program.

4.6.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

Alternative 2 would allow for up to 10,000 acres throughout the State to be enrolled in CREP. Currently, there 5,151.2 acres enrolled in the program. Approximately 4,848.4 acres would be available for enrollment in the program.

4.6.3 Conclusion

Recreational opportunities, such as wildlife viewing and photography, and possibly hunting and fishing, may be available on some CREP land, depending on the activity and the landowners' permission. Conversion of cropland to a more natural condition would be compatible local parks, wildlife refuges, and historic sites. For many people who recreate in rural areas, part of the experience is the route to their destination.

Alternative 2 would allow up to 10,000 acres to be enrolled in the DECREP. This would be an additional 4,848.4 acres, compared with only 848.4 acres under Alternative 1, which would continue to allow up to a total of 6,000 acres in the program.

4.7. TRAFFIC AND TRANSPORTATION

4.7.1 Alternative 1- No Action (Existing Conditions)

Chapter 3, **section 3.7** presents a map showing the ground transportation network throughout the State of Delaware. **Figure 2-**1 in Chapter 2 shows the locations of the existing CREP contracts. As shown, they occur throughout the State, with minimal contracts in New Castle County or the far northern tip of the State where the transportation system is more complex. The existing CREP contracts are concentrated in Kent and Sussex Counties, west of U.S. Route 13 and south of Dover. The transportation systems are not expected to adversely impact CREP land.

Transportation corridors that extend through cropland fragment and severe fields, thus making it more difficult for farmers to plow and cultivate. CREP practices will help minimize dust, air pollutants, and slow runoff from impervious surfaces.

4.7.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

Alternative 2 proposes to expand the eligible CREP area from 6,000 acres to 10,000 acres throughout the State. As discussed in Alternative 1, eligible CREP land expands the State. As shown on **Figure 2-1**, the concentrations of the existing CREP contracts appear west of U.S. Route 13 in Kent and Sussex Counties, south of Dover. In New Castle County, the CREP land appears to concentrate between Middletown on the north and Smyrna to the south. Major transportation routes in this area include U.S. 13, U.S. 301 and State 896, U.S. 40, State 71, and U.S. Route 1. These transportation systems are not expected to adversely impact CREP land.

As stated in Alternative 1, transportation corridors that extend through cropland fragment and severe fields, thus making it more difficult for farmers to plow and cultivate. CREP practices will help minimize dust, air pollutants, and slow runoff from impervious surfaces.

4.8 HUMAN HEALTH AND SAFETY

Chapter 3 addresses some of the more significant health and safety issues, such as use of pesticides, and effects on water and air quality. Drinking water supplies and swimming are major health issues, as is the quality of air in the region. Other health issues relate to the use of pesticides and other chemicals.

4.8.1 Alternative 1-No Action (Existing Conditions)

For Alternative 1, **section 4.3.1** addresses the reduction in nitrogen, phosphorous, and sediments under Alternative 1, as a result of implementing CREP conservation practices. Without the need to apply pesticides and herbicides to crops, the release of these chemicals would be reduced. However, spraying for certain pests, such as gypsy moths and other blights and insects could continue. The human health benefits of retiring marginal cropland may be better measured as more land is enrolled into the program and these benefits can be measured more substantively.

4.8.2 Alternative 2- Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

No adverse effects to human health and safety would occur with the implementation of Alternative 2. In fact, as the area would be expanded from 6,000 acres to 10,000 acres, the benefits to the environmental conditions may be more accurately monitored and quantified. Improvements to the air quality, water quality, noise levels, and to the overall environment would be nearly twice the level of Alternative 1.

4.8.3 Conclusion

One of the goals of CREP is to reduce nonpoint source pollution from agricultural sources. These pollutants include sediments, nitrates, pesticides, and phosphorus, and fecal coliform caused by runoff from poultry litter and livestock operations. The benefits of expanding the CREP area in Delaware would be greater in terms of a reduction in emissions and improvements to surface and ground water quality.

4.9 SOCIOECONOMIC IMPACTS

4.9.1 Alternative 1-No Action (Existing Conditions)

As with most States, Delaware's farm numbers and land in farms have been declining, mainly due to land conversion. The costs of farming, along with the historically weak markets for the major crop and livestock products, raise the issue of the economic sustainability of commercial agriculture in Delaware.

At both the State and Federal levels, policies have recently been enacted and amplified in the 2002 Farm Bill, that are aimed at preserving land in farming, assisting farmers in environmental stewardship, and providing support for commodity producers to offset low prices. Recent farming trends have shown that land is disappearing from farming and farm operators are leaving the tradition and not being replaced because the economic benefits of farming are less than the rewards from nonagricultural professions.

Delaware's population is growing rapidly. The loss of farmland in the State is tied more to the dispersed pattern of residences and associated businesses through formerly rural areas of metro-area counties, i.e., suburban sprawl. Since 1980, the annual rate of decline of land in farms in the central metro counties has been 2.1 percent annually, while the rate of decline in the rest of the State is less than 1 percent annually.

The market value of agricultural products sold declined from $690,794 in 1997 to $618,853 in 2002. Crop production declined 24 percent during this time.

4.9.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

The information presented in Alternative 1 also applies to this alternative. The Federal commitments involve paying 50 percent of the eligible costs of CRP conservation practices. Reimbursements to the CREP participants from all sources must be consistent with the cost-share provisions as outlined in *Handbook 2-CRP, Rev. 4*.

FSA and CCC agree to make an annual incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise normally applicable to the land enrolled in CREP, based on the following practices and percentages:

> (1) 95 percent for land proposed for establishment as Riparian Buffers (CP22), Hardwood Tree Plantings (CP3A), Wetland Restoration (CP23) and Wetland Restoration Non-Floodplain (CP23A), provided that the total annual contract rental rate, does not exceed $150/acre. Should the base annual rental rate, plus the full 130 percent of the special Federal/State incentive payments exceed $150 per acre, then the Federal incentive shall be 73 percent of the difference between $150 less the base annual rental rate, and the State incentive payment shall be 27 percent of the difference.
>
> (2) 32 percent for land established as Shallow Water Areas for Wildlife (CP9), Grassed Filter Strips (CP21), and Permanent Wildlife Habitat (CP4D), provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, does not exceed $110 per acre. Should the base annual rental rate, plus the full 50 percent of the special Federal/State CREP incentive payments exceed $110 per acre, then Federal incentive shall be 64 percent of the difference between $110 and the base annual rental rate, and the State incentive payment shall be 36 percent of the difference.

Under Alternative 2, farmers would receive an annual incentive payment for enrolling their land under CP22-Riparian Buffers, CP3A-Hardwood Tree Planting, CP23-Wetland Restoration, and CP23A-Wetland Restoration, Non-Floodplain. For land established to CP9-Shallow Water Areas for Wildlife, CP21-Filter Strips, and CP4D-Permanent Wildlife Habitat, incentives would also be paid to landowners choosing these practices.

4.9.3 Conclusion

Farm policies set forth in the 2002 Farm Bill aim at preserving farmland, assisting farmers in environmental stewardship and providing support for commodity producers to offset lower farm prices. Recent farming trends have shown that land is disappearing from farming and being converted to development at a rapid rate. Farmers are leaving the tradition and are not being replaced because the economic benefits do not outweigh the cost. In other words, some farmers lose money farming.

In addition to the financial incentives discussed above, recreational and leisure activities on CREP land can also produce financial benefits to landowners. A national survey showed a conservative estimate for the hunting, fishing and wildlife-associated recreation in the project area is 1,537,000 participants; 17,550,000 work-days; and $1,541,294,000 in expenditures.[47]

4.10 ENVIRONMENTAL JUSTICE

Chapter 3, section 3.10 presents an overview of minority and women farm operators in Delaware. Prior to implementing a CREP contract, the Delaware Environmental Checklist (DE-CPA-052) is prepared. Item D of this checklist addresses whether potential impacts may occur to minority and low-income communities (see **Appendix H**).

Although CREP contracts provide compensation to farmers for enrolling certain land in CREP, FSA does not monitor whether these funds are being passed on to compensate tenant farmers for the loss of land. The county operating committee's are responsible for determining whether

[47] National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 1996.

landlord tenant provisions have been violated before approving CRP-1. The determination shall be made by reviewing the documentation submitted with the CRP-1 and researching the tenant history on the farm. When there is a dispute between a landlord and a tenant, and the county operating committee determines there is insufficient evidence to make a determination, the county committee shall not approve the CRP contract until the landlord and tenant resolve the dispute.

A tenant may sign a statement voluntarily relinquishing his/her interest in the farm or CRP benefits allowing the landlord to offer land for CRP that has a history of a tenant if COC determines that the landlord has the "necessary means" to conduct the farming operation. As of February 6, 2002, all CRP participants, landlords, and tenants are required to sign a copy of the CRP-1 indicating that they fully understand the provisions relating to Tenants and Landlords.[48]

4.10.1 Alternative 1-No Action (Existing Conditions)

CREP is a conservation voluntary program that pays landowners to convert marginal cropland to various natural conditions. There would be no disproportionate effect to communities of color or lower income levels under CREP.

4.10.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

As stated, CREP is a voluntary program. As such, there would be no disproportionate effect to communities of color or lower income levels under CREP.

4.10.3 Conclusion

As CREP is a voluntary conservation enrollment program open to all eligible landowners or operators, there would be no disproportionate impacts to any low-income or minority communities under either alternative.

4.11 OTHER PROTECTED RESOURCES

Sections 3.10.1 and 3.10.2 describe the reaches of the rivers in the National Wild and Scenic Rivers System and in the NRI, and the two National Wildlife Refuges in the State, as well as the Delaware National Estuarine Research Reserve (DNERR).

4.11.1 Alternative 1-No Action (Existing Conditions)

Currently there 5,151.2 acres under CREP contract in Delaware. This alternative would allow for up to 6,000 acres to be enrolled into the program. As a result, only 848.4 acres remain eligible for enrollment.

Figure 3-3 shows the locations of the reaches of the rivers within the National Wild and Scenic Rivers system. Two sections of White Clay Creek, a river recently included in the National Wild and Scenic River system are located in New Castle County. A segment of the Misipillion River, listed in the NRI, is located in Sussex County. There are no CREP lands in the vicinity of White Clay Creek, as most of the CREP lands in this county occur south of Middletown, with one exception. There would be no impacts or benefits to these resources from CREP lands under this alternative.

[48] USDA-FSA Memorandum, Subject: CRP Landlord and Tenant Provisions. February 6, 2002.

4.11.2 Alternative 2-Expanded and Enhanced Delaware CREP Agreement (Agency's Preferred Alternative)

Alternative 2 would allow for up to 10,000 acres to be enrolled in DECREP, which would provide for about 4,848.4 acres to be enrolled into the program. Most of the existing CREP lands are under contract in Kent and Sussex Counties with a few around the Delaware Bay. If CREP expands through the selection of this alternative, there may be opportunities for marginal cropland to be converted to a form of conservation practice that would benefit these resources.

4.11.3 Conclusion

Alternative 1 would allow for up to 6,000 acres to be enrolled into DECREP, which would provide for an additional 848.4 acres to be included in the program. Currently, there are no CREP lands in the vicinity of White Clay Creek, which is included in the National Wild and Scenic River system. There are a few CREP lands near the Misipillion River, listed in the NRI.

Selection of Alternative 2 would allow for an additional 4,848.4 acres to be enrolled in the DECREP, which is nearly double the amount currently enrolled. As the entire State of Delaware is eligible for enrollment in CREP, selection of this alternative would enable more landowners to enroll land located in the vicinity of these resources in the program, thus providing added benefits to water quality, air quality and habitat improvements.

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CHAPTER 5.0 CUMULATIVE EFFECTS

Cumulative impacts are defined by CEQ in §1508.7 as the incremental effect of the proposed action when added to other past, present and reasonably foreseeable future actions regardless of who or what agency undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions that occur over time.

Since the program's inception in 1997, CCC, FSA, and Congress have responded to farmers' needs and have made programmatic adjustments to CRP, as well as to CREP. Some of these adjustments include:

- New cropping history requirements that cropland must be planted or considered planted four of the six crop years (1996-2001).
- Emphasis on increasing enhancement of riparian habitat from 70,000 acres to 93,000 acres; and for providing habitat for declining species.
- Targeted land to be enrolled increased from 70,000 acres to 77,000 acres for land adjacent to streams, wetlands or other waterbodies; targets for HEL decreased to 16,000 acres from 20,000 acres.
- For cropland, for a field or a portion of a field, if the weighted average EI for the three predominant soils of the new land of the acreage offered is ≥8, the land is eligible to be offered for CREP; i.e., the EI increased from ≥8 to ≥16.
- 2,000 acres was specified for habitat for declining species.
- Incentive payments were added for land enrolled for riparian buffers, wetland restoration, shallow-water areas for wildlife, HEL and for habitat for declining species.

Current literature states that the implementation of CPs will in general have a positive effect on the removal of sediment and nutrients. However the magnitude of this effect will vary depending upon local conditions and programs. Most research centers on field-level impacts though it is recognized that there is a paucity of data that quantify the change in pollution levels in streams and lakes resulting from the installation of conservation practices.[49]

Loss of undisturbed, herbaceous cover in agricultural areas across the country has resulted in declining populations of grassland bird species. Peterson and Best (1996) found mean bird abundance to be four times greater on CRP fields than on row-crop fields and that 20 of the 22 most common bird species were more abundant on CRP fields than on row-crop fields. Researchers are concluding that programs such as CRP and CREP greatly contribute to the resurgence of several species whose declines have been attributable to the conversion of grassland to cropland.[50]

Habitat loss and fragmentation have been, and continue to be, significant detriments to upland game birds and other declining species. Quail is an early-successional species, which mean that they inhabit areas that have recently been disturbed. Fallowed fields, brushy fencerows, and recently cleared forests are examples of early-successional habitats. Throughout the mid-1900s, this habitat type was abundant. However, due to cultivation practices and tillage, suburban development, and loss of old forests, habitat suitable for these species declined significantly.

[49] Dosskey, M.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. *Environmental Management* 28(5): pp. 577-598.
[50] USDA and Illinois DNR. *2001 Annual Report Illinois Conservation Reserve Enhancement Program (CREP)*, pp. 55-57.

The decline of game species, such as quail, has been accompanied by the decline of an entire community of grassland and early successional wildlife species with similar habitat requirements, including grasshopper sparrows, savannah sparrows, vesper sparrows, field sparrows, indigo buntings, American goldfinch, prairie warblers, eastern meadowlarks, short-eared owls, meadow voles, and a wide variety of butterflies and other insects. These species rely on herbaceous cover for nesting, food and brood-rearing habitat.

For wildlife habitat and buffers to be productive and effective, contiguous areas or long and wide corridors need to be established. It is recommended that targeted species and acreages be developed. Consideration of these species and their targeted acreages should be discussed with FWS, DNREC, NRCS, and other wildlife experts in the State to target contiguous areas for CREP wildlife practices and to understand and identify their purposes. Specific habitat requirements to accommodate these species vary and need to be carefully considered in the future for benefits to be realized.

General riparian buffer performance characteristics for surface flow include the following:

1. Buffers retain 40-100 percent of sediment that enters from cultivated fields.
2. Sediment attached pollutants are reduced to a lesser degree than sediment.
3. Dissolved pollutants mass and concentrations are reduced in quantity similar to that or less than that of water volume.
4. There are some situations where pollutant mass and concentrations increase as a result of large runoff flows remobilizing previously captured material.

Future activities to control nitrate in streams in highly modified systems will need to rely more upon practices such as constructed wetlands and infield practices that lower nitrogen application rates. Large-scale assessments of the needs for riparian buffers and wetlands in response to the hypoxic zone in the Gulf of Mexico suggest that the need for these conservation practices will be substantial.[51]

The cumulative effects of the DECREP involve the interest and the ability of Delaware farmers to voluntarily enroll certain environmentally sensitive land into an agricultural conservation program for the purpose of reducing runoff and sedimentation and to ultimately improve the water quality of the Chesapeake Bay, Delaware Bay, and Inland Bays basin.

Alternative 1, though successful, would limit the full enrollment to only 6,000 acres. Therefore, under this alternative only about 848.8 acres are remaining to be enrolled into the program. Selection of Alternative 2 would allow for the continuation of the program and enrollment of up to 10,000 total acres, including those enrollments established under Alternative 1. Selection of this alternative would allow for about 4,848.8 acres to be enrolled into the program. Though CREP contracts are established with participants for 10- to 15-year periods, permanent protection is essentially the only way of guaranteeing that these lands will not be developed.

As presented at the *2002 National CREP Forum*, monitoring is critical to CREP to document successes and continually improve. Each State ideally should have a comprehensive monitoring plan matched to its program goals and objectives.[52] A monitoring plan for Delaware is recommended to determine the benefits and potential consequences of CREP.

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[51] Mitsch, W.J., et al. 2001. Reducing nitrogen loading to the Gulf of Mexico from the Mississippi River basin: strategies to counter a persistent ecological problem. *BioScience* 51(5), pp. 373-388.

[52] CREP States Monitoring. Moderated by Andrea Moore, ILDNR. Panel at the *National CREP Forum 2002.*

Potential adverse effects relate to unforeseen programmatic changes that could occur in CREP due to termination of the program. At any time, Congress could eliminate support for the program, and reliance to the State and local governments and nonprofit conservation programs would shift. As the coastal states continue to attract people to the area and pressures continue to be placed on State and local communities to provide infrastructure and public services, land sales by farmers to developers will most likely increase. Such sales would result conversion of farmland to subdivisions and therefore would result in larger areas of fragmented habitat, incompatible development in or adjacent to floodplains and riparian areas, and increases in sedimentation and runoff.

FSA will develop detailed procedures for implementing CREP, which will be incorporated into *Handbook 2-CRP, Rev. 4*. The partners involved in CREP will develop and implement a comprehensive communications plan that will include an evaluation of all State CREPs.

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CHAPTER 6.0 MITIGATION MEASURES

6.1 ROLES AND RESPONSIBILITIES

6.1.1 USDA-FARM SERVICE AGENCY

FSA administers CREP and coordinates with the SIP to minimize potential impacts to natural resources on a site-specific basis that could arise from implementation of CPs by contract.

6.1.2 NATURAL RESOURCES CONSERVATION SERVICE

NRCS assists producers and land owners by providing technical assistance in planning and implementing CPs and developing conservation plans. NRCS provides assistance in completing site-specific environmental reviews.

6.1.3 U.S. FISH AND WILDLIFE SERVICE

FWS is responsible for the administration of the Endangered Species Act. Section 7 of this Act requires all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with FWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. FWS works with landowners to help them conserve endangered species on their lands, including providing financial grants and other assistance.

6.1.4 STATE HISTORIC PRESERVATION OFFICE

The Delaware Division of Historical and Cultural Affairs, Delaware Department of State, (SHPO) preserves Delaware's historical heritage through identifying, studying, and recording the State's historic buildings, structures, objects, districts, landscapes, and archaeological sites. The SHPO consults with Federal agencies to ensure that their actions are in compliance with Section 106 of the National Historic Preservation Act.

6.1.5 DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL COMPLIANCE (DNREC) DELAWARE COASTAL PROGRAMS

The mission of the Delaware Coastal Program is to "Preserve, protect, develop and where possible restore and enhance the resources of Delaware's coastal zone by effective administration of the Coastal Management Program and National Estuarine Research Reserve (DNERR)".

6.2 MITIGATION

Appropriate mitigation measure will be determined on a site-specific, contract-specific basis with technical assistance from FWS and NRCS. Avoiding or minimizing the potential impacts to natural resource values that could occur from the implementation of CPs is a key component to the success of CREP. Before a CP can be implemented, a site-specific environmental review is conducted onsite as a condition of approving a CREP contract. As part of this environmental review process, consultation with appropriate regulatory agencies concerning installation of CPs would be conducted to avoid or minimize the potential risk to critical resources identified in this PEA.

Consultation with DNREC, NRCS, and FWS would be conducted to determine the presence or potential presence of federally and State-protected plant and animal species, as well as the occurrence of any critical habitat that supports these species, if indicated during the site-specific environmental review process.

Consultation with the Delaware Division of Historical and Cultural Affairs (SHPO) would be conducted prior to determining whether ground disturbance would potentially impact any known historic properties listed in or eligible for inclusion in the National Register of Historic Places. Such consultation will be included as part of the landowner's conservation plan and environmental review. If during ground disturbance activities any cultural resources are discovered, such activities will be immediately halted and the SHPO consulted.

FSA will consult with DNREC on a case-by-case basis should additional stipulations be required on CPs proposed in coastal zones. The implementation of CP23, proposed for the Agency's Preferred Alternative, would restore the functions and values of wetland ecosystems that have been devoted to agricultural use. The level of restoration of the wetland ecosystem shall be determined by the producer in consultation with NRCS.

The following are proposed mitigation measures that can be implemented, as needed, if indicated during the site-specific environmental review process:

- Spatial and/or temporal boundaries during CP implementation around sensitive breeding or foraging areas;
- Minimize human disturbance during breeding seasons and during the occurrence of rare and protected species;
- Periodic or rotational harvesting of riparian vegetation during CP implementation;
- Installation of silt fencing to minimize sedimentation and runoff into surface waters;
- Timely and effective reseeding or re-vegetation after flooding;
- Strict enforcement of proper use of herbicides, pesticides, fertilizers in CP implementation;
- Installation of tree shelters, netting, plastic tubing, or other animal damage control measures;
- Placement of temporary supplemental irrigation systems or plastic mulch, unless natural regeneration is selected by producer;
- Rock-filled infiltration trenches to induce subsurface flow;
- Control of noxious weeds and invasive plant species, insects, and pests, including maintenance to avoid an adverse impact on surrounding lands;
- Preparation of an approved tree planting plan in consultation with the State Forester;
- Preparation of an approved conservation plan prior to installing CPs;
- Preparation of a wildlife conservation plan must be developed in consultation with FWS;
- Chemicals used must be registered and approved and applied according to authorized registered uses;
- Plantings must be protected from destructive fire and browsing wildlife;
- Permanent habitat must serve as buffers to protect shallow water areas;
- Erosion and runoff will be controlled and drain tiles may be broken to restore natural water flow;
- Water source will be provided for livestock away from filter strips and adjacent streams or water bodies and fencing may be needed to prevent livestock from accessing riparian buffer; and
- Infeasible-to-farm provisions may be applied to riparian buffers on cropland and riparian buffer shall begin at the top of a stream bank

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Richard L. Bergold, Delaware State Executive Director	USDA-Farm Service Agency	Overall management of DE FSA program activities
Cheryl Z. Butler, Program Manager	USDA-Farm Service Agency	CREP policies, NEPA compliance and agency review
Charles (Chad) Chadwell, National CREP Program Manager	USDA-Farm Service Agency	CREP policies
Norma Collins, Delaware State Environmental Coordinator	USDA- Delaware Farm Service Agency	Statistical data; agency coordination; document review
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Paul Petrichenko, Assistant for Programs	USDA-Natural Resources Conservation Service	Natural resources, technical assistance, NRCS maps
Kathleen Schamel, Federal Preservation Officer	USDA-Farm Service Agency	Sec. 106 compliance; cultural resources; historic preservation; document review
Robin Talley, Program Specialist/District Director	USDA-Delaware Farm Service Agency	CREP policies; document review
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Mark Hogan, Planner	DNREC, Division of Soil &Water Conservation	CREP watershed information, Agriculture BMP calculations
Lyle Jones, Environmental Program Manager	DNREC, Division of Water Resources	Land use change rates
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Timothy Slavin, State Historic Preservation Officer	Delaware Historical and Cultural Affairs	Historical and cultural resource compliance
Consultant		
Eileen M. Carlton, Principal Environmental Planner	Environmental Management Collaboration, Ltd.	NEPA compliance, legislative & regulatory mandates; document preparation

CHAPTER 9.0 AGENCIES AND PERSONS CONTACTED

Throughout the planning process for the DECREP PEA, a number of agencies were consulted. The following agencies were contacted either for specific compliance requirements or for technical information used in this report. **Table 8-1** at the end of this chapter is a listing of all agencies and persons contacted during scoping and during the announcement of the availability of the PEA. **Appendix D** is a compendium of correspondence received from agencies regarding this program to date.

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Table 8-1: Agencies and Persons Contacted during the Delaware CREP PEA Scoping Process

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Terry	Pepper		DE Assoc. of Conservation Districts	104 Captain Davis Drive	Camden-Wyoming	DE	19934
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Rick	Duncan		Delaware Rural Water Association	210 Vickers Road	Milford	DE	19963
Jim	Butch	Environmental Scientist	U.S. Environmental Protection Agency	1650 Arch Street	Philadelphia	PA	19103-2029
Fred	Suffian	Nonpoint Source Pollution	U.S. Environmental Protection Agency	1650 Arch Street	Philadelphia	PA	19103-2029
Kimberly	Cole	Environmental Scientist	Div of Soil & Water Conservation DNREC Delaware Coastal Programs	89 Kings Highway	Dover	DE	19901
Arthur O.	Tucker		Department of Agriculture & Natural Resources Delaware State University	1200 N. DuPont Hwy.	Dover	DE	19901-2277

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
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Robert	Baker	President	Delaware Farm Bureau	233 S. DuPont Highway	Camden	DE	19934
Wallace	Caulk		Farm Bureau	3457 S. DuPont Highway	Camden	DE	19934
Robert F.	Garey		Farm Bureau	4191 Hopkins Cemetery Road	Felton	DE	19943
Michael T.	Scuse	Secretary	Delaware Dept. of Agriculture	2320 South DuPont Highway	Dover	DE	19901
Richard A.	Hassel		U.S Army Corps of Engineers Attn: CENAP-OR-R	100 Penn Square East	Philadelphia	PA	19107-3390
Kevin	Faust		U.S Army Corps of Engineers	1203 College Park Drive	Dover	DE	19904-8713
J. Thomas	Sims	Assoc. Dean for Academic Programs and Research	University of Delaware College of Agriculture & Natural Resources	113 Townsend Hall	Newark	DE	19716-2103
Dave	Hansen	Research & Education Center	University of Delaware	16684 County Seat Highway	Georgetown	DE	19947-9575

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Robert	Naczi	Claude E. Phillips Herbarium	Delaware State University Dept of Agriculture & Natural Resources	1200 N. DuPont Highway	Dover	DE	19901-2277
Carla P.	Short	Chairperson	DE FSA State Committee	26342 Big Mill Road	Georgetown	DE	19947-9608
Katherine	Bunting-Howarth		Watershed Assessment Section, DNREC	820 Silver Lake Blvd., Suite 220	Dover	DE	19904
John	Filasky	DE FSA State Committee Member		1343 Bunker Hill Road	Middletown	DE	19707
Saxton C.	Lambertson	DE FSA State Committee Member		2353 Central Church Road	Dover	DE	19904-1222
Andrew R.	McCown	President	Chester River Association c/o Associate Dir., Echo Hill Outdoor School	13655 Bloomingneck Road	Worton	MD	21678
David J.	Mayonado		Monsanto	6075 Westbrooke Drive	Salisbury	MD	21801
Bill	Angstadt	Executive Secretary	Delaware Maryland Agribusiness Assn.	P.O. Box 377	Reading	PA	19607

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Paul E.	Sample	Technical Coordinator	Technical Advisory Office, Div of Research State of Delaware Legislative Council	308 Walden Road	Wilmington	DE	19803
Mark	Fuchs		Sothern States Cooperative, Inc.	24790 Holsinger Lane	Ridgely	MD	21660
Timothy	Riley	District Coordinator	Kent Conservation District	800 Bay Road, Suite 2	Dover	DE	19901
Bruce	Jones	Environmental Program Administrator	DNREC, Div of Soil & Water Conservation	408 N. DuPont Highway, Suite A	Georgetown	DE	19947
John F.	Bister	Environmental Program Manager	DNREC, Div of Soil & Water Conservation	408 N. DuPont Highway, Suite A	Georgetown	DE	19947
Lisa M.	Gaps		Delaware Rural Water Association	210 Vickers Drive	Milford	DE	19963
Thomas G.	Barthelmeh	Environmental Program Manager	DNREC, Div. of Soil & Water Conservation	89 Kings Highway	Dover	DE	19901
Susan E.	Yost	Claude E. Phillips Herbarium	Delaware State University Dept of Agriculture & Natural Resources	1200 N. DuPont Highway	Dover	DE	19901-2277

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
John	Barndt	Water Supply	DNREC	89 Kings Highway	Dover	DE	19901
Michael	Brown	Program Administrator, District Operations	DNREC, Div. of Soil & Water Conservation	89 Kings Highway	Dover	DE	19901
Laura	Herr	Division of Water Resources	DNREC (Wetlands)	89 Kings Highway	Dover	DE	19901
Timothy	Kaden	Land Preservation Specialist	DNREC, Div. of Parks & Recreation	89 Kings Highway	Dover	DE	19901
John	Schneider	Watershed Assessment Section	DNREC	820 Silver Lake Blvd., Suite 220	Dover	DE	19904-2464
Robert	Palmer	NPS Program Manager	DNREC, Div of Soil & Water Conservation	89 Kings Highway	Dover	DE	19901
John	Graham		The Nature Conservancy	100 West 10th Street, Suite 1107	Wilmington	DE	19801
Kenneth S.	Clark, Sr.		Nanticoke Indian Association	Route 4, Box 107A	Millsboro	DE	19966
Agnes	White	Water Protection (WP11)	Environmental Protection Agency	1650 Arch Street	Philadelphia	PA	19103-2029

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Al	Rizzo		USDA, Fish & Wildlife Service, Chesapeake Bay Field Office	177 Admiral Cochrane Dr	Annapolis	MD	21401-7307
Nathan R.	Hudson	CCA	Hudson Consulting	14617 Arvey Road	Laurel	DE	19956
Greg	Moore		Delaware Fish & Wildlife	89 Kings Highway	Dover	DE	19901
Bill	Whitman		Delaware Fish & Wildlife	89 Kings Highway	Dover	DE	19901
Patrick J.	Emory	Director	DNREC, DE Div of Fish & Wildlife	89 Kings Highway	Dover	DE	19901
Edward	Christoffers	Project Leader	Delaware Bay Estuary Project	2610 Whitehall Neck Road	Smyrna	DE	19977
Samuel H.	Dyke	President, Delaware Forestry Assn.	Glatfelter Pulpwood Co.	P.O. Box 1971	Salisbury	MD	21802-1971
Austin	Short	State Forester	Delaware Forest Service, Delaware Dept of Agriculture	2320 S. Dupont Highway	Dover	DE	19901
Karen	Sykes	NE Area State & Private Forestry	USDA, Forest Service	180 Canfield Street	Morgantown	WV	26505

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Douglas E.	Rambo	Hydrologist	DNREC, Div. of Water Resources, Water Supply Section	89 Kings Highway	Dover	DE	19901
John H.	Talley	Associate Director	Delaware Geological Society	University of Delaware DGS Building	Newark	DE	19716-7501
A. Scott	Andres	Scientist	Delaware Geological Society	University of Delaware DGS Building	Newark	DE	19716-7501
Judith M.	Denver	Hydrologist	US Geological Survey	1289 McD Drive	Dover	DE	19901
Bill	Rohrer		Delaware Dept of Agriculture	2320 S. DuPont Highway	Dover	DE	19901
Joan N.	Larivee	State Historic Preservation Officer	DE State Historic Preservation Office	15 The Green	Dover	DE	19904
Timothy A.	Slavin	State Historic Preservation Officer	Delaware Division of Historical and Cultural Affairs, Delaware Dept of State	21 The Green, Suite B	Dover	DE	19901
James C.	McCulley	Member, Board of Directors	Home Builders Assn of Delaware	100 Lake Drive, #3	Newark	DE	19702-3340

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Eric	Buehl	Executive Director	Center for Inland Bays	467 Highway One	Lewes	DE	19958
Dyrmple B.	Marsh, PhD	College of Agriculture & Related Sciences	Delaware State University	1200 N. Dupont Hwy.	Dover	DE	19901-2277
Patricia	Todd		League of Women Voters	1221 Evergreen Road	Wilmington	DE	19803
Eileen	Butler	Manager, Conservation & Preservation	Delaware Nature Society	P.O. Box 700	Hockessin	DE	19707
Bill	Satterfield	Executive Director	Delmarva Poultry Industry, Inc.	16686 County Seat Highway	Georgetown	DE	19947-4881
Carla P.	Solberg		Sierra Club	P.O. Box 1908	Dover	DE	19903-1908
Ed	Hallock		Delaware State Div Public Health	P.O. Box 637	Dover	DE	19903
Kenneth	Bell	Dean	School of Ag & Natural Resources, Delaware State University	1200 N. DuPont Highway	Dover	DE	19901
Holger H.	Harvey	Executive Director	Delaware Wildlands, Inc.	315 Main Street, P.O. Box 505	Odessa	DE	19730

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Peter	Martin		Delaware Wildlands, Inc.	315 Main Street, P.O. Box 505	Odessa	DE	19730
Mark	Davis	Executive Assistant	Delaware Dept of Agriculture	2320 S. DuPont Highway	Dover	DE	19901
Kevin	Donnelly	Director	DNREC, Div of Water Resources	89 Kings Highway	Dover	DE	19901
John	Wolflin	Field Supervisor	U.S. Fish & Wildlife Service, Chesapeake Bay Field Office	177 Admiral Cochrane Dr.	Annapolis	MD	21401-7307
Dan	Kugler	Deputy Administrator	USDA, CSREES, Natural Resources & Environment	1400 Independence Ave., SW, MS 2210	Washington	DC	20250-2210
Kathleen	Schamel	Federal Preservation Officer	USDA, Farm Service Agency, Conservation and Environmental Programs Division	1400 Independence Ave., SW, MS 0513	Washington	DC	20250-2210
James	Fortner	Environmental Compliance Manager	USDA, Farm Service Agency, Conservation and Environmental Programs Division	1400 Independence Ave., SW, MS 0513	Washington	DC	20250-2210

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Cheryl	Butler	Program Manager	USDA, Farm Service Agency, Conservation and Environmental Programs Division	1400 Independence Ave., SW, MS 0513	Washington	DC	20250-2210
Kevin	Schmidt	Regional Director	American Farmland Trust, Mid-Atlantic Region	1200 18th St., NW, Suite 800	Washington	DC	20036
Jerry	Griswold	Chesapeake Bay Program Coordinator	USDA-NRCS Chesapeake Bay Program	410 Severn Ave., Suite 109	Annapolis	MD	21403
Russell	Mader	Nutrient Subcommittee Coordinator	USDA-NRCS, Chesapeake Bay Program	410 Severn Ave., Suite 109	Annapolis	MD	21403
Carin	Bisland		USEPA, Chesapeake Bay Program	410 Severn Ave., Suite 109	Annapolis	MD	21403
Lee	Epstein	Land Conservation	Chesapeake Bay Foundation	6 Herndon Ave.	Annapolis	MD	21403
David	O'Neill	Executive Director	Chesapeake Bay Trust	60 West St., Suite 200-A	Annapolis	MD	21401
Ann	Swanson	Executive Director	Chesapeake Bay Commission	60 West St., Suite 200	Annapolis	MD	21401

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Chris	Conner	Alliance for the Chesapeake Bay	Chesapeake Bay Program	410 Severn Ave.	Annapolis	MD	21403
David J.	Bancroft	Executive Director	Alliance for the Chesapeake Bay	6600 York Road, Suite 100	Baltimore	MD	21212
Roy P.	Dyson	Senate Chair	Joint Committee on the Chesapeake & Atlantic Coastal Bays Critical Area				
		Director	Agribusiness Assn.	11523 Lynch Rd.	Worton	MD	21678
		Director	Mid-Atlantic Soybean Assn.	9530 Spring Hill Lane	Salisbury	MD	21801
		Director	The Conservation Fund	5807 Kennett Pike	Centreville	DE	19807
		Director	The Nature Conservancy	100 W 10th St., Suite 107	Wilmington	DE	19801
Judy	Noritake		Wilderness Society	1615 M Street	Washington	DC	20036
Randy	Schneider		NOAA, Chesapeake Bay Progam	410 Severn Ave., Suite 109	Annapolis	MD	21403

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Ralph	Reed	Delaware Dept of Transportation	Planning Division	P.O. Box 778	Dover	DE	19903
		Sussex County	Planning & Zoning Commission	#2 The Circle, P.O. Box 589	Georgetown	DE	19947
		Sussex County	Community Development & Housing	P.O. Box 589	Georgetown	DE	19947
Ulder J.	Tillman	Director Division of Public Health	Delaware Health & Social Services	P.O. Box 637	Dover	DE	19903
Robert	Stickels	Sussex County Administrator		#2 The Circle, P.O. Box 589	Georgetown	DE	19947
Jon	Hall	State Conservationist	NRCS	1221 College Park Drive, Suite 100	Dover	DE	19904
		DNREC	Division of Water Resources	89 Kings Highway	Dover	DE	19901
Thomas	Baker	Director of Public Works	Sussex Co. Admin Bldg - 3rd Floor	#2 The Circle, P.O. Box 589	Georgetown	DE	19947
		U.S. Environmental Protection Agency	USEPA Region III	1650 Arch Street	Philadelphia	PA	19103-2029

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
		DNREC	Division of Air/Waste Management	89 Kings Highway	Dover	DE	19901
Duane	Fox	Delaware Fire Marshall		22705 Park Avenue	Georgetown	DE	19947
Kevin	McSweeney	Delaware Fire Marshall		1537 Chestnut Grove Road	Dover	DE	19904
John	Rossiter	Delaware Fire Marshall		2307 MacArthur Road	New Castle	DE	19720
Robert	McLeod	Kent County Administrator	Kent County Administrative Complex	555 Bay Road	Dover	DE	19904
		Kent County Planning & Zoning	Kent County Administrative Complex	555 Bay Road	Dover	DE	19901
Hans	Medlarz	Director of Public Works	Kent County Administrative Complex	555 Bay Road	Dover	DE	19901
		Kent County Community Development & Housing	Kent County Administrative Complex	555 Bay Road	Dover	DE	19901
Timothy	Garrahan		NRCS	21315 Berlin Road, Unit 3	Georgetown	DE	19947

First	Last	Title	Agency/ Organization	Address	City	State	Zip Code
Debbie	Absher		Sussex Conservation District	21315 Berlin Road, Unit 2	Georgetown	DE	19947
Susan	Love	Resource Planner	DNREC, Division of Soil & Water Conservation Delaware Coastal Programs	89 Kings Hwy	Dover	DE	19901
Thomas	Wiltbank		NRCS	800 Bay Road Suite 2	Dover	DE	19901
Timothy	Riley		Kent County Conservation District	800 Bay Road Suite 2	Dover	DE	19901

Source: USDA, Delaware Farm Service Agency, April 2005.

APPENDICES

APPENDIX A

DELAWARE CREP AGREEMENTS AND AMENDMENT NO. 1 BETWEEN THE U.S. DEPARTMENT OF AGRICULTURE COMMODITY CREDIT CORPORATION AND THE STATE OF DELAWARE

HOUSE BILL 750

AMENDMENT #1
TO THE AGREEMENT
BETWEEN THE U.S. DEPARTMENT OF AGRICULTURE
COMMODITY CREDIT CORPORATION
AND
THE STATE OF DELAWARE

I. PURPOSE

The purpose of this amendment to the Memorandum of Agreement (Agreement) signed on December 18, 2002, between the U.S. Department of Agriculture, the Commodity Credit Corporation, and the State of Delaware is to add two CRP practices as eligible, allow larger enrollments per tract for one practice, expand the areas eligible, and increase the overall acreage goal from 6,000 acres to 10,000 acres.

II. AMENDMENT

IV. PROGRAM ELEMENTS, A., is amended to change enrollment goals from 6,000 acres to 10,000 acres, add as eligible cropland adjacent to category II streams, and provide for enrollments of practice CP9 within the CREP area to read:

A. The DECREP will consist of a special continuous sign-up CRP component and a State of Delaware incentive program. The DECREP will seek to enroll up to 10,000 acres in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas adjoining drainage ditches, streams and other waterbodies identified as Category I & II impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (October 1, 1998), or areas adjoining drainage ditches contributing to Category I & II impaired segments in the Chesapeake Bay, Delaware Bay, and Inland Bays basin areas, except that practice CP9, Shallow Water Areas for Wildlife are eligible within the CREP area and do not have to adjoin drainage ditches, streams or other waterbodies.

IV. PROGRAM ELEMENTS, B. (2) is amended to change enrollments allowed of practice CP4D from 5 acres to 10 acres per tract or from 5 percent to 10 percent of a tract, whichever is greater and allow the county committee to approve larger enrollments on a case-by-case basis and (3) and (7) are amended to add practices CP9 and CP23A as eligible CREP practices to read:

B. The eligible CRP practices for enrollment under CREP are:

(2) CP4D - Permanent Wildlife Habitat - provided that practice acres for an individual contract will be limited to 10 acres per tract or 10 percent of a tract, whichever is greater. Exception: Enrollment of additional acreage under CP4D may be approved by the FSA County Committee on case-by-case basis.
(3) CP9 – Shallow Water Areas for Wildlife. Acres enrolled under practice CP9 may not exceed 20 acres per tract. More than one CRP-1per tract may be approved under this agreement for acres devoted to CP9 provided not to exceed 20 acres per tract enrolled.
(7) CP23A – Wetland Restoration, Non-Floodplain

V. FEDERAL COMMITMENTS, D is amended to add practice CP23A, Wetland Restoration, Non-Floodplain and practice CP9, Shallow Water Areas for Wildlife as eligible for incentive payments to read:

D. Make an annual incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise normally applicable to the land enrolled in the CREP, as calculated under paragraph V. C., in the following amounts:

(1) for land to be established to practices CP22, Riparian Buffers, CP3A, Hardwood Tree Planting, CP23, Wetland Restoration and CP23A, Wetland Restoration, Non-Floodplain: 95 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130% of the special federal/State incentive payments exceed $150 per acre, then the federal incentive shall be 73% of the difference between $150 less the base annual rental rate, and the State incentive payment shall be 27% of the difference.

(2) for land established to practices CP9, Shallow Water Areas for Wildlife, CP21, Grassed Filter Strips and CP4D, Permanent Wildlife Habitat: 32 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50% of special federal/State CREP incentive payments exceed $110 per acre, then federal incentive shall be 64% of the difference between $110 and the base annual rental rate, and the State incentive payment shall be 36% of the difference.

VI. STATE COMMITMENTS, B. (2) (a) and (b) are amended to add practice CP23A and practice CP9 as eligible for State incentive payments to read:

a) for land established to practices CP3A, Hardwood Tree Planting, CP22, Riparian Buffers, CP23, Wetland Restoration and CP23A, Wetland Restoration, Non-Floodplain: 35 percent provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130% of special federal/State CREP incentive payments provided for in this agreement exceed $150 per acre, then the federal incentive shall be 73% of the difference of $150 less the base annual rental rate, and the State incentive payment shall be 27% of the difference;

b) for land established to practices CP9, Shallow Water Areas for Wildlife, CP21, Grassed Filter Strips and CP4D, Permanent Wildlife Habitat: 18 percent provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50% of special federal/State CREP incentive payments exceed $110 per acre, the federal incentive shall be 64% of the difference between $110 the base annual rental rate, and the State incentive payment shall be 36% of the difference;

IT IS SO AGREED:

FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE AND THE

COMMODITY CREDIT CORPORATION

BY: _____ DATE: _____

John A. Johnson
Deputy Administrator for Farm Programs
U.S. Department of Agriculture
Chairman of the Board
Commodity Credit Corporation

FOR THE STATE OF DELAWARE

BY: _____ DATE: _____

John H. Hughes
Secretary,
Delaware Department of Natural Resources and Environmental Control

DEC-19-02

AGREEMENT
BETWEEN
THE U.S. DEPARTMENT OF AGRICULTURE
COMMODITY CREDIT CORPORATION

AND

THE STATE OF DELAWARE

FOR IMPLEMENTATION OF
THE CONSERVATION RESERVE ENHANCEMENT PROGRAM
(Revised September, 2002)

I. PURPOSE

This Agreement is between the Commodity Credit Corporation (CCC) of the United States Department of', Agriculture (USDA) and the State of Delaware (State) to implement a Conservation Reserve Enhancement Program (CREP) In connection with the federal Conservation Reserve Program (CRP). The primary objective of this CREP is enhancement of water quality through reduction of agricultural nutrients to further the goal of restoring designated uses of Delaware's waterbodies. The secondary goal of this CREP is enhancement of wildlife habitats.

II. GENERAL PROVISIONS

The intended outcome is to allow, when deemed appropriate by USDA, CCC, and Delaware, certain acreage to be enrolled under the CREP. The waters of Delaware drain into the Chesapeake Bay, Delaware Bay, and the Delaware Inland Bays - all of which are National Estuaries. Delaware is within an area of special environmental sensitivity that is designated a CRP national conservation priority area. This designation makes all cropland eligible to be offered if all other eligibility requirements are met.

USDA, CCC, and the State of Delaware in cooperation with other Federal, State, and local authorities, seek to take actions that will help reduce the occurrence of sediment and nutrient runoff which contribute to excessive nutrient enrichment of the Chesapeake, Delaware and Inland Bays, as well as promote enhanced wildlife habitats. This agreement is not intended to supersede any rules or regulations, which have been, or may be promulgated by either USDA or CCC, This agreement is intended to facilitate existing authorities through a cooperative effort of USDA, CCC, and Delaware,

It is the intent of USDA, CCC and the State of Delaware that this CREP will address the following objectives:

A. Facilitate nutrient and sediment reduction pursuant to Delaware's goal of restoring designated uses of surface waters.

B. Provide conservation buffers on approximately 1200 miles of Delaware's waterways and drainage systems.

C. Increase wildfire habitat acreage and create wildlife corridors in the targeted areas described in section IV A.

D. Restore natural conditions for water temperature and dissolved oxygen in areas protected by riparian forested buffers.

III. AUTHORITY

A. Federal

The CCC has the authority under provisions of the Food Security Act of 1985, as amended (the 1985 Act) (16 U. S. C. 3830 et seq.) and the regulations at 7 CFR part 1410 to perform activities contemplated by this agreement. The 2002 Act authorizes new enrollments of land in the CRP through December 31, 2007.

Other authorities may also apply.

B. State

Funding authority for Delaware to enter into this Agreement is Section 15 (b)(2), General Assembly House Bill No. 750. These State CREP funds were to be obligated by June 30, 2002. Beyond June 30, 2002, funding authority is subject to annual authorization by the Delaware General Assembly.

IV. PROGRAM ELEMENTS

USDA, CCC and the State agree that:

A. The Delaware CREP will consist of a special continuous sign-up CRP component and a State of Delaware incentive program. The Delaware CRTP wi11 seek to enroll up to 6,000 acres in the Chesapeake, Delaware and Inland Bays basin areas adjoining drainage ditches, streams and other waterbodies identified as Category I impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities Lilt (October 1, 1998), or areas adjoining drainage ditches contributing to Category I impaired segments in the Chesapeake, Delaware and Inland Bays basin areas.

B. The eligible CRP practices for enrollment under CREP are:

(1) CP3A - Hardwood Tree Planting.
(2) CP4D - Permanent Wildlife Habitat - provided that practice acres for an individual contract will be limited to 5 acres per tract or 5% of a tract, whichever is greater,
(3) CP21 , Grassed Filter Strip&
(4) CP22 - Riparian Buffers.
(5) CP23 - Wetland Restoration.

These practices may be used in conjunction with each other.

C. In determining CCC's share of the cost of practice establishment, CCC shall apply the customary CRP procedures and rules. A!1 approved conservation plans shall be consistent with applicable CRP statutes and regulations, as well as specifications outlined in the applicable Natural Resources Conservation Service Field Office Technical Guide. Modifications to these Field Office Technical Guides, that meet the provisions of Handbook 2-CRP, and are adopted subsequent to the date of this agreement will be implemented as appropriate to achieve the overall purposes of this Agreement in a cost-effective manner.

D. The term for continuous sign-up CRP contracts for acres enrolled in this CREP must be a minimum of 10 years, but may not exceed *a* maximum of 15 years.

E. Producers eligible for this CREP will not be denied the opportunity to offer eligible acreage for enrollment in the regular CRP during general or continuous enrollment periods.

F. CRP contracts executed under this Agreement will be administered in accordance with, and subject to, the CRP regulations at 7 CFR part 1410, and the provisions of this Agreement, and such other rules and regulations as *may* apply. In the event of a conflict, the CRP regulations will be controlling.

G. This Agreement shall remain in force and effect until December 31, 2007, or it may be terminated by USDA, CCC or the State upon written notice. Such termination will not alter responsibilities regarding existing contractual obligations under the CREP between participants and USDA or CCC, or between participants and the State.

H. No lands may be enrolled under this program until the USDA's Deputy Administrator for Farm Program in consultation with USDA's Natural Resource Conservation Service, concurs with a detailed Delaware Amendment to Handbook 2-CRP, which will provide a thorough description of this program and applicable practices.

V. FEDERAL COMMITMENTS

USDA and CCC agree to:

A. Determine producer eligibility for participation in the CREP consistent with the regulations at 7 CFR Part 1410 and administer those CRP Contracts that are executed.

B. Pay 50 percent of the eligible was of CRP conservation practices. Reimbursements to the CREP participants from all sources must be consistent with the cost-share provisions as outlined in Handbook 2-CRP and temporary CRP directives as issued by USDA.

C. Make an annual rental payment under the CRP contract for each eligible acre enrolled. The basic rental rate in all cases will be the normal CRP rate for non-irrigated cropland for the kind and location involved, and will be calculated *as* provided for in the existing Handbook 2-CRP. The basic rate will be adjusted *as* otherwise provided in this section.

D. Make an annual incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise normally applicable to the land enrolled in the CREP, as calculated under paragraph V. C., in the following amounts:

(1) for land to be established to practices CP22, Riparian Buffers, CP3A, Hardwood Tree Planting, and CP23, Wetland Restoration:95 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130% of the special federal/State incentive payments exceed $150 per acne, then the federal incentive shall be 73% of the difference between $150 less the *base* annual rental rate, and the State incentive payment shall be *27%* of the difference.

(2) for land established to practices CP21, *Grassed* Filter *Strips* and CP4D, Permanent Wildlife Habitat: 32 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50% of

special federal/State CREP incentive payments exceed $110 per acre, then federal Incentive shall be 64% of the difference between $110 and the base annual rental rate, and the State incentive payment shall be 36% of the difference.

E. Provide the annual maintenance payment for each acre enrolled in the same manner as with other CRP contracts.

F. Provide eligibility and enrollment information to landowners concerning this CRE1' and technical assistance for the CREP.

G. Provide, in a manner consistent with any existing CRP, additional assistance to producers whose practices are destroyed by circumstances beyond the producer's control.

H. Permit successors-in-interest to contracts enrolled under this CREP subject to normal CRP statutes, regulations, and procedures.

I. Administer contracts for lauds approved under the CREP.

J. Share appropriate data, in accordance with procedures, restrictions and exemptions established under the federal Freedom of Information Act, federal privacy laws and other applicable laws, with the State to facilitate State monitoring efforts.

K. Develop conservation plans for treatment of enrolled acres to address identified natural resource problems by devoting eligible land to permanent vegetative cover or other comparable practices, and review conservation plans developed by others for producers offering to enroll eligible acreage in the CREP.

L. Conduct annual compliance reviews according to Handbook 2-CRP to ensure compliance with the CAP contract.

M. Coordinate with the State of Delaware in the development of a broad campaign for continuous public information and education regarding the CREP.

N. Subject to the availability of funds, pay onetime Signing Incentive Payment (SIP) at normal CRP rates for acreage enrolled in the Delaware CREP in practices CP21 and CP22 in accordance with Handbook 2-CRP procedure.

O. Subject to the availability of funds, pay a onetime practice Incentive payment at normal CRP rates equal to 40 percent of the eligible coat of installation of practices CP21 and CP22 in accordance with Handbook 2•CRP procedure.

P. Make an annual rental payment for eligible marginal pastureland based on the marginal pastureland rental rote as listed in Handbook2.CRP procedure.

VI. STATE

COMMITMENTS

Delaware agrees to:

A. Contribute not less than 20 percent of the overall Federal program costs, pursuant to continued annual program appropriations from the Delaware General Assembly.

B. Be responsible for:

(1) making direct cost-share payments to approved participants of 37.5 percent of the eligible reimbursable costs for all conservation practices established under this CREP;

(2) making an incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise applicable to the land enrolled in the CREP (as calculated under paragraph V. C.), in the following amounts. State incentive payments will be accelerated to be paid in a lump sum within the first year of the contract:

a) for land established to practices CP3A, Hardwood Tree Planting, CP22, Riparian Buffers, and CP23, Wetland Restoration: 35 percent provided that the total annual contract rental rate, inclusive of all Incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130% of special federal-State CREP incentive payments provided for in this agreement exceed $150 per acre, then the federal incentive shall be 73% of the difference of $150 less the base annual rental rate, and the State incentive payment shall be 27% of the difference;

b) for land established to practices CP21, Grassed Filter Strips and CP4D, Permanent Wildlife Habitat: 18 percent provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50% of special federal-State CREP incentive payments exceed $110 per acre, the federal incentive shall be 64% of the difference between $110 the base annual rental rate, and the State incentive payment shall be 36% of the difference;

(3) paying all coats associated with the annual monitoring program;

(4) providing technical assistance through the local soil and water conservation districts in the development of conservation plans, including installation of the identified practices. Development of conservation plans will be coordinated with the USDA's Natural Resources Conservation Service for producers offering to enroll eligible acreage in the CREP; and

(5) providing conservation planning assistance for the entire farm to enroll participants on a voluntary basin

Seek persons willing to offer eligible and appropriate land for enrollment in the CREP.

Develop and Implement, in coordination with USDA and CCC, a broad campaign for continuous public information and education regarding the CREP.

Ensure that the CREP is coordinated with other agricultural and natural resource conservation programs at the State and Federal level
Prepare an annual report to the Deputy Administrator for Farm Programs, ESA Within 60 days of the end of the Federal fiscal year (September 30) which Includes, at a minimum, level of program participation, the results of the annual monitoring program, and a summary of non-federal CREP expenditures.

VII. OTHER PROVISIONS

A. **All commitments by USDA and the State are subject to the availability of funds. In the event either party is subject to a funding limitation, it will notify the other party expeditiously and any necessary modifications will be made to this Agreement.**

B. **The Executive Vice-President; CCC, the Deputy Administrator for Farm Programs, FSA, and their successors or designees, are delegated the authority to carry out this Agreement for CCC**

and USDA consistent with the provisions of the 19$S Act, the regulations at 7 CFR Part 1410 and other authorities as may apply. The Secretary of the Delaware Department of Natural Resources and Environmental Control, or his or her designee, is delegated authority to carry out this Agreement for the State of Delaware.

C. All CRP contracts under this CREP shall be subject to all limitations set forth in the regulations at 7 CFR Part 1410, including, but not limited to, such matters as economic use, transferability, violations and contract modifications. Agreements between owners or operators and the State may impose additional conditions not in conflict with those under the CRP regulations, but only if approved by CCC.

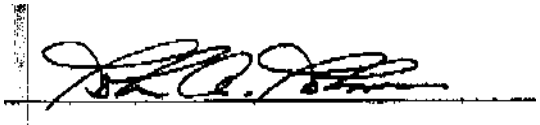
D. Neither the State nor USDA shall assign or transfer any rights or obligations under this Agreement without the prior written approval of the other party.

E. The State and USDA agree that each party must be responsible for its own acts to the extent required by law and shall not, in any case, be responsible or liable for the acts of any others and the results thereof.

F. This agreement may be modified or extended upon mutual written agreement by the Sate and USDA.

IT IS SO AGREED:

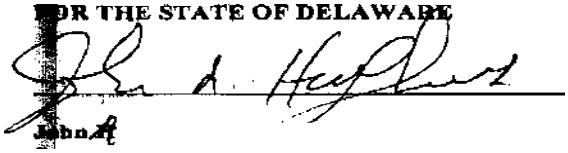
FOR THE U. S. DEPARTMENT OF AGRICULTURE AND THE COMMODITY CREDIT CORPORATION



12-18-02
DATE

John Johnson
Deputy Administrator for Farm Programs
Farm Service Agency
Deputy Vice President
Commodity Credit Corporation

FOR THE STATE OF DELAWARE



12/12/02

John A. Hughes
Secretary,
Delaware Department of Natural Resources and Environmental Control

AGREEMENT

BETWEEN

THE U.S. DEPARTMENT OF AGRICULTURE
COMMODITY CREDIT CORPORATION

AND

THE STATE OF DELAWARE

FOR IMPLEMENTATION OF
THE CONSERVATION RESERVE ENHANCEMENT PROGRAM

I. PURPOSE

This Agreement is between the Commodity Credit Corporation (CCC) of the United States Department of Agriculture (USDA) and the State of Delaware (State) to implement a Conservation Reserve Enhancement Program (CREP) in connection with the federal Conservation Reserve Program (CRP). The primary objective of this CREP is enhancement of water quality through reduction of agricultural nutrients to further the goal of restoring designated uses of Delaware's water bodies. The secondary goal of this CREP is enhancement of wildlife habitats.

II. GENERAL PROVISIONS

The intended outcome is to allow, where deemed appropriate by USDA, CCC, and Delaware, certain acreage to be enrolled under the CREP. The waters of Delaware drain into the Chesapeake Bay, Delaware Bay, and the Delaware Inland Bays - all of which are National Estuaries. Delaware is within an area of special environmental sensitivity that is designated a CRP national conservation priority area. This designation makes all cropland eligible to be offered if all other eligibility requirements are met.

USDA, CCC, and the State of Delaware in cooperation with other Federal, State, and local authorities, seek to take actions that will help reduce the occurrence of sediment and nutrient runoff which contribute to excessive nutrient enrichment of the Chesapeake, Delaware and Inland Bays, as well as promote enhanced wildlife habitats. This agreement is not intended to supersede any rules or regulations, which have been, or may be promulgated by either USDA or CCC. This agreement is intended to facilitate existing authorities through a cooperative effort of USDA, CCC, and Delaware.

It is the intent of USDA, CCC and the State of Delaware that this CREP will address the following objectives:

A. Facilitate nutrient and sediment reduction pursuant to Delaware's goal of restoring designated uses of surface waters.

B. Provide conservation buffers on approximately 1,200 miles of Delaware's waterways and drainage systems.

C. Increase wildlife habitat acreage and create wildlife corridors in the targeted areas described in section IV A.

D. Restore natural conditions for water temperature and dissolved oxygen in areas protected by

riparian forested buffers.

III. AUTHORITY

A. Federal

The CCC has the authority under provisions of the Food Security Act of 1985, as amended (1985 Act)(16 U.S.C. 3830 et seq.), and the regulations at 7 CFR part 1410 to perform activities contemplated by this agreement. The 1985 Act authorizes new enrollments of land in the CRP through December 31, 2002.

Other authorities may also apply.

B. State

Funding authority for Delaware to enter into this Agreement is Section 15 (b)(2), General Assembly House Bill No. 750. State CREP funds must be obligated by June 30, 2002. See Exhibit 1.

IV. PROGRAM ELEMENTS

USDA, CCC and the State agree that:

A. The Delaware CREP will consist of a special continuous sign-up CRP component and a State of Delaware incentive program. The Delaware CREP will seek to enroll up to 6,000 acres in the Chesapeake, Delaware and Inland Bays basin areas adjoining drainage ditches, streams and other water bodies identified as Category 1 impaired segments in Delaware's Unified Watershed Assessment and Watershed Restoration Priorities List (October 1, 1998), or areas adjoining drainage ditches contributing to Category 1 impaired segments in the Chesapeake, Delaware and Inland Bays basin areas.

B. The eligible CRP practices and targeted acreage enrollment for the CREP are:

(1) CP3A - Hardwood Tree Planting - 500 ac. - provided that plantings shall range from 200 to 300 trees per acre.
(2) CP4D - Permanent Wildlife Habitat - 1,000 ac.- provided that practice acres for an individual contract will be limited to 5 ac. per tract or 5% of a tract, whichever is greater.
(3) CP21 - Grassed Filter Strips - 3,000 ac., of which 2,000 ac. will be of grassed filter strips within those watersheds numbered 26 through 41 on Exhibit 2.
(4) CP22 - Riparian Buffers - 1,000 ac., of which 500 acres will be of riparian buffers within those watersheds numbered 26 through 41 on Exhibit 2.
(5) CP23 - Wetland Restoration - 500 ac.

These practices may be used in conjunction with each other.

C. In determining CCC's share of the cost of practice establishment, CCC shall apply the customary CRP procedures and rules. All approved conservation plans shall be consistent with applicable CRP statutes and regulations, as well as specifications outlined in the applicable Natural Resources Conservation Service Field Office Technical Guide. Modifications to these Field Office Technical Guides, that meet the provisions of Handbook 2-CRP, and are adopted subsequent to the date of this agreement will be implemented as appropriate to achieve the overall purposes of this Agreement in a cost-effective manner.

D. The term for continuous sign-up CRP contracts for acres enrolled in this CREP must be a minimum of 10 years, but may not exceed a maximum of 15 years.

E. Producers eligible for this CREP will not be denied the opportunity to offer eligible acreage for enrollment in the regular CRP during general or continuous enrollment periods.

F. CRP contracts executed under this Agreement will be administered in accordance with, and subject to, the CRP regulations at 7 CFR part 1410, and the provisions of this Agreement, and such other rules and regulations as may apply. In the event of a conflict, the CRP regulations will be controlling.

G. This Agreement shall remain in force and effect until December 31, 2002, or it may be terminated by USDA, CCC or the State upon written notice. Such termination will not alter responsibilities regarding existing contractual obligations under the CREP between participants and USDA or CCC, or between participants and the State.

H. No lands may be enrolled under this program until the USDA's Deputy Administrator for Farm Programs, in consultation with USDA's Natural Resource Conservation Service, concurs with a detailed Delaware Amendment to Handbook 2-CRP, which will provide a thorough description of this program and applicable practices.

V. FEDERAL COMMITMENTS

USDA and CCC agree to:

A. Determine producer eligibility for participation in the CREP consistent with the regulations at 7 CFR part 1410 and administer those CRP contracts that are executed.

B. Pay 50 percent of the eligible reimbursable costs of CRP conservation practices. Reimbursements to the CREP participants from all sources may not exceed 100 percent of the cost of the practices implemented.

C. Make an annual rental payment under the CRP contract for each eligible acre enrolled. The base rental rate in all cases will be the normal CRP rate for non-irrigated cropland for the kind and location involved, and will be calculated as provided for in the existing Handbook 2-CRP. The basic rate will be adjusted as otherwise provided in this section.

D. Make an annual incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise normally applicable to the land enrolled in the CREP, as calculated under paragraph V. C., in the following amounts:

(1) for land to be established to practices CP22, Riparian Buffers and CP3A, Hardwood Tree Planting, 95 percent, provided that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 150% of special federal/state CREP incentive payments provided for in this agreement exceed $150 per acre, the federal incentive shall be 73% of the difference between $150 less the base annual rental rate and the state incentive payment shall be 27% of the difference.

(2) for land established to practices CP21, Grassed Filter Strips; CP4D, Wildlife Habitat Enhancement; and CP23, Wetland Restoration, 32 percent provided that the total annual

contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 50% of special federal/state CREP incentive payments exceed $110 per acre, the federal incentive shall be 64% of the difference between $110 and the base annual rental rate, and the state incentive payment shall be 36% of the difference.

E. Provide the annual maintenance payment for each acre enrolled in the same manner as with other CRP contracts.

F. Provide eligibility and enrollment information to landowners concerning this CREP and technical assistance for the CREP in general.

G. Provide, in a manner consistent with any existing CRP, additional assistance to producers whose practices are destroyed by circumstances beyond the producer's control.

H. Permit successors-in-interest to contracts enrolled under this CREP subject to normal CRP statutes, regulations, and procedures.

I. Administer contracts for lands approved under the CREP.

J. Share appropriate data, in accordance with procedures, restrictions and exemptions established under the federal Freedom of Information Act, federal privacy laws and other applicable laws, with the State to facilitate State monitoring efforts.

K. Develop conservation plans for treatment of enrolled acres to address identified natural resource problems by devoting eligible land to permanent vegetative cover or other comparable practices, and review conservation plans developed by others for producers offering to enroll eligible acreage in the CREP.

L. Conduct annual compliance reviews according to Handbook 2-CRP to ensure compliance with the CRP contract.

M. Coordinate with the State of Delaware in the development of a broad campaign for continuous public information and education regarding the CREP.

VI. STATE COMMITMENTS

Delaware agrees to:

A. Contribute not less than 20 percent of the overall Federal program costs.

B. Be responsible for:

(1) making direct cost-share payments to approved participants of 37.5 percent of the eligible reimbursable costs for all conservation practices established under this CREP;

(2) making an incentive payment, as a percentage of the base CRP maximum annual rental rate otherwise applicable to the land enrolled in the CREP (as calculated under paragraph V. C.), in the following amounts. State incentive payments will be accelerated to be paid in a lump sum within the first year of the contract:

a) for land established to practices CP22, Riparian Buffers; and CP3A, Hardwood Tree Planting, 35 percent, *provided* that the *total annual contract rental rate*, inclusive of all incentives except the annual maintenance payment, shall not exceed $150 per acre. Should the base annual rental rate, plus the full 130% of special federal/state CREP incentive payments provided for in this agreement exceed $150 per acre, the federal incentive shall be 73% of the difference of $150 less the base annual rental rate and the state incentive payment shall be 27% of the difference;

b) for land established to practices CP21, Grassed Filter Strips; CP4D, Wildlife Habitat Enhancement; and CP23, Wetland Restoration, 18 percent, *provided* that the total annual contract rental rate, inclusive of all incentives except the annual maintenance payment, shall not exceed $110 per acre. Should the base annual rental rate, plus the full 58% of special federal/state CREP incentive payments provided for in this agreement exceed $110 per acre, the federal incentive shall be 64% of the difference of $110 less the base annual rental rate and the state incentive payment shall be 36% of the difference;

(3) paying all costs associated with the annual monitoring program;

(4) providing technical assistance through the local soil and water conservation districts in the development of conservation plans, including installation of the identified practices. Development of conservation plans will be coordinated with the USDA's Natural Resources Conservation Service for producers offering to enroll eligible acreage in the CREP; and

(5) providing conservation planning assistance for the entire farm to enroll participants on a voluntary basis.

C. Seek persons willing to offer eligible and appropriate land for enrollment in the CREP.

D. Develop and implement, in coordination with USDA and CCC, a broad campaign for continuous public information and education regarding the CREP.

E. Ensure that the CREP is coordinated with other agricultural and natural resource conservation programs at the State and Federal level.

F. Prepare an annual report to the Deputy Administrator for Farm Programs, FSA within 60 days of the end of the Federal fiscal year (September 30) which includes, at a minimum, level of program participation, the results of the annual monitoring program, and a summary of non-federal CREP expenditures.

VII. OTHER PROVISIONS

A. All commitments by USDA and the State are subject to the availability of funds. In the event either party is subject to a funding limitation, it will notify the other party expeditiously and any necessary modifications will be made to this Agreement.

B. The Executive Vice-President, CCC, the Deputy Administrator for Farm Programs, FSA, and their successors or designees, are delegated the authority to carry out this Agreement for CCC and USDA consistent with the provisions of the 1985 Act, the regulations at 7 CFR part 1410 and other authorities as may apply. The Secretary of the Delaware Department of Natural Resources and Environmental Control, or his or her designee, is delegated authority to carry out this Agreement for the State of Delaware.

C. All CRP contracts under this CREP shall be subject to all limitations set forth in the regulations at 7 CFR Part 1410, including, but not limited to, such matters as economic use, transferability, violations and contract modifications. Agreements between owners or operators and the State may impose additional conditions not in conflict with those under the CRP regulations, but only if approved by CCC.

D. Neither the State nor USDA shall assign or transfer any rights or obligations under this Agreement without the prior written approval of the other party.

E. The State and USDA agree that each party will be responsible for its own acts to the extent required by law and shall not, in any case, be responsible or liable for the acts of any others and the results thereof.

F. This agreement may be modified or extended upon mutual written agreement by the Sate and USDA.

IT IS SO AGREED:

FOR THE U. S. DEPARTMENT OF AGRICULTURE AND
THE COMMODITY CREDIT CORPORATION

June 2, 1999

DAN GLICKMAN
Secretary of Agriculture
U. S. Department of Agriculture and
Chairman of the Board
Commodity Credit Corporation

DATE

FOR THE STATE OF DELAWARE

Jun 2, 1999

TOM CARPER
Governor
State of Delaware

DATE

On June 2, 1999, the undersigned witnessed the signing of the Conservation Reserve Enhancement Program Agreement between the State of Delaware and the U.S. Department of Agriculture.

HOUSE OF REPRESENTATIVES
139TH GENERAL ASSEMBLY
HOUSE BILL NO. 750

BOND AND CAPITAL IMPROVEMENTS ACT OF THE STATE OF DELAWARE AND CERTAIN OF ITS AUTHORITIES FOR THE FISCAL YEAR ENDING JUNE 30, 1999; DEAUTHORIZING STATE GUARANTEED BOND AUTHORIZATIONS; AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION BONDS OF THE STATE; APPROPRIATING FUNDS FROM THE TRANSPORTATION TRUST FUND; DEAUTHORIZING AND REAUTHORIZING CERTAIN FUNDS OF THE TRANSPORTATION TRUST FUND; APPROPRIATING SPECIAL FUNDS OF THE DELAWARE TRANSPORTATION AUTHORITY; REVERTING AND REPROGRAMMING CERTAIN FUNDS OF THE STATE; APPROPRIATING GENERAL FUNDS AND SPECIAL FUNDS OF THE STATE; APPROPRIATING MONIES FROM THE TWENTY-FIRST CENTURY FUND; APPROPRIATING GENERAL FUNDS TO AN INFRASTRUCTURE INVESTMENT PLAN; SPECIFYING CERTAIN PROCEDURES, CONDITIONS AND LIMITATIONS FOR THE EXPENDITURE OF SUCH FUNDS; AND AMENDING CERTAIN PERTINENT STATUTORY PROVISIONS.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF DELAWARE (three-fourths of all members elected to each house thereof concurring therein):A

Section 1. Fiscal Year 1999 Capital Improvements Project Schedule Addendum. The General Assembly hereby authorizes the following projects in the following amounts to be expended for the purposes set forth in this Section and as described in the Fiscal Year 1999 Governor's Recommended Capital Budget and Project Information document. Any authorization balance (excluding Transportation Trust Fund balances) remaining unexpended or unencumbered by June 30, 2001, shall be subject to reversion or deauthorization.

Section 14. Exxon Funds. It is the intent of the General Assembly that the monies appropriated in this Act and funds authorized for minor capital improvements in any annual appropriation act may be used to match Exxon funds for any purpose deemed appropriate by the State Energy Weatherization Committee and so long as the purpose does not contradict the purposes set forth in the Section 1 Addendum of this Act.

1

Section 15. Infrastructure Investment Plan. (a) It is the intent of the General Assembly that One Hundred Sixteen Million Dollars ($116,000,000) be appropriated from General Funds to the Office of the Secretary, Department of Finance (25-01-00) to be used for long-term investments to promote economic and educational competitiveness and to protect Delaware's quality of life. Unless otherwise provided below, funds shall be deposited into the Twenty-First Century Fund as established by §6102A, Title 29, Delaware Code. Of the total appropriation, Sixty-Nine Million Dollars ($69,000,000) shall be used to establish a Growth Management Fund to complement State and county land use goals by directing investments in existing communities and growth areas; and protecting critical farmland and open space from urban sprawl. The Cabinet Committee on State Planning Issues shall provide overall guidance and coordination to ensure that investments made by the Growth Management Fund are consistent with the State's land use policies. Funds shall be allocated as follows:

Purpose	Amount
Farmland Preservation	$20,000,000
Open Space	$26,000,000
Housing Development	$ 8,000,000
Water/Wastewater	$15,000,000

The remaining Forty Seven Million Dollars ($47,000,000) shall be administered through the Department of Finance and shall be subject to the specific requirements established by law to govern expenditures for these purposes. No funds shall be used for agency overhead or personnel-related costs except as otherwise indicated in this Section. Funds shall be allocated as follows:

Purpose	Amount
Education Technology	$13,000,000
Port of Wilmington	$20,000,000
Riverfront Development	$14,000,000

(b)(1) Funds Appropriated in subsection (a) for Farmland Preservation shall be available for expenditure to the Department of Agriculture as follows:

Fiscal Year	Amount
1999	$5,000,000
2000	$8,000,000
2001	$7,000,000

Farmland Preservation funds shall be used to support the purchase of development rights program to preserve quality farmland and ensure the continued viability of the Delaware agricultural industry. Prior to the distribution of these funds, the Foundation shall execute the provisions established in §§ 901-918, Title 3, Delaware Code and shall have approved by the Cabinet Committee on State Planning Issues the regulations and procedures adopted by the Delaware Agricultural Lands Preservation Foundation that are designed to ensure the protection of farmland that is being threatened by development.

Subject to the prior approval of the Cabinet Committee on State Planning Issues, the Delaware Agricultural Lands Preservation Foundation may waive part or all of the match required by this section for lands near targeted growth areas that are threatened by development. In addition, up to One Hundred Fifty Thousand Dollars ($150,000) annually may be used for operational costs of the Agricultural Lands Preservation Foundation.

(b)(2) Of the funds appropriated for Farmland Preservation in subsection (a), up to $1,600,000 shall be used by the Department of Natural Resources and Environmental Control for the Conservation Reserve Enhancement Program (CREP). These funds shall be used to match federal funds on a 20/80-match ratio. The objectives of the CREP program are to improve water quality, erosion control, and wildlife habitat in geographic regions, which have been adversely affected by agricultural activities. These funds shall be used to contract or cost-share with landowners for the planting of grass filterstrips, riparian buffers, and other environmental improvements that will greatly assist in the attainments of TMDL's in areas not meeting water quality standards. These funds shall not be subject to reversion until June 30, 2002. Should federal funding for this program not be secured, these funds shall be used for the purposes set forth in subsection (b)(1).

3

APPENDIX B

CHESAPEAKE BAY MEMORANDUM OF UNDERSTANDING, 2000

Memorandum of Understanding

AMONG

the State of Delaware, the District of Columbia, the State of Maryland, the State of New York, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, the State of West Virginia, and the United States Environmental Protection Agency

REGARDING

Cooperative Efforts for the Protection of the Chesapeake Bay and Its Rivers

WHEREAS, the Chesapeake Bay is a National Treasure for which we are responsible, due to our stewardship of the 64,000 square miles of land in its watershed, and the 111,000 miles of creeks, streams and rivers which run through our jurisdictions and ultimately into its waters; and,

WHEREAS, over the years the Chesapeake Bay's remarkable ecosystem has been impaired by the excess of nutrients and sediments flowing into it through its tributaries; and,

WHEREAS, the Chesapeake Bay Program, an internationally-recognized intergovernmental effort has made measurable strides toward the restoration of the Bay and its living resources; and

WHEREAS, that effort has been notable for its reliance on cooperative and consensus-based approaches for its greatest successes; and

WHEREAS, despite efforts to date, the tidal rivers and the Bay remain on the Clean Water Act list of impaired waters thereby requiring establishment of a total maximum daily load by May 2011 unless those waters meet applicable water quality standards by 2010; and

WHEREAS, we have developed a process, based on advanced science and data acquisition, which integrates the cooperative and statutory water quality programs applicable to the Chesapeake Bay and its tidal tributaries, and enhances through watershed-wide partnership the ability to restore the Bay's living resources and meet the necessary water quality standards;

NOW, THEREFORE, we, the undersigned executives representing the District, state and Federal entities with responsibility for the quality of the waters flowing into the Chesapeake Bay agree that we will:

- Work cooperatively to achieve the nutrient and sediment reduction targets that we agree are necessary to achieve the goals of a clean Chesapeake Bay by 2010, thereby allowing the Chesapeake and its tidal tributaries to be removed from the list of impaired waters.
- Provide for an inclusive, open and comprehensive public participation process.
- Collaborate on the development and use of innovative measures such as effluent trading, cooperative implementation mechanisms, and expanded interstate agreements to achieve the necessary reductions.

→

By this Agreement, we will work toward our goals in a spirit open to others, welcome new ideas, pursue fairness and equity, seek the most cost effective solutions, encourage collaborative approaches, and always be committed to the common goal of a healthy and productive Chesapeake Bay and its rivers. We agree to report annually to the citizens on the progress toward achieving the goals of this agreement.

FOR THE STATE OF DELAWARE

Signed September 2000

FOR THE DISTRICT OF COLUMBIA

Signed October 2000

FOR THE STATE OF MARYLAND

Signed October 2000

FOR THE STATE OF NEW YORK

Signed November 2000

FOR THE COMMONWEALTH OF PENNSYLVANIA

Signed October 2000

FOR THE COMMONWEALTH OF VIRGINIA

Signed November 2000

FOR THE STATE OF WEST VIRGINIA

Signed June 2002

FOR THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

Signed October 2000

Chesapeake Bay Program
A Watershed Partnership

CHESAPEAKE EXECUTIVE COUNCIL

DIRECTIVE NO. 04-2

Meeting the Nutrient and Sediment Reduction Goals

– *Next Steps* –

In its 2003 Directive, "Meeting the Nutrient and Sediment Reduction Goals," the Chesapeake Executive Council reaffirmed its pledge to achieve the *Chesapeake 2000* commitment to, "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." The Council endorsed the Bay-specific water quality criteria published in April 2003, and the nutrient and sediment allocations for all tributary rivers, and pledged to complete Tributary Strategies to achieve the allocations in 2004. The Council directed the tidal water jurisdictions to complete their regulatory processes to revise their Chesapeake Bay and tidal tributary water quality standards as expeditiously as possible, and that is occurring. The U.S. Environmental Protection Agency pledged to assist the jurisdictions to develop permitting and contractual tools and strategies to control nutrient loadings. The Council also directed the Chesapeake Bay Program to convene a Chesapeake Bay Watershed Blue Ribbon Panel to identify funding sources for implementing the tributary strategies, with the Panel's detailed report to be completed by October 2004.

Substantial progress has been made in 2004 on all components of the 2003 Directive. The Blue Ribbon Panel produced its report on schedule, after a thorough assessment of nutrient and sediment sources and funding options, and made a number of excellent, far-reaching recommendations. Our Directive No. 04-1 directs the Principals' Staff Committee to convene a committee to develop a proposal for the Panel's central recommendation to create a Chesapeake Bay Financing Authority to assure the financing needed to implement the Tributary Strategy requirements by 2010.

This Directive addresses next steps, each of which will advance Tributary Strategy implementation, and identifies measures to implement several Panel recommendations upon which action can be taken quickly. In addition, we ask each Chesapeake Bay signatory and headwater state to review the full breadth of the Blue Ribbon Panel recommendations and determine those whose implementation would be beneficial in their jurisdictions.

Expanding the Chesapeake Executive Council

As the 2003 Directive noted, we have formed a Chesapeake Bay water quality partnership in which all seven jurisdictions in the watershed are engaged. The Governors of Delaware, New York and West Virginia have agreed, through memoranda of understanding, to participate fully in the nutrient and sediment reduction initiatives of *Chesapeake 2000*. The Blue Ribbon Panel recommended that the bonds between the signatory jurisdictions and the headwater states be strengthened by inviting the headwater states to join the Chesapeake Executive Council. This directive reaffirms that the headwater states may sign the Chesapeake Bay Agreement in its entirety, and thus become Council members. In the meantime, they will continue to act as full partners with the signatory jurisdictions in carrying out this Directive and all other Chesapeake Bay Program initiatives designed to restore water quality.

Determining Funding Priorities

We direct the Principals' Staff Committee to lead a process to reach consensus among the jurisdictions on funding priorities, as recommended by the Blue Ribbon Panel. This will provide invaluable program guidance for making the best use of current federal, state, local and private funding sources, and for directing funding from a regional financing authority.

Engaging the Department of Agriculture

All Tributary Strategies contain ambitious goals for agricultural nutrient and sediment reduction, including restoration of riparian forest buffers. As the Blue Ribbon Panel pointed out, full participation by the U.S. Department of Agriculture (USDA) in the Chesapeake Bay Program is essential to achieving our water quality restoration goals. We will invite the USDA to increase its participation in the Chesapeake Bay Program at all levels, and to appoint a high-level official to participate in all meetings of the Principals' Staff Committee.

Finding Opportunities in the Farm Bill

Furthermore, we call for establishment of an ad-hoc workgroup composed of representatives from each of the signatory and headwater states, as well as the Chesapeake Bay Commission, to identify opportunities associated with the 2007 Farm Bill for further nutrient and sediment reduction in the Chesapeake Bay region. The group will develop a regional proposal in 2005. At a minimum, the workgroup should address the following, as identified in the Blue Ribbon panel recommendations: 1) improvements to the efficiency of agricultural cost-share programs; 2) inclusion of comprehensive nutrient management plans as part of compliance for Farm Bill commodity payment programs; 3) greater emphasis on the Conservation Security Program; 4) increased overall Farm Bill funding for the Chesapeake Bay watershed; and 5) increased funding for forest buffer restoration in the Conservation Reserve Enhancement Program.

Establishing a Watershed Funding Network

We direct the Chesapeake Bay Program to establish immediately a "Chesapeake Bay Watershed Funding Network" which would include representatives from the Clean Water Act State Revolving Loan Fund programs throughout the watershed, USDA officials responsible for Farm Bill assistance to Bay watershed farmers for conservation and nutrient-sediment best management practices, and other relevant financial assistance entities. The purpose of this network is to establish a better mutual understanding of how existing financing programs operate, explore possibilities for greater effectiveness, and consider ways to improve financing of tributary strategy implementation. Attention should be paid to "co-funding" programs, as referenced in the Blue Ribbon Panel's report, and to establishing an analytical basis for identifying "hardship communities" which would require grant assistance to meet tributary strategy requirements.

Improving Coordination of Federal Agencies

To complement and reinforce the effectiveness of the Network, we call upon the federal agencies involved in the Bay restoration to convene an annual high-level meeting to review program and funding relationships.

Managing Urban Stormwater

The Blue Ribbon Panel emphasized the challenge posed by development patterns in the watershed, and the danger that growth could weaken, and possibly outstrip, our collective efforts to restore the water quality and habitat of the Bay and its tidal tributaries. The projected high costs for correcting urban stormwater pollution in the Tributary Strategies are beyond most jurisdictions' ability to fund at this time, and developments each day are adding to the stormwater pollution burden. The Panel urges

that preventive strategies be fully implemented and enforced. New, more effective, technologies such as "low impact development" to encourage environmentally sensitive design should be emphasized and linked with preservation and restoration of riparian forest buffers. We agree, and direct the Chesapeake Bay Program to develop approaches for urban stormwater management that are more prevention-oriented, more effective and efficient, and that make the best use of regulatory, voluntary and incentive tools.

Implementing and Enforcing Air and Water Laws

The Blue Ribbon Panel stressed the benefits of enforcing relevant Clean Water Act and Clean Air Act regulations vigorously, and we agree. In particular, we direct expeditious implementation of the provisions of the document entitled "NPDES Permitting Approach for Discharges of Nutrients in the Chesapeake Bay Watershed—December 2004", which was developed in a partnership between the U.S. Environmental Protection Agency and all watershed jurisdictions.

January 10, 2005

CHESAPEAKE EXECUTIVE COUNCIL

FOR THE COMMONWEALTH OF VIRGINIA

FOR THE STATE OF MARYLAND

FOR THE COMMONWEALTH OF PENNSYLVANIA

FOR THE DISTRICT OF COLUMBIA

FOR THE UNITED STATES OF AMERICA

FOR THE CHESAPEAKE BAY COMMISSION

FOR THE STATE OF DELAWARE

FOR THE STATE OF NEW YORK

FOR THE STATE OF WEST VIRGINIA

APPENDIX C

FEDERAL AND STATE ENVIRONMENTAL LAWS AND POLICIES RELATED TO DELAWARE CREP

Environmental Laws and Policies Related to Delaware CREP

Mandate	Administering Agency	Purpose
National Environmental Policy Act of 1969 (NEPA, P.L. 91-190, as amended by P.L. 94-52 and P.L. 94-52; (42 U.S.C. 4321-4347*)*	All Federal agencies	Establishes national policy for protection of the human environment and ensures that decisionmakers taken environmental factors into account. Requires all Federal agencies to analyze alternatives and document impacts resulting from proposed actions that could potentially affect the natural and human environment.
Council on Environmental Quality Regulations, as amended; 40 CFR 1500-1508	All Federal agencies	Implements NEPA and provides guidance to Federal agencies in the preparation of environmental documents identified under NEPA.
Farmland Protection Policy Act of 1981 (7 U.S.C. 4201-4209)	USDA-NRCS	Minimizes impacts from Federal activities on farmland and maximizes compatibility with State and local policies.
Watershed Protection and Flood Prevention Act of 1954 (P.L. 83-566; 16 U.S.C. 1001-1008)	USDA-NRCS	Prior to FY 1996, watershed planning activities and the cooperative river basin surveys and investigations authorized by Section 6 of the Act were operated as separate programs.
Flood Control Act (P.L. 78-534)	USDA-NRCS	Authorized the Secretary of Agriculture to install watershed improvement measures to reduce flooding, sedimentation, and erosion damages, and to further the conservation, development, use and disposal of water and the proper utilization of land.
Farm Security and Rural Investment Act of 2002 (P.L. 107-171; 2002 Farm Bill)	USDA-NRCS	The 2002 Farm Bill enhances the long-term quality of our environment and conservation of our natural resources. Published Conservation Reserve Program rule and launched CRP. Provides funding for conservation programs on working farm lands.
Clean Water Act (CWA) of 1977, as amended (33 U.S.C. 1251, et seq.)	U.S. Environmental Protection Agency; U.S. Army Corps of	Sec. 106, Water Pollution Control, aims to prevent, reduce and eliminate water pollution.

Mandate	Administering Agency	Purpose
U.S. Army Corps of Engineers Regulatory Guidance Letter and National Wetlands Mitigation Action Plan, dated 12/24/02	Engineers; States	Sec. 303, Water Quality Standards and Implementation Plan, requires States to develop, adopt and enforce water quality standards to protect and restore the chemical, physical and biological integrity of all waters. Sec. 319, Nonpoint Source Program Implementation. Sec. 320, National Estuary Program, authorizes the development of comprehensive conservation and management plans for specific legislatively designated estuaries. Sec. 401 regulates water quality requirements specified under the CWA. Section 402 requires a National Pollutant Discharge Elimination System (NPDES) permit for discharges into waters of the U.S. Sec. 404 requires a permit before dredging or filling wetlands can occur. Clarified President George W Bush Administration's policies on wetland loss and mitigation.
Endangered Species Act of 1973 (16 U.S.C. 1531-1543)	U.S. Fish & Wildlife Service	Establishes a policy to protect and restore federally listed threatened and endangered species of flora and fauna.
Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712;40 Stat. 755), as amended	U.S. Fish & Wildlife Service	Protects migratory birds designated by this act as a Federal responsibility.
Federal Water Pollution Control Act of 1972 (33 U.S.C. 1251-1376, et seq.)	U.S. Environmental Protection Agency	Establishes standards for the restoration and maintenance of the chemical, physical and biological integrity of the nation's waters through prevention, reduction, and elimination of pollution.
Standards for the Use or Disposal of Biosolids (40 CFR 503)	U.S. Environmental Protection Agency	Provides States and local governments with guidance on the use or disposal of biosolids, including land application, and permit application requirements.

Mandate	Administering Agency	Purpose
Executive Order 11990, *Protection of Wetlands*	U.S. Fish & Wildlife Service, USDA-NRCS, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency	Requires Federal agencies to consider all practicable alternatives to impacting wetlands.
Executive Order 11988, *Floodplain Management*	Federal Emergency Management Agency, USDA-NRCS, U.S. Army Corps of Engineers	To restore and preserve the natural and beneficial values served by floodplains.
Executive Order 13112, *Invasive Species*	All Federal agencies	Prevents the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
National Historic Preservation Act of 1966, as amended; Sec. 106 and Sec. 110; 16 U.S.C. 470; 36 CFR 60, 63, 65, 78-79, 800	National Park Service; State Historic Preservation Offices	Protects and preserves districts, sites, structures, architectural, archaeological, and cultural resources. Sec. 106 requires consultation with the SHPO. Sec. 110 requires that NPS identify and nominate all eligible resources under its jurisdiction to the National Register of Historic Places.
Coastal Zone Management Act of 1972, as amended (P.L. 92-583)	National Oceanic and Atmospheric Administration	Each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State coastal management programs.
Sec. 6217, Coastal Nonpoint Pollution Control Program	U.S. Environmental Protection Agency and State CZM Program	Develop and implement programs to restore and protect coastal waters that include compliance with the minimum nonpoint source management measures.
Archaeological and Historic Preservation Act of 1974, as amended; 16 U.S.C. 469-469c; 74 Stat. 220	National Park Service; all Federal agencies	Requires survey, recovery, and preservation of significant scientific, prehistorical, historical, archaeological, or paleontological data when such data may be destroyed to due Federal activities.

Mandate	Administering Agency	Purpose
Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*	All Federal agencies	To avoid Federal actions that cause disproportionately high and adverse impacts on minority and low-income populations with respect to human health and environment.
State of Delaware Statutes and Related Programs		
Delaware Erosion and Sediment Control Program	Delaware Dept. of Natural Resources and Environmental Control	Implemented through local conservation districts to address erosion and sediment control on developing lands.
Clean Water State Revolving Fund (CWSRF) Program	NRCS and Delaware Dept. of Agriculture	Provides reduced rate loan funding for water quality projects, including agricultural Best Management Practices. Delaware's CWSRF targets poultry and dairy producers
The Tidal Wetlands Act of 1973 (Title 7 Delaware State Code, Chapter 66)	Delaware Dept. of Natural Resources and Environmental Control	Tidal wetlands are protected and a permit is required for construction in these areas.
Subaqueous Lands Act of 1969 (Title 7 Delaware State Code, Chapter 72)	Delaware Dept. of Natural Resources and Environmental Control	Rivers, streams, and other open waterbodies are protected against uses or changes that may impair the public interest in the use of tidal or navigable waters. Subaqueous lands are "submerged lands and tidelands."
Delaware Agricultural Lands Preservation Act (Title 3 Delaware State Code, Chapter 9)	Delaware Dept. of Agriculture	To conserve, protect and encourage improvement of agricultural lands within the State for the production of food and other agricultural products. Provides for the creation of agricultural preservation districts and the purchase of permanent preservation easements. It is also the declared policy of the State to encourage, promote and protect farming as a valued occupation.
Delaware Coastal Zone Act (Title 7, Part VII, Chapter 70)	Delaware Dept. of Natural Resources and Environmental Control and the Coastal Zone Industrial Control Board	To protect Delaware's coastal area from the destructive impacts of heavy industrialization and offshore bulk product transfer facilities. The Act protects the coastal areas and safeguards their use primarily for recreation and tourism.

Mandate	Administering Agency	Purpose
Delaware Right to Farm (Del. Code Ann. Tit. 3, & 1401 (2005)	Delaware Dept. of Agriculture	Provides landowners with the opportunity to farm their land.
Delaware Agricultural Districts Enabling Statutes (Del. Code Ann. Tit. 3 §§ 901-930 (2004)	Delaware Dept. of Agriculture	Establishes agricultural districts for farmland preservation.
Delaware Conservation Easement Enabling Statutes (Del. Cod Ann. Title 7, §§ 6901-6905 (2005)	Delaware Dept. of Agriculture	Allows for the preservation of land through conservation easements.
Title 3 Chapter 11 §1102 , Plant Pests Law	Delaware Dept. of Agriculture	To eradicate, repress, and prevent the spread of plant pests (i) within the State, (ii) to points outside the State, and (iii) from outside the State to points within the State.
Delaware Surface Water Quality Standards, as amended.	Delaware Dept. of Natural Resources and Environmental Control	Designates uses and water quality standards for Delaware's surface waters.

Source: Compiled by Environmental Management Collaboration, Ltd., 2006.

APPENDIX D

DELAWARE CREP PROGRAMMATIC ENVIRONMENTAL ASSESSMENT SCOPING COMMENTS

February 10, 2006

Richard L. Bergold, State Executive Director
Delaware State FSA Office
1221 College Park Dr., Suite 201
Dover, DE 19904-8713

RE: CREP AND PEA SCOPING COMMENTS

Dear Mr. Bergold,

This office has no comments to the above referenced subject. The DE State Fire Prevention Regulations have no applicable regulations that would affect the PEA and the CREP. Agricultural operations are not under the purview of the Delaware State Fire Prevention Regulations.

If you have any questions, feel free to contact me at 302-856-5298.

Sincerely,

Duane T. Fox, Jr., CFPS, CFI
Asst. Chief, Technical Services

From: scott andres [mailto:asandres@udel.edu]
Sent: Tuesday, January 31, 2006 11:46 AM
To: Collins, Norma - Dover, DE
Subject: CREP/PEA comments

Dear Ms. Collins,
I recently received a letter dated January 26, 2006 that requests comments on CREP. Thank you for the opportunity to comment on these important initiatives. I am writing to make you aware of recently completed programs and publications of the Delaware Geological Survey (DGS) that have direct bearing on water resources and other environmental protection efforts and can assist USDA staff evaluate projects proposed for CREP funding. All DGS publications are available through the DGS web site www.udel.edu/dgs/publ.html, or by contacting the DGS at delgeosurvey@udel.edu or 302-831-2833.

DGS staff have published map, report, and digital GIS products that identify Ground Water Recharge Resource Protection areas (GWR RPAs). These features represent the areas where shallow subsurface conditions promote rapid infiltration of water into the Columbia aquifer, the aquifer most often used by water supply wells and the primary source of water in Delaware streams, riparian zones, and wetlands. GWR RPAs are offered specific protections under statute in Chapter 40 of the New Castle County Unified Development Code. As of 2004, Kent County Code Chapter 180 also had specific planning objectives for GWR RPAs and was considering ordinances into the planning and zoning process (Chapter 187). At the State level, State law (7 Delaware Code Chapter 60 Subchapter VI) instructs counties and municipalities to develop measures

to protect GWR RPAs in their comprehensive plans. The State Source Water Protection Program also includes GWR RPAs in policy and guidance documents. Please contact the Water Supply Section of DNREC (739-9945) for further information about how GWR RPAs are used. Hard copy versions

of the maps are DGS Hydrologic Map Nos. 11 and 12. The summary report is DGS Report of Investigations No. 66. GIS-ready products are DGS Digital Product 02-01.

DGS staff have recently completed three GIS-ready digital products on water table elevation and depth to water table for the Coastal Plain of Delaware. Each product is a series of GIS grids with 30-meter horizontal and 1-foot vertical resolution that covers a single county. Given the close association of the water table with streams and wetlands, and GIS tools that can quickly map the boundaries of watersheds and areas contributing water to a given surface water feature, these products are a ready source of data for evaluating hydrologic characteristics of surface water features. Hard copy map and report products are DGS Special Publication No. 27 and DGS Report of

Investigations No. 68. The GIS-ready product for Sussex County has been

published as DGS Digital Product 05-01, draft copies of Kent and New Castle County products are available for download from a data access area of the DGS web site at www.udel.edu/dgs/ftp/wtmap/.

We have also been conducting a multi-year project to map the thickness
and water transmitting properties of the water table aquifer in Sussex County. The products of this research were originally intended to support hydrologic modeling in support of wastewater disposal permitting

and risk assessment for public water supply wells, but also can be used in watershed assessment applications and studies. Results of the first phase, which covers eastern Sussex, are being published as DGS Report of

Investigations No. 70, and have been released as GIS-ready product available from a data access area of the DGS web site at www.udel.edu/dgs/ftp/ESHM. A draft copy of the report is also available

in the same location. Results that cover western Sussex are due to be released in June 2006. Kent County mapping efforts have just begun.

Please let me know if you have any questions about this information or
want to discuss other ways that the DGS can assist your efforts. Hard copy of this message will also be forwarded via US Mail.

Yours truly,

A. Scott Andres
Delaware Geological Survey
University of Delaware
Newark, DE 19716

302-831-0599

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

DELAWARE COASTAL
MANAGEMENT PROGRAM

TELEPHONE: (302) 739-9283
FAX: (302) 739-2048

February 6, 2006

Norma Collins
State Environmental Coordinator
Farm Service Agency
1221 College Park Drive
Suite 201
Dover, DE 19904

Re: PEA for Delaware Conservation Reserve Enhancement Program

Dear Ms. Collins:

Thank you for the opportunity to provide comments for the development of a Programmatic Environmental Assessment (PEA) for the Delaware Conservation Reserve Enhancement Program (CREP). In your letter dated January 26, 2006 you specifically requested information regarding issues of concern for CREP, significant resources and ongoing or proposed programs.

The Delaware National Estuarine Research Reserve (DNERR) system is administered by the Delaware Coastal Programs. The goal of the DNERR is to establish, protect, and manage natural estuarine habitats for research and education. The DNERR consists of two main components, the Blackbird Creek and St. Jones River. These sites include both brackish and freshwater estuaries, and represent the diverse estuarine ecosystems found throughout the Mid-Atlantic. Special emphasis has been placed on permanently protecting lands adjacent to the Blackbird Creek, a relatively pristine river and important link in the Blackbird Millington Conservation Corridor. Between 2003 and 2005 approximately 220 acres along Blackbird Creek have been added to the Reserve holdings. Enclosed are maps depicting location and targeted conservation areas for each DNERR component. Where possible, the CREP program should help to meet the conservation goals of the DNERR.

In addition, the Delaware Coastal Programs has specific concerns regarding the conservation and preservation of non-tidal freshwater wetlands in the State. As you may know, the State of Delaware has no State-wide law that prohibits filling, excavation or disturbance of non-tidal freshwater wetlands. Although the US Army Corps of Engineers does regulate freshwater regulations, a recent Supreme Court case has decreased their authority to regulate "isolated" wetlands. In Delaware, the US Army Corps of Engineers generally will not regulate any freshwater wetland that is more than 1000 feet from a waterbody, leaving many wetlands, particularly vernal pools, vulnerable to degradation. To the extent possible, consideration should be given to isolated

to degradation. To the extent possible, consideration should be given to isolated freshwater wetlands and the PEA should evaluate strategies to ensure inclusion of freshwater wetland protection.

As we discussed during our phone call on February 3, 2006, you must submit the draft PEA to the Delaware Coastal Programs for a Coastal Zone Federal Consistency concurrence. This program was established in 1972 by the Federal Coastal Zone Management Act to ensure that federal activities within or effecting a State's coastal zone comply with that State's coastal management policies. Additional information regarding Federal Consistency is available on our website at: **http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/fedcon.htm**. Please note that under the Federal law, we have up to 60 days to review this project and a 20-day public notice period is required.

If you have any questions, please contact me at (302) 739-9283 or via email at **Susan.Love@state.de.us**.

Sincerely,

Susan E. Love
Delaware Coastal Programs

Enclosures (6)

From: Love Susan E. (DNREC) [mailto:Susan.Love@state.de.us]
Sent: Friday, February 03, 2006 3:42 PM
To: Collins, Norma - Dover, DE
Subject: Delaware Coastal Zone Federal Consistency

Hello Norma!

At your request, additional information about Delaware's Coastal Zone Federal Consistency requirements can be found on-line at:
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/fedcon.htm

If you click the "coastal Delaware" graphic, you can access a quick and easy description of the program and why we do it. You can access our complete program document by clicking "comprehensive update and routine program implementation." This document contains all the necessary info for applying for a coastal zone federal consistency certification for each type of project (direct federal action, federal permit etc…) and a list of our policies.

Many of the projects you do will require a federal consistency certification because they are a direct federal program affecting the resources of Delaware – e.g. the CREP program or because they receive federal funding. I'd like to sit down and talk with you and your colleagues about what types of projects should be coming to this office for review, and what does not need to come through.

Please call me with any questions you may have.

Regards
susan

Susan E. Love
Resource Planner
Delaware Coastal Programs
Phone: 302.739.9283
Fax: 302.739.2048

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

February 8, 2006

Mr. Richard L. Bergold
State Executive Director
United States Department of Agriculture
Delaware State Farm Service Agency Office
1221 College Park Drive, Suite 201
Dover, Delaware 19904-8713

Attn: Norma Collins, State Environmental Coordinator

RE: USDA Commodity Credit Corporation/Farm Service Agency Notice of Intent to Prepare a Programmatic Environmental Assessment for the Delaware Conservation Reserve Enhancement Program

Dear Mr. Bergold:

This responds to your letter, dated January 25, 2006, requesting early input relative to the U.S. Department of Agriculture Farm Service Agency's (FSA) plan to initiate a Programmatic Environmental Assessment (PEA) for the Conservation Reserve Enhancement Program (CREP) in Delaware. The CREP PEA will evaluate alternatives to and potential effects of enrolling up to 10,000 acres of cropland into this conservation program. We have reviewed the information you provided and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The goals of the Delaware CREP are to improve and enhance water quality by reducing the flow of agricultural nutrients into Delaware's water bodies and the Chesapeake Bay, and to enhance wildlife habitat. Conservation practices prescribed by Delaware CREP include hardwood tree planting (CP3A), permanent wildlife habitat (CP4D), shallow water areas for wildlife (CP9), grassed filter strips (CP21), riparian buffers (CP22), wetland restoration (CP23, 23A), and wildlife habitat for upland birds (CP33). As all of these practices have the potential to enhance wildlife habitat for trust resources, including federally threatened and endangered species occurring in Delaware, the U.S. Fish and Wildlife Service (Service) fully supports the goals of the Delaware CREP. Furthermore, we look forward to working with FSA to ensure that the implementation of any individual CREP conservation practice does not adversely affect federally listed species (and when feasible, benefits them).

The federally endangered Delmarva fox squirrel *(Sciurus niger cinereus)* is known to occur in appropriate habitat in Sussex County, Delaware. This species occupies mature pine and hardwood forests, both bottomland and upland, with a relatively open understory. Conservation practices such as hardwood tree plantings and riparian forest buffers have the potential to connect fragmented forests occupied by Delmarva fox squirrels and could potentially aid in the expansion of the existing populations in Delaware. However, if any clearing of forested habitat (including individual trees ≥10 inch d.b.h.) will occur as part of an individual CREP enrollment in certain areas of Sussex County, the Delmarva fox squirrel may be impacted. Areas in which the Delmarva fox squirrel is known to occur include forested habitat within the following U.S.G.S. topographic quadrangle maps: Lewes, Milton, Sharptown and Laurel. We recommend that Delaware FSA consult with the U.S. Fish and Wildlife Service on CREP enrollments in these areas of Sussex County for which forest clearing is proposed.

The federally threatened bog turtle *(Clemmys muhlenbergii)* is known to occur in New Castle County, Delaware. This species primarily inhabits palustrine wetlands comprised of a muddy bottom or shallow water, and tussocks of vegetation. Bog turtles usually occur in small, discrete populations occupying suitable wetland habitat dispersed along a watershed. The occupied "intermediate successional stage" wetland habitat is usually a mosaic of micro-habitats ranging from dry pockets, to areas that are saturated with water, to areas that are periodically flooded. Some wetlands occupied by bog turtles are located in agricultural areas and are subject to grazing by livestock; in fact, in some cases light to moderate livestock grazing of wetlands can help maintain bog turtle habitat by preventing vegetative succession.

Because of these habitat requirements, actions commonly chosen to combat streambank erosion and improve water quality, such as establishing forested riparian buffer zones, fencing cattle out of wetlands, and placing large rocks along stream channels, could diminish the ability of bog turtles to use the streams and associated floodplains as dispersal corridors and reduce the suitability of wetland areas for use by bog turtles. We recommend that lands proposed for Delaware CREP enrollment in certain areas of New Castle County be evaluated on a case-by-case basis to avoid impacts to bog turtle populations. The following drainage basins have been identified by the Delaware Natural Heritage and Endangered Species Program (DNHESP) as watersheds in which the bog turtle may occur: Brandywine Creek, Red Clay Creek, White Clay Creek, Christina River, Elk Creek, Red Lion Creek, Dragon Run Creek, Chesapeake Delaware Canal, Chesapeake Drainage System, and Appoquinimink River. We recommend that projects occurring in these watersheds be screened through DNHESP. If a potential bog turtle wetland is identified within the proposed project area further section 7 consultation with the U.S. Fish and Wildlife Service may be required. Measures the Service might recommend to avoid impacts to bog turtles include seasonal restrictions on project construction and alterations to project design to protect habitat quality.

The federally threatened swamp pink *(Helonias bullata)* occurs throughout the state of Delaware. Swamp pink is a perennial wildflower that inhabits a variety of freshwater wetlands, including spring seepages, swamps, bogs, wet meadows and margins of small streams. The major threat to the species is loss and degradation of its wetland habitat due to encroaching development, sedimentation, pollution, succession, and wetland drainage. Therefore, targeted enrollment of properties within watersheds occupied by swamp pink may provide conservation benefit to

existing populations. However, in order to ensure that there are no direct impacts to these populations we recommend that projects occurring in the watersheds identified below are screened through DNHESP. If a swamp pink population is identified within a proposed project area further section 7 consultation with the U.S. Fish and Wildlife Service may be required.

Swamp Pink Watersheds of Occurrence in the state of Delaware		
County	U.S.G.S. Topographic Quad Map	Watershed
New Castle	Middletown	Barlow Branch of Blackbird Creek
	Saint George's	Muddy run of Christina River
Kent	Harrington	Killen Pond - Murderkill River
		Tantrough Branch of Mispillion River
	Milford	Tantrough Branch, Beaverdam Branch, and Johnson Branch of Mispillion River
Sussex	Ellendale	Church Branch of Cedar Creek
		Cedar Creek
	Fairmount	Chapel Branch of Herring Creek
	Harbeson	Dutton Ditch - Ingram Branch and Round Pole Branch of Broadkill River
	Milford	Lednum Branch, Beaverdam Branch, Tantrough Branch, and Johnson Branch of Mispillion River
	Milton	North Prong, Sowbridge Branch, and Piney Branch of Primehook Creek
		Brittingham Branch, Pemberton Branch, and Round Pole Branch of Broadkill River
	Mispillion River	Beaverdam Branch of Cedar Creek
		Cedar Creek

The federally threatened bald eagle *(Haliaeetus leucocephalus)* nests throughout the state of Delaware. Construction or forest clearing activities within one-quarter mile of an active nest may impact bald eagles. Therefore, we recommend FSA contact DNHESP to determine if a particular DE CREP enrollment is located in the vicinity of a bald eagle nest. We propose FSA work with DNHESP to obtain maps depicting bald eagle nest locations throughout the state of Delaware (updated annually) so that FSA may more efficiently make effect determinations. If a bald eagle nest is identified within one-quarter mile of a proposed project area further section 7 consultation with the U.S. Fish and Wildlife Service may be required. One measure the Service might recommend to avoid impacts to nesting bald eagles would be adhering to seasonal restrictions on project construction.

Except for occasional transient individuals, no other federally proposed or listed endangered or threatened species are known to exist within the areas of potential Delaware CREP activity. Should additional information on listed or proposed species become available, this determination may be reconsidered. Species occurrence information must be renewed each calendar year.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Edna Stetzar, of DNHESP, at (302) 653-2883 ext. 126. You may also obtain information on how to make such a request by visiting the Program website at www.dnrec.state.de.us/nhp.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Maricela Constantino of my Threatened and Endangered Species Program staff at (410) 573-4542.

Sincerely,

Sherry Kreeft

John Wolflin
Supervisor

cc Karen Bennett, Delaware Natural Heritage Program, Smyrna, DE

United States
Department of
Agriculture

Farm and Foreign
Agricultural
Services

Farm Service
Agency

Delaware FSA
State Office
1221 College Pk Dr
Suite 201
Dover, DE
19904-8713

Ph: 302-678-4250
Fax: 302-678-9100

March 17, 2006

Mr. John Wolflin, Field Supervisor
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307

Attn: Maricela Constantino

RE: USDA-Farm Service Agency Response to U.S. Fish and Wildlife Service Scoping Comments on the Delaware Conservation Reserve Enhancement Program (CREP)

Dear Mr. Wolflin:

Thank you for responding to our letter, dated February 8, 2006, announcing scoping for the Delaware Conservation Reserve Enhancement Program (CREP), and for addressing issues pursuant to section 7 of the Endangered Species Act and the Fish and Wildlife Coordination Act. From review of your comments, we understand there are four federally listed threatened and endangered species of concern in the State of Delaware:

1) Delmarva fox squirrel,
2) bog turtle,
3) swamp pink, and
4) bald eagle.

FSA wants to assure you that we will coordinate, consult and ensure that CREP practices do not jeopardize or cause harm to any federally or state-protected species, rare species or species of concern, or critical habitat supporting these species. A goal of CREP is to ensure the viability and continued existence of the State's declining species through the implementation of beneficial CREP practices designed to enhance habitat for these species.

Delmarva Fox Squirrel (*Sciurus niger cinereus*)

U.S. Fish and Wildlife Service (USF&WS) recommends that Delaware FSA consult with them on CREP enrollments in areas of Sussex County if forest clearing is proposed. Delaware CREP occurs only on actively managed cropland, and clearing of forest land is not a CREP practice and that would never be proposed or approved under CREP. Hardwood tree planting, an approved CREP practice, could eventually enhance habitat for the Delmarva fox squirrel. As a result, FSA does not believe there should be a need for further consultation with USF&WS for this species under CREP.

Bog Turtle (*Clemmys muhlenbergii*)

USF&WS has noted that the following drainage basins have been identified by the Delaware Natural Heritage and Endangered Species Program (DNHESP) as watersheds where the bog turtle may occur: Brandywine Creek, Red Clay Creek, White Clay Creek, Christina River, Elk Creek, Red Lion Creek,

Dragon Run Creek, Chesapeake Delaware Canal, Chesapeake Drainage System, and Appoquinimink River. USF&WS recommends that CREP projects occurring in these watersheds be screened by the DNHESP.

Please be advised that Delaware CREP is only approved in the coastal plain region of Delaware and does not occur in the drainage basins you have identified above. Therefore, FSA does not believe that consultation regarding the bog turtle is required at this time.

Swamp Pink (*Helonias bullata*)

USF&WS recommends that CREP projects occurring in watersheds identified on the chart on Page 3 of its letter, dated February 8, 2006, be screened through DNHESP to ensure that there are no direct impacts to the swamp pink.

FSA understands that swamp pink is a perennial species that occurs in freshwater wetlands. In Delaware, CREP is practiced in actively cultivated cropland and DNHESP has advised FSA that there should be no need to consult on CREP projects in these watersheds.

Bald Eagle (*Haliaeetus leucocephalus*)

USF&WS recommends that FSA consult with DNHESP to obtain maps showing the locations of bald eagle nests throughout the State of Delaware (updated annually) so that FSA may more efficiently determine the potential effects to these nests prior to approving CREP contracts and implementing CREP practices. If a bald eagle nest is identified within one-quarter mile of a proposed project, FSA will conduct further section 7 consultations with USF&WS to ensure that nesting sites are protected and not disturbed.

As recommended, FSA will consult further with Edna Stetzar of DNHESP regarding the presence of bald eagle nesting sites and the potential for other rare and protected species. If needed, FSA will be available to meet with you regarding CREP in Delaware. We look forward to your review of our response. Please call me at 302-678-4250 if you have any questions.

Sincerely,

Richard L. Bergold
State Executive Director

cc: Karen Bennett, Delaware Natural Heritage and Endangered Species Program, Smyrna, DE

Dear Mr. Olson:

FSA has contacted you as a representative of the USDA State Technical Committee. As you know, the DECREP program has been in effect since 1999. The Agency is revising the program to include new practices and additional acreage as explained in the letter.

Under NEPA, a programmatic environmental review of the CREP program is required at this time. Public comments are also sought by announcements that are being run in the Delaware State News and the Delmarva Farmer.

The process that has been utilized in the past with the Delaware Forest Service will remain the same unless changes are warranted by the findings of this review. Your Agency's continued support in the revised CREP program will be as appreciated as your past contributions.

I hope this explanation is helpful. If you have any further questions, please let me know at 678-4257. Thank you.
Norma Collins
State Environmental Coordinator - Delaware
USDA- Farm Service Agency

From: Olson James (DDA) [mailto:James.Olson@state.de.us]
Sent: Friday, January 27, 2006 9:33 AM
To: Collins, Norma - Dover, DE
Subject: CREP PEA

Dear Ms. Collins,

I am a bit confused as to why I was sent the email with the attached letter requesting input on this project. The Delaware Forest Service does participate in CREP, but only to the extent of arranging for the actual tree planting and producing a management plan. We receive the site information from NRCS, and coordinate with them for the actual planting, but that has been the extent of our involvement.

We would be happy to help out, but I would need to find out exactly what information you desire from our foresters.

Thank you,

James Olson

James W. Olson, CF
Senior Forester
Forest Stewardship Coordinator
Delaware Forest Service
Telephone: 302/856-2893
FAX: 302/856-5039

APPENDIX E

STATE OF DELAWARE
FEDERALLY AND STATE-LISTED THREATENED AND ENDANGERED SPECIES

DELAWARE SPECIES OF GREATEST CONSERVATION NEED AND THEIR HABITAT ASSOCIATIONS

Federally Listed Threatened and Endangered Species in Delaware

Common Name	Scientific Name	Status	Distribution
BIRDS:			
Eagle, bald	*Haliaeetus leucocephalus*	T	Entire state
Plover, piping	*Charadrius melodus*	T	Sussex County
FISH:			
Sturgeon, shortnose[1]	*Acipenser brevirostrum*	E	Delaware River and Delaware Bay
MAMMALS:			
Squirrel, Delmarva fox	*Sciurus niger cinereus*	E[2]	Sussex County
Whale, finback[1]	*Balaenoptera physalus*	E	Oceanic
Whale, humpback[1]	*Megaptera novaeangliae*	E	Oceanic
Whale, right[1]	*Eubalaena spp.*	E	Oceanic
REPTILES:			
Turtle, bog	*Clemmys muhlenbergii*	T	New Castle County
Turtle, green[1]	*Chelonia mydas*	T	Oceanic; summer visitor coastal waters
Turtle, hawksbill[1]	*Eretmochelys imbricata*	E	Oceanic; summer visitor coastal waters
Turtle, leatherback[1]	*Dermochelys coriacea*	E	Oceanic; summer visitor coastal waters
Turtle, loggerhead[1]	*Caretta caretta*	T	Oceanic; summer resident coastal waters - rarely nests
Turtle, Atlantic ridley[1]	*Lepidochelys kempi*	E	Oceanic; summer resident coastal waters
PLANTS:			
Dropwort, Canby's	*Oxypolis canbyi*	E	No recent records (1894)
Amaranth, seabeach	*Amaranthus pumilus*	T	Atlantic coastal beaches, Sussex County
Pink, swamp	*Helonius bullata*	T	Entire state
Pogonia, small-whorled	*Isotria medeoloides*	T	New Castle County

Beackrush, Knieskerns	*Rhynchospora knieskernii*	T	No recent records (1875)
Asphodel, bog	*Narthecium americanum*	C	Presumed extirpated
Panic grass, Hirsts'	*Dichanthelium hirstii*	C	Sussex County

Source: U.S. Fish & Wildlife Service, Chesapeake Bay Field Office. June 2005.
http://www.fws.gov/chesapeakebay/EndSppWeb/lists/specieslist-de.htm

[1]Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Oceanic and Atmospheric Administration Fisheries Service.
[2]Experimental population designated at Assawoman Wildlife Management Area (*Federal Register* Vol. 49, No. 179 pgs. 35951-35955)

E = Endangered
T = Threatened
C = Candidate

State Listed Endangered Species in Delaware

Pursuant to Title 7 DNREC, 3000 Division of Fish and Wildlife, 3900 Wildlife, Sections 16.2.2 and 16.2.3, the following species are listed as endangered by the State of Delaware and are afforded the protection in accordance with section 601 of Title 7:

Amphibians
Salamander, Eastern Tiger (*Ambystoma tigrinumtigrinum*)
Treefrog, Barking (*Hyla gratiosa*)

Birds
Creeper, Brown* (*Certhia americana*)
Eagle, Bald (*Haliaeetus leucocephalus*)
Grebe, Pied-billed* (*Podilymbus podiceps*)
Harrier, Northern* (*Circus cyaneus*)
Hawk, Cooper's* (*Accipiter cooperii*)
Heron, Black-Crowned Night- (*Nycticorax nycticorax*)
Heron, Yellow-Crowned Night- (*Nyctanassa violacea*)
Parula, Northern* (*Parula americana*)
Plover, Piping (*Charadrius melodus*)
Owl, Short-eared* (*Asio flammeus*)
Oystercatcher, American (*Haematopus palliatus*)
Rail, Black (*Laterallus jamaicensis*)
Sandpiper, Upland (*Bartramia longicauda*)
Shrike, Loggerhead (*Lanius ludovicianus*)
Skimmer, Black (*Rynchops niger*)
Sparrow, Henslow's (*Ammodramus henslowii*)
Tern, Common* (*Sterna hirundo*)
Tern, Forster's* (*Sterna forsteri*)
Tern, Least (*Sterna antillarum*)
Warbler, Cerulean (*Dendroica cerulea*)
Warbler, Hooded* (*Wilsonia citrina*)
Warbler, Swainson's (*Limnothlypis swainsonii*)
Woodpecker, Red-headed (*Melanerpes erythrocephalus*)
Wren, Sedge (*Cistothorus platensis*)

* Breeding population only

Fish
Sturgeon, Atlantic (*Acipenser oxyrhynchus*)

Insects
Beetle, Little White Tiger (*Cicindela lepida*)
Beetle, White Tiger (*Cicindela dorsalis*)
Beetle, Seth Forest Scavenger (*Hydrochus sp*.)
Elfin, Frosted (*Incisalia irus*)
Firefly, Bethany (*Photuris bethaniensis*)
Hairstreak, Hessel's (*Mitoura hesseli*)
Hairstreak, King's (*Satyrium kingi*)
Skipper, Rare (*Problema bulenta*)
Wing, Mulberry (*Poanes massasoit chermocki*)

Mammals
Squirrel, Delmarva Fox (*Sciurus niger cinereus*)

Mollusks
Lampmussel, Yellow (*Lampsilis cariosa*)
Lampmussel, Eastern (*Lampsilis radiata*)
Wedgemussel, Dwarf (*Alasmidonta heterodon*)
Pondmussel, Eastern (*Ligumia nasuta*)
Floater, Brook (*Alasmidonta varicosa*)
Mucket, Tidewater (*Leptodea ochracea*)

Reptiles
Sea Turtle, Leatherback (*Dermochelys coriacea*)
Sea Turtle, Atlantic Ridley (*Lepidochelys kempii*)
Sea Turtle, Green (*Chelonia mydas*)
Sea Turtle, Loggerhead (*Caretta caretta*)
Turtle, Bog (*Clemmys muhlenbergii*)
Snake, Corn (*Elaphe guttata guttata*)

Delaware Species of Greatest Conservation Need

See Key on last page for explanation of Criteria factors and Cross Reference columns

Tier 1 criteria: State Endangered; sensitive/significant DE populations; Federal Endangered or Threatened; global rank G1/T1 or G2/T2; NETC listing warranted; BCR 30 Highest tier; AFS endangered or threatened
Tier 2 criteria: State rank S1, S2, SH, SX, (if not Tier 1); Federal Candidate; global rank G3/T3; NETC concern (if not Tier 1); BCR 30 High tier; AFS vulnerable; NMFS prohibited fishery

Species		CRITERIA										CROSS REFERENCE											
		State Status	State Rank	Sensitive/ Significant DE Populations	Federal Status	Global Rank	NETC Listing	NETC Concern	BCR 30 Tier	AFS Status	NMFS Prohibited	CITES App I	CITES App II	CITES App III	IUCN Cat	ASMFC Mgd	MAFMC Mgd	NEFC Mgd	USSCP Regional Priority	NAWMP Pop Goal %	NAWCP Risk Category	PIF 44 Level	TNC Target
Tier 1																							
Bivalves																							
Alasmidonta heterodon	dwarf wedgemussel	E	SH		E	G1G2	☐	☑			☐	☐	☐	☐	EN	☐	☐	☐					☑
Alasmidonta undulata	triangle floater		SH	restricted range		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Alasmidonta varicosa	brook floater	E	SX			G3	☐	☑			☐	☐	☐	☐	DD	☐	☐	☐					☑
Lampsilis cariosa	yellow lampmussel	E	SH			G3G4	☐	☑			☐	☐	☐	☐	EN	☐	☐	☐					☑
Lampsilis radiata	Eastern lampmussel	E	S1			G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Leptodea ochracea	tidewater mucket	E	S1			G4	☐	☑			☐	☐	☐	☐	NT	☐	☐	☐					☑
Ligumia nasuta	Eastern pondmussel	E	S1			G4G5	☐	☑			☐	☐	☐	☐	NT	☐	☐	☐					☑
Crustaceans																							
Callinectes sapidus	blue crab			keystone species			☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Arachnids																							
Limulus polyphemus	horseshoe crab			keystone species			☐	☐			☐	☐	☐	☐		☑	☐	☐					☑
Insects																							
Autochton cellus	gold-banded skipper		SH	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Callophrys hesseli	Hessel's hairstreak	E	S1			G3G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Callophrys irus	frosted elfin	E	S1			G3	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Catocala antinympha	sweetfern underwing		SH	regional rarity		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Catocala carissima	an underwing moth		S1?	disjunct		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Catocala lacrymosa	tearful underwing		S1S3	regional rarity		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Catocala marmorata	marbled underwing		SU	regional rarity		G3G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Catocala nebulosa	clouded underwing		S1	regional rarity		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Cicindela dorsalis media	white tiger beetle	E	SU			G4T4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Cicindela lepida	little white tiger beetle	E	S1			G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Cicindela patruela consentanea	Northern barrens tiger beetle		SH			G3T2T3	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Cicindela rufiventris	Eastern red-bellied tiger beetle		SU	one occurrence		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Euphyes conspicua	black dash		S1	restricted range		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Exyra fax	pitcher plant moth		S1	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Gomphus fraternus	midland clubtail		S1	restricted range		G5	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Hadena ectypa	a noctuid moth		SH	regional rarity		G3G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Hydrochus spangleri	Seth Forest water scavenger beetl	E	SH			G1	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Nannothemis bella	elfin skimmer		S1	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Nicrophorus americanus	American burying beetle		SX		E	G2G3	☐	☑			☐	☐	☐	☐	CR	☐	☐	☐					☐
Papaipema appassionata	pitcher plant borer moth		SH	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Papaipema duplicata	dark stoneroot borer moth		SH	regional rarity		G2G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Papaipema eupatorii	eupatorium borer moth		SH	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Papaipema maritima	maritime sunflower borer moth		S1	regional rarity		G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Photuris bethaniensis	Bethany Beach firefly	E	S1			G1?	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Poanes massasoit	mulberry wing	E	S1			G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☐
Poanes massasoit chermocki	Chermock's mulberry wing		S1			G4T1	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Problema bulenta	rare skipper	E	S1			G2G3	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Satyrium kingi	King's hairstreak	E	S1			G3G4	☐	☐			☐	☐	☐	☐		☐	☐	☐					☑
Fishes																							
Acantharchus pomotis	mud sunfish		S2			G5	☑	☑			☐	☐	☐	☐		☐	☐	☐					☐
Acipenser brevirostrum	shortnose sturgeon		S3N		E	G3	☐	☑		T	☐	☑	☐	☐	VU	☐	☐	☐					☑
Acipenser oxyrinchus	Atlantic sturgeon	E	S2		C	G3	☐	☐		CD	☐	☐	☑	☐	NT	☑	☐	☐					☑

Habitat Associations of Delaware Species of Greatest Conservation Need

Habitat Level 1	Habitat Level 2	Habitat Level 3
Gastropods		
Anguispira alternata	**flamed tigersnail**	**Tier 2**
Upland Habitats	Upland Forests	
Anguispira fergusoni	**Coastal Plain tigersnail**	**Tier 2**
undetermined		
Carychium exiguum	**obese thorn**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Discus catskillensis	**angular disc**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Euconulus dentatus	**toothed hive**	**Tier 2**
undetermined		
Gastrocopta armifera	**armed snaggletooth**	**Tier 2**
Upland Habitats	Upland Forests	
Haplotrema concavum	**gray-foot lancetooth**	**Tier 2**
Upland Habitats	Upland Forests	
Philomycus flexuolaris	**winding mantleslug**	**Tier 2**
undetermined		
Pomatiopsis lapidaria	**slender walker**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	
Punctum vitreum	**glass spot**	**Tier 2**
undetermined		
Pupoides albilabris	**white-lip dagger**	**Tier 2**
undetermined		
Stenotrema hirsutum	**hairy siltmouth**	**Tier 2**
Upland Habitats	Upland Forests	
Triodopsis tridentata	**Northern threetooth**	**Tier 2**
Upland Habitats	Upland Forests	
Ventridens intertextus	**pyramid dome**	**Tier 2**
Upland Habitats	Upland Forests	
Vertigo pygmaea	**crested vertigo**	**Tier 2**
undetermined		
Vertigo teskeyae	**swamp vertigo**	**Tier 2**
undetermined		
Vertigo tridentata	**honey vertigo**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	
Zonitoides nitidus	**black gloss**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Bivalves		
Alasmidonta heterodon	**dwarf wedgemussel**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Alasmidonta undulata	**triangle floater**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Alasmidonta varicosa	**brook floater**	**Tier 1**
Freshwater Aquatic Habitats	Piedmont Streams	
Anodonta implicata	**alewife floater**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Elliptio fisheriana	**Northern lance**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Bivalves		
Lampsilis cariosa	**yellow lampmussel**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Lampsilis radiata	**Eastern lampmussel**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Leptodea ochracea	**tidewater mucket**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Ligumia nasuta	**Eastern pondmussel**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Strophitus undulatus	**creeper**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Crustaceans		
Callinectes sapidus	**blue crab**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Arachnids		
Limulus polyphemus	**horseshoe crab**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Insects		
Acontia defecta	**a noctuid moth**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Acronicta connecta	**a noctuid moth**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Shrub Swamps Piedmont Stream Valley Wetlands
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Scrub-Shrub Wetlands
Acronicta exilis	**exiled dagger moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Acronicta increta	**a dagger moth**	**Tier 2**
undetermined		
Acronicta lithospila	**streaked dagger moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Acronicta rubricoma	**a dagger moth**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Aeshna tuberculifera	**black-tipped darner**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds Streamside Herbaceous Wetlands
Aeshna verticalis	**green-striped darner**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds Streamside Herbaceous Wetlands
Agabetes acuductus	**a hydrophilid beetle**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Isolated Forested Wetlands
Agnorisma bollii	**a noctuid moth**	**Tier 2**
Upland Habitats	Upland Forests	
Agrius cingulata	**pink spotted hawkmoth**	**Tier 2**
undetermined		
Amblyscirtes aesculapius	**laos-winged roadside-skipper**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Amblyscirtes carolina	**Carolina roadside-skipper**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Amorpha juglandis	**walnut sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Upland Habitats	Upland Forests	
Anacamptodes pergracilis	**cypress looper**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Anatrytone logan	**Delaware skipper**	**Tier 2**
undetermined		
Anax longipes	**comet darner**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Archanara subflava	**yellow sedge borer**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Streamside Herbaceous Wetlands
Archilestes grandis	**great spreadwing**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Argia bipunctulata	**seepage dancer**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Peat Wetlands
Argia moesta	**powdered dancer**	**Tier 2**
undetermined		
Argia translata	**dusky dancer**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams Ponds, Lakes & Reservoirs	
Argyrostrotis quadrifilaris	**a noctuid moth**	**Tier 2**
undetermined		
Asterocampa celtis	**hackberry emperor**	**Tier 2**
undetermined		
Atlides halesus	**great purple hairstreak**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Shrub Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Scrub-Shrub Wetlands
Atrytonopsis hianna	**dusted skipper**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats Shrub/brush Upland Habitats
Autochton cellus	**gold-banded skipper**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	
Battus philenor	**pipevine swallowtail**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Bellura gortynoides	**a noctuid moth**	**Tier 2**
undetermined		
Boloria bellona	**meadow fritillary**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Boloria selene	**silver-bordered fritillary**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Boloria selene myrina	**myrina fritillary**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Brachymesia gravida	**four-spotted pennant**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Callophrys augustinus	**brown elfin**	**Tier 2**
undetermined		
Callophrys gryneus	**juniper hairstreak**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Callophrys henrici	**Henry's elfin**	**Tier 2**
undetermined		

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Callophrys hesseli	**Hessel's hairstreak**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Callophrys irus	**frosted elfin**	**Tier 1**
Upland Habitats	Upland Forests Early Successional Upland Habitats	Coastal Plain Upland Forests
Calyptra canadensis	**Canadian owlet**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	
Caripeta aretaria	**a geometer moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats Upland Forests	Dune Forests & Woodlands Coastal Plain Upland Forests
Catocala alabamae	**Alabama underwing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Catocala antinympha	**sweetfern underwing**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Catocala carissima	**an underwing moth**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Catocala cerogama	**yellow banded underwing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Catocala flebilis	**mournful underwing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Catocala insolabilis	**inconsolable underwing**	**Tier 2**
Upland Habitats	Upland Forests	
Catocala lacrymosa	**tearful underwing**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Catocala maestosa	**sad underwing**	**Tier 2**
Upland Habitats	Upland Forests	
Catocala marmorata	**marbled underwing**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Catocala minuta	**little underwing**	**Tier 2**
undetermined		
Catocala nebulosa	**clouded underwing**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Catocala palaeogama	**oldwife underwing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Catocala parta	**mother underwing**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Catocala praeclara	**praeclara underwing**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Catocala residua	**residua underwing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Catocala unijuga	**once-married underwing**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Celithemis monomelaena	**black spotted skimmer**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Other Habitats	Sand/Gravel Pits	
Celithemis ornata	**faded pennant**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Callihomis verna	**double-ringed pennant**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Other Habitats	Sand/Gravel Pits	
Ceratomia undulosa	**waved sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Cerura scitiscripta	**black-etched prominent**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Upland Habitats	Upland Forests	
Chloropteryx tepperaria	**angle winged emerald moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Cicindela dorsalis	**Eastern beach tiger beetle**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
Cicindela dorsalis media	**white tiger beetle**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Cicindela duodecimguttata	**twelve-spotted tiger beetle**	**Tier 2**
undetermined		
Cicindela formosa generosa	**big sand tiger beetle**	**Tier 2**
undetermined		
Cicindela hirticollis	**beach-dune tiger beetle**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Interdunal Wetlands
Upland Habitats	Beach & Dune Habitats	Dune Shrublands Dune Grasslands Unvegetated Sandy Beach
Cicindela lepida	**little white tiger beetle**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Dune Shrublands Dune Grasslands Unvegetated Sandy Beach
Cicindela marginata	**margined tiger beetle**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Cicindela patruela	**Northern barrens tiger beetle**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Cicindela patruela consentanea	**Northern barrens tiger beetle**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Cicindela purpurea	**cow path tiger beetle**	**Tier 2**
undetermined		
Cicindela rufiventris	**Eastern red-bellied tiger beetle**	**Tier 1**
Other Habitats	Sand/Gravel Pits	
Cicindela scutellaris	**festive tiger beetle**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	
Other Habitats	Sand/Gravel Pits	
Cicindela unipunctata	**one-spotted tiger beetle**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Cirrhophanus triangulifer	**a noctuid moth**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	
Clathene kentuckiensis	**Kentucky lichen moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Clathene tenuifascia	**a lichen moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Copivaleria grotei	**Grote's sallow**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Upland Habitats	Upland Forests	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Cordulegaster bilineata	**brown spiketail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Cordulegaster erronea	**tiger spiketail**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Darapsa versicolor	**hydrangea sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Shrub Swamps
Deidamia inscripta	**lettered sphinx**	**Tier 2**
Upland Habitats	Upland Forests	
Dolba hyloeus	**black alder or pawpaw sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Drasteria graphica	**a noctuid moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	
Drasteria graphica atlantica	**Atlantic graphic moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Shrublands
Dromogomphus spinosus	**black-shouldered spinyleg**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Enallagma dubium	**burgundy bluet**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Enallagma durum	**big bluet**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Enallagma pallidum	**pale bluet**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Enallagma vesperum	**vesper bluet**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Enallagma weewa	**blackwater bluet**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Erynnis baptisiae	**wild indigo duskywing**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Erynnis brizo brizo	**sleepy dusky wing**	**Tier 2**
undetermined		
Erynnis icelus	**dreamy duskywing**	**Tier 2**
undetermined		
Erynnis martialis	**mottled duskywing**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Euphydryas phaeton	**Baltimore checkerspot**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Euphyes conspicua	**black dash**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands Streamside Herbaceous Wetlands
Euphyes dion	**dion skipper**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds Piedmont Stream Valley Wetlands Streamside Herbaceous Wetlands

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Exyra fax	**pitcher plant moth**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Peat Wetlands
Feniseca tarquinius	**harvester**	**Tier 2**
undetermined		
Gluphisia lintneri	**a notodontid moth**	**Tier 2**
undetermined		
Gomphaeschna antilope	**taper-tailed darner**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Coastal Plain Seasonal Ponds Peat Wetlands
Gomphaeschna furcillata	**harlequin darner**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Gomphus apomyius	**banner clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Gomphus fraternus	**midland clubtail**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Gomphus plagiatus	**russet-tipped clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Gomphus rogersi	**sable clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Gomphus spinicops	**arrow clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams	
Gomphus villosipes	**unicorn clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Grammia phyllira	**phyllira tiger moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Hadena ectypa	**a noctuid moth**	**Tier 1**
Upland Habitats	Upland Forests	
Haploa colona	**a tiger moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Helocombus bifidus	**a water scavenger beetle**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Isolated Forested Wetlands
Helocordulia selysii	**Selys' sundragon**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Hemileuca maia maia	**the buckmoth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Hesperia metea	**cobweb skipper**	**Tier 2**
undetermined		
Hesperia sassacus	**Indian skipper**	**Tier 2**
undetermined		
Heterocampa astarte	**a notodontid moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	
Hoperius planatus	**a hydrophilid beetle**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Isolated Forested Wetlands
Hydrochus spangleri	**Seth Forest water scavenger beetle**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Isolated Forested Wetlands
Ischnura kellicotti	**lilypad forktail**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Riverine Aquatic & Submerged Vegetation
Lepipolys perscripta	**a noctuid moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Lestes eurinus	**amber-winged spreadwing**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Leucorrhinia intacta	**dot-tailed whiteface**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Libellula auripennis	**golden-winged skimmer**	**Tier 2**
undetermined		
Libellula axilena	**bar-winged skimmer**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Libellula deplanata	**blue corporal**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Libellula flavida	**yellow-sided skimmer**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Libytheana carinenta	**American snout**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Lophocampa caryae	**an arctiid moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Lucanus elaphus	**giant stag beetle**	**Tier 2**
Upland Habitats	Upland Forests	
Lycaena hyllus	**bronze copper**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Streamside Herbaceous Wetlands
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Macrochilo louisiana	**a noctuid moth**	**Tier 2**
undetermined		
Macromia illinoiensis	**illinois river cruiser**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams	
Macromia taeniolata	**royal river cruiser**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Manduca jasminearum	**ash sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Scrub-Shrub Wetlands
Manduca rustica	**rustic sphinx**	**Tier 2**
undetermined		
Megacephala virginica	**Virginia big-headed tiger beetle**	**Tier 2**
undetermined		
Melitara prodenialis	**a snout-moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Forests & Woodlands Dune Grasslands
Nannothemis bella	**elfin skimmer**	**Tier 1**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Nehalennia gracilis	**sphagnum sprite**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Peat Wetlands
Nehalennia integricollis	**Southern sprite**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Nehalennia irene	**sedge sprite**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Nicrophorus americanus	**American burying beetle**	**Tier 1**
Upland Habitats	Upland Forests Early Successional Upland Habitats	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Nigetia formosalis	**a noctuid moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Orgyia detrita	**a tussock moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Ostrocerca prolongata	**bent forestfly**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams	
Paonias astylus	**huckleberry sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Upland Habitats	Upland Forests	
Papaipema appassionata	**pilcher plant borer moth**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
	Non-forested Wetlands	Peat Wetlands
Papaipema araliae	**aralia shoot borer moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Papaipema astuta	**yellow stoneroot borer**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema baptisiae	**wild indigo borer moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Papaipema birdi	**umbelliifer borer moth**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Shrub Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal High Marshes
Papaipema circumlucens	**hop borer**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema duplicata	**dark stoneroot borer moth**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema eupatorii	**eupatorium borer moth**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
		Streamside Herbaceous Wetlands
Papaipema furcata	**ash borer moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema lysimachiae	**loosestrife borer moth**	**Tier 2**
undetermined		
Papaipema maritima	**maritime sunflower borer moth**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	
Papaipema pterisii	**braoken borer moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema rigida	**rigid sunflower borer moth**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Papaipema rutila	**mayapple borer moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Papaipema speciosissima	**osmunda borer moth**	**Tier 2**
undetermined		
Papaipema stenocelis	**chain fern borer moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
	Non-forested Wetlands	Peat Wetlands
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Scrub-Shrub Wetlands
Parahypenodes quadralis	**a noctuid moth**	**Tier 2**
undetermined		

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Papaipema buffalonensis	**a borer moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Piedmont Stream Valley Wetlands
Paratrea plebeja	**trumpet vine sphinx**	**Tier 2**
Upland Habitats	Beach & Dune Habitats Early Successional Upland Habitats	Dune Forests & Woodlands Shrub/brush Upland Habitats
Pero hubneraria	**a geometer moth**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Pero zaffasaria	**a geometer moth**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Photuris bethaniensis	**Bethany Beach firefly**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Interdunal Wetlands
Photuris frontalis	**a firefly**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Photuris hebes	**a firefly**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Photuris pensylvanica	**a firefly**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Photuris pyralomimus	**a firefly**	**Tier 2**
Upland Habitats		
Photuris tremulans	**a firefly**	**Tier 2**
Upland Habitats		
Poanes hobomok	**hobomok skipper**	**Tier 2**
undetermined		
Poanes massasoit	**mulberry wing**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds Piedmont Stream Valley Wetlands Streamside Herbaceous Wetlands
Poanes massasoit chermocki	**Chermock's mulberry wing**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Streamside Herbaceous Wetlands
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Polygonia progne	**gray comma**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Pompeius verna	**little glassywing**	**Tier 2**
undetermined		
Pontia protodice	**checkered white**	**Tier 2**
undetermined		
Problema bulenta	**rare skipper**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Satyrium kingi	**King's hairstreak**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Satyrium liparops	**striped hairstreak**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Satyrium liparops strigosum	**striped hairstreak**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Satyrodes eurydice	**eyed brown**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands Streamside Herbaceous Wetlands
Schinia septentrionalis	**a noctuid moth**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Insects		
Schinia spinosae	**a noctuid moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Shrublands Dune Grasslands
Schinia trifascia	**three-lined flower moth**	**Tier 2**
undetermined		
Somatochlora filosa	**fine-lined emerald**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Somatochlora provocans	**treetop emerald**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Speyeria aphrodite	**aphrodite fritillary**	**Tier 2**
Upland Habitats	Upland Forests Early Successional Upland Habitats	Piedmont Upland Forests Herbaceous Upland Habitats Shrub/brush Upland Habitats
Speyeria idalia	**regal fritillary**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats Shrub/brush Upland Habitats
Sphinx chersis	**great ash sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Sphinx eremitus	**hermit sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Sphinx franckii	**Franck's sphinx**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	
Upland Habitats	Upland Forests	
Stiriodes obtusa	**a noctuid moth**	**Tier 2**
undetermined		
Stylogomphus albistylus	**least clubtail**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams	
Sympetrum ambiguum	**blue-faced meadowhawk**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Coastal Plain Seasonal Ponds
Sympetrum semicinctum	**band-winged meadowhawk**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds Piedmont Stream Valley Wetlands Streamside Herbaceous Wetlands
Synanthedon castaneae	**chestnut clearwing moth**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Tetragoneuria costalis	**stripe-winged baskettail**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Tetragoneuria spinosa	**robust baskettail**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tolype notialis	**a lasiocampid moth**	**Tier 2**
Upland Habitats	Beach & Dune Habitats Upland Forests	Dune Forests & Woodlands Coastal Plain Upland Forests
Xestia youngii	**Young blueberry dart**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands Non-forested Wetlands	Forested Floodplains & Riparian Swamps Peat Wetlands
Zale metata	**a noctuid moth**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Fishes		
Acantharchus pomotis	**mud sunfish**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Fishes		
Acipenser brevirostrum	**shortnose sturgeon**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Acipenser oxyrinchus	**Atlantic sturgeon**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Alosa mediocris	**hickory shad**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Apeltes quadracus	**fourspine stickleback**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Carcharhinus obscurus	**dusky shark**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats Offshore Habitats	
Carcharodon carcharias	**white shark**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats Offshore Habitats	
Cetorhinus maximus	**basking shark**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats Offshore Habitats	
Coitus caerulleomentum	**Blueridge sculpin**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Enneacanthus chaetodon	**blackbanded sunfish**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Enneacanthus obesus	**banded sunfish**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Etheostoma vitreum	**glassy darter**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Ictalurus natalis	**yellow bullhead**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Lampetra aepyptera	**least brook lamprey**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Lampetra appendix	**American brook lamprey**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Moxostoma macrolepidotum	**shorthead redhorse**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Notropis amoenus	**comely shiner**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Notropis bifrenatus	**bridle shiner**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Notropis chalybaeus	**ironcolor shiner**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Noturus insignis	**margined madtom**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams Coastal Plain Streams	
Percina peltata	**shield darter**	**Tier 1**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Pristis pectinata	**smalltooth sawfish**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Fishes		
Squatina dumeril	**Atlantic angel shark**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Amphibians		
Ambystoma maculatum	**spotted salamander**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Ambystoma tigrinum tigrinum	**tiger salamander**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Eurycea longicauda	**longtail salamander**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Hemidactylium scutatum	**four-toed salamander**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Hyla chrysoscelis	**Cope's gray treefrog**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Hyla gratiosa	**barking treefrog**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Pseudotriton montanus montanus	**mud salamander**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Rana virgatipes	**carpenter frog**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
Scaphiopus holbrookii	**Eastern spadefoot**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Coastal Plain Seasonal Ponds
Other Habitats	Sand/Gravel Pits	
Reptiles		
Agkistrodon contortrix	**copperhead**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Caretta caretta	**loggerhead sea turtle**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Cemophora coccinea	**scarlet snake**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Chelonia mydas	**Atlantic green turtle**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Clemmys guttata	**spotted turtle**	**Tier 1**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
	Non-forested Wetlands	Shrub Swamps
		Coastal Plain Seasonal Ponds
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Dermochelys coriacea	**leatherback sea turtle**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Elaphe guttata	**corn snake**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Dune Forests & Woodlands
	Upland Forests	Coastal Plain Upland Forests
Eretmochelys imbricata imbricata	**hawksbill**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Eumeces laticeps	**broadhead skink**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests

Habitat Level 1	Habitat Level 2	Habitat Level 3
Reptiles		
Glyptemys muhlenbergii	**bog turtle**	**Tier 1**
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
Heterodon platirhinos	**Eastern hognose snake**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Forests & Woodlands
	Upland Forests	Coastal Plain Upland Forests
Lampropeltis getula	**common kingsnake**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Lampropeltis triangulum	**milk snake**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	Herbaceous Upland Habitats
		Shrub/brush Upland Habitats
Lepidochelys kempii	**Kemp's Ridley sea turtle**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Malaclemys terrapin terrapin	**Northern diamondback terrapin**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
Nerodia erythrogaster	**plainbelly water snake**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Opheodrys aestivus	**rough green snake**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
Pseudemys rubriventris	**redbelly turtle**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
	Ponds, Lakes & Reservoirs	
Regina septemvittata	**queen snake**	**Tier 2**
Freshwater Aquatic Habitats	Piedmont Streams	
	Coastal Plain Streams	
Non-tidal Wetland Habitats	Non-forested Wetlands	Piedmont Stream Valley Wetlands
		Streamside Herbaceous Wetlands
Scincella lateralis	**ground skink**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Forests & Woodlands
	Upland Forests	Coastal Plain Upland Forests
Storeria occipitomaculata	**redbelly snake**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Terrapene carolina	**Eastern box turtle**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	
Thamnophis sauritus	**Eastern ribbon snake**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
	Non-forested Wetlands	Coastal Plain Seasonal Ponds
		Piedmont Stream Valley Wetlands
		Streamside Herbaceous Wetlands
Virginia valeriae	**smooth earth snake**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Birds		
Accipiter cooperii	**Cooper's hawk**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Accipiter striatus	**sharp-shinned hawk**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Actitis macularia	**spotted sandpiper**	**Tier 1**
Freshwater Aquatic Habitats	Piedmont Streams Coastal Plain Streams Ponds, Lakes & Reservoirs	
Other Habitats	Impoundments	
Ammodramus caudacutus	**saltmarsh sharp-tailed sparrow**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Ammodramus henslowii	**Henslow's sparrow**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats Shrub/brush Upland Habitats
Ammodramus maritimus	**seaside sparrow**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Ammodramus savannarum	**grasshopper sparrow**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Anas clypeata	**Northern shoveler**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Other Habitats	Impoundments	
Anas platyrhynchos	**mallard**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes
Other Habitats	Impoundments	
Anas rubripes	**American black duck**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Other Habitats	Impoundments	
Ardea herodias	**great blue heron**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps Isolated Forested Wetlands
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes Tidal High Marshes
Arenaria interpres	**ruddy turnstone**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Asio flammeus	**short-eared owl**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Asio otus	**long-eared owl**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Aythya affinis	**lesser scaup**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	
Aythya americana	**redhead**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Aythya marila	**greater scaup**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Aythya valisineria	**canvasback**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	
Bartramia longicauda	**upland sandpiper**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Bonasa umbellus	**ruffed grouse**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Botaurus lentiginosus	**American bittern**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal High Marshes
Branta bernicla	**brant**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Branta canadensis	**Canada goose (migratory)**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Other Habitats	Impoundments	
Bubulcus ibis	**cattle egret**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
		Tidal High Marshes
Bucephala albeola	**bufflehead**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	
Buteo lineatus	**red-shouldered hawk**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
Buteo platypterus	**broad-winged hawk**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Calidris alba	**sanderling**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Calidris alpina	**dunlin**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Other Habitats	Impoundments	
Calidris canutus	**red knot**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Calidris fuscicollis	**white-rumped sandpiper**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Other Habitats	Impoundments	
Calidris maritima	**purple sandpiper**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
		Unvegetated Sandy Beach
Calidris pusilla	**semipalmated sandpiper**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Other Habitats	Impoundments	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Caprimulgus vociferus	**whip-poor-will**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Isolated Forested Wetlands
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Casmerodius albus	**great egret**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes Tidal High Marshes
Catharus bicknelli	**Bicknell's thrush**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Catharus fuscescens	**veery**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Catoptrophorus semipalmatus	**willet**	**Tier 2**
Upland Habitats Tidal Wetland Habitats	Beach & Dune Habitats Saltwater & Brackish Tidal Wetlands	Unvegetated Sandy Beach Tidal Low Marshes
Other Habitats	Impoundments	
Certhia americana	**brown creeper**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Chaetura pelagica	**chimney swift**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	
Other Habitats	Structures	
Charadrius melodus	**piping plover**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands Unvegetated Sandy Beach
Charadrius wilsonia	**Wilson's plover**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Dune Grasslands Unvegetated Sandy Beach
Other Habitats	Impoundments	
Chlidonias niger	**black tern**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	
Chordeiles minor	**common nighthawk**	**Tier 1**
Upland Habitats	Beach & Dune Habitats Early Successional Upland Habitats	Dune Forests & Woodlands Dune Shrublands Dune Grasslands Shrub/brush Upland Habitats
Other Habitats	Structures	
Circus cyaneus	**Northern harrier**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Cistothorus palustris	**marsh wren**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Streamside Herbaceous Wetlands
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Cistothorus platensis	**sedge wren**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal High Marshes
Clangula hyemalis	**oldsquaw**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Coccyzus erythropthalmus	**black-billed cuckoo**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Colaptes auratus	**Northern flicker**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	
Colinus virginianus	**Northern bobwhite**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
		Shrub/brush Upland Habitats
Coragyps atratus	**black vulture**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	
Other Habitats	Structures	
Coturnicops noveboracensis	**yellow rail**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	
Cygnus columbianus	**tundra swan**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Other Habitats	Impoundments	
Dendroica cerulea	**cerulean warbler**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Dendroica discolor	**prairie warbler**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Dendroica dominica	**yellow-throated warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Dendroica pensylvanica	**chestnut-sided warbler**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Dolichonyx oryzivorus	**bobolink**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Egretta caerulea	**little blue heron**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
		Tidal High Marshes
Egretta thula	**snowy egret**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
		Tidal High Marshes
Egretta tricolor	**tricolored heron**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
		Tidal High Marshes

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Empidonax minimus	**least flycatcher**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Empidonax traillii	**willow flycatcher**	**Tier 2**
Non-tidal Wetland Habitats	Non-forested Wetlands	Shrub Swamps
Falco peregrinus	**peregrine falcon**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Other Habitats	Structures	
Fulica americana	**American coot**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Other Habitats	Impoundments	
Gavia stellata	**red-throated loon**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Haematopus palliatus	**American oystercatcher**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands Unvegetated Sandy Beach
Haliaeetus leucocephalus	**bald eagle**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Helmitheros vermivorus	**worm-eating warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Himantopus mexicanus	**black-necked stilt**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Other Habitats	Impoundments	
Hylocichla mustelina	**wood thrush**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Icteria virens	**yellow-breasted chat**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Icterus galbula	**Baltimore oriole**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Ixobrychus exilis	**least bittern**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal High Marshes
Lanius ludovicianus	**loggerhead shrike**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats Shrub/brush Upland Habitats
Larus marinus	**great black-backed gull**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Shrublands
Larus minutus	**little gull**	**Tier 2**
undetermined		
Laterallus jamaicensis	**black rail**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal High Marshes
Limnodromus griseus	**short-billed dowitcher**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Other Habitats	Impoundments	
Limnothlypis swainsonii	**Swainson's warbler**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Limosa fedoa	**marbled godwit**	**Tier 2**
Other Habitats	Impoundments	
undetermined		
Limosa haemastica	**Hudsonian godwit**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Other Habitats	Impoundments	
Lophodytes cucullatus	**hooded merganser**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams Ponds, Lakes & Reservoirs	
Other Habitats	Impoundments	
Melanerpes erythrocephalus	**red-headed woodpecker**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps Isolated Forested Wetlands
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Melanitta fusca	**white-winged scoter**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Melanitta nigra	**black scoter**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Melanitta perspicillata	**surf scoter**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Mniotilta varia	**black-and-white warbler**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Myiarchus crinitus	**great crested flycatcher**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Numenius phaeopus	**whimbrel**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
Nyctanassa violacea	**yellow-crowned night-heron**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes Tidal High Marshes
Nycticorax nycticorax	**black-crowned night-heron**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes Tidal High Marshes
Oporornis formosus	**Kentucky warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Pandion haliaetus	**osprey**	**Tier 1**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Freshwater Tidal Wetlands Saltwater & Brackish Tidal Wetlands	Freshwater Tidal Marshes Tidal Low Marshes Tidal High Marshes
Other Habitats	Impoundments	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Parula americana	**Northern parula**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Passerculus sandwichensis	**savannah sparrow**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
	Early Successional Upland Habitats	Herbaceous Upland Habitats
Pelecanus erythrorhynchos	**American white pelican**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	
Pelecanus occidentalis	**brown pelican**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Petrochelidon pyrrhonota	**cliff swallow**	**Tier 2**
Other Habitats	Structures	
Phalacrocorax auritus	**double-crested cormorant**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Phalacrocorax carbo	**great cormorant**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Phalaropus lobatus	**red-necked phalarope**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	
Phalaropus tricolor	**Wilson's phalarope**	**Tier 2**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	
Pipilo erythrophthalmus	**Eastern towhee**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Shrublands
	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Piranga olivacea	**scarlet tanager**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Plegadis falcinellus	**glossy ibis**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Pluvialis dominica	**American golden-plover**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
	Early Successional Upland Habitats	Herbaceous Upland Habitats
Other Habitats	Impoundments	
Pluvialis squatarola	**black-bellied plover**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Unvegetated Sandy Beach
	Early Successional Upland Habitats	Herbaceous Upland Habitats
Other Habitats	Impoundments	
Podiceps auritus	**horned grebe**	**Tier 2**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Other Habitats	Impoundments	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Podilymbus podiceps	**pied-billed grebe**	**Tier 1**
Freshwater Aquatic Habitats	Ponds, Lakes & Reservoirs	
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Other Habitats	Impoundments	
Pooecetes gramineus	**vesper sparrow**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Porzana carolina	**sora**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal High Marshes
Protonotaria citrea	**prothonotary warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
		Isolated Forested Wetlands
Puffinus gravis	**greater shearwater**	**Tier 2**
undetermined		
Puffinus lherminieri	**Audubon's shearwater**	**Tier 1**
undetermined		
Rallus elegans	**king rail**	**Tier 2**
Tidal Wetland Habitats	Freshwater Tidal Wetlands	Freshwater Tidal Marshes
	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Rhodostethia rosea	**Ross' gull**	**Tier 2**
undetermined		
Riparia riparia	**bank swallow**	**Tier 2**
Other Habitats	Sand/Gravel Pits	
Rynchops niger	**black skimmer**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
		Unvegetated Sandy Beach
Scolopax minor	**American woodcock**	**Tier 1**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Seiurus motacilla	**Louisiana waterthrush**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
		Coastal Plain Upland Forests
Setophaga ruticilla	**American redstart**	**Tier 1**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Sitta pusilla	**brown-headed nuthatch**	**Tier 2**
Upland Habitats	Beach & Dune Habitats	Dune Forests & Woodlands
	Upland Forests	Coastal Plain Upland Forests
Somateria mollissima	**common eider**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Spizella pusilla	**field sparrow**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
		Shrub/brush Upland Habitats
Sterna anaethetus	**bridled tern**	**Tier 2**
undetermined		
Sterna antillarum	**least tern**	**Tier 1**
Upland Habitats	Beach & Dune Habitats	Dune Grasslands
		Unvegetated Sandy Beach
Sterna dougallii dougallii	**roseate tern**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Sterna forsteri	**Forster's tern**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes

Habitat Level 1	Habitat Level 2	Habitat Level 3
Birds		
Sterna hirundo	**common tern**	**Tier 1**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Upland Habitats	Beach & Dune Habitats	Dune Grasslands Unvegetated Sandy Beach
Sterna nilotica	**gull-billed tern**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes
Sterna paradisaea	**Arctic tern**	**Tier 2**
undetermined		
Strix varia	**barred owl**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps Isolated Forested Wetlands
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Toxostoma rufum	**brown thrasher**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Tringa melanoleuca	**greater yellowlegs**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Other Habitats	Impoundments	
Tringa solitaria	**solitary sandpiper**	**Tier 2**
Freshwater Aquatic Habitats	Coastal Plain Streams	
Other Habitats	Impoundments	
Tryngites subruficollis	**buff-breasted sandpiper**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Herbaceous Upland Habitats
Tyrannus tyrannus	**Eastern kingbird**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Tyto alba	**barn owl**	**Tier 2**
Tidal Wetland Habitats	Saltwater & Brackish Tidal Wetlands	Tidal Low Marshes Tidal High Marshes
Vermivora chrysoptera	**golden-winged warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests
Vermivora pinus	**blue-winged warbler**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Vireo flavifrons	**yellow-throated vireo**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Vireo gilvus	**warbling vireo**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Wilsonia canadensis	**Canada warbler**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Wilsonia citrina	**hooded warbler**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Mammals		
Balaena glacialis	**Northern right whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Balaenoptera borealis	**sei whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	

Habitat Level 1	Habitat Level 2	Habitat Level 3
Mammals		
Balaenoptera musculus	**blue whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Balaenoptera physalus	**fin whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Canis latrans	**coyote**	**Tier 2**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Cryptotis parva	**least shrew**	**Tier 2**
Upland Habitats	Early Successional Upland Habitats	Shrub/brush Upland Habitats
Lasionycteris noctivagans	**silver-haired bat**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Lasiurus borealis	**Eastern red bat**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Lasiurus cinereus	**hoary bat**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests Coastal Plain Upland Forests
Megaptera novaeangliae	**humpback whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Myotis leibii	**Eastern small-footed myotis**	**Tier 1**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Myotis septentrionalis	**Northern myotis**	**Tier 2**
Upland Habitats	Upland Forests	Piedmont Upland Forests
Nycticeius humeralis	**evening bat**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps
Phocoena phocoena	**harbor porpoise**	**Tier 1**
Brackish & Marine Aquatic Habitats	Nearshore Habitats	
Physeter catodon	**sperm whale**	**Tier 1**
Brackish & Marine Aquatic Habitats	Offshore Habitats	
Puma concolor couguar	**puma**	**Tier 2**
Sciurus niger cinereus	**Delmarva fox squirrel**	**Tier 1**
Upland Habitats	Upland Forests	Coastal Plain Upland Forests
Sorex fontinalis	**Maryland shrew**	**Tier 2**
Non-tidal Wetland Habitats	Forested Wetlands	Forested Floodplains & Riparian Swamps

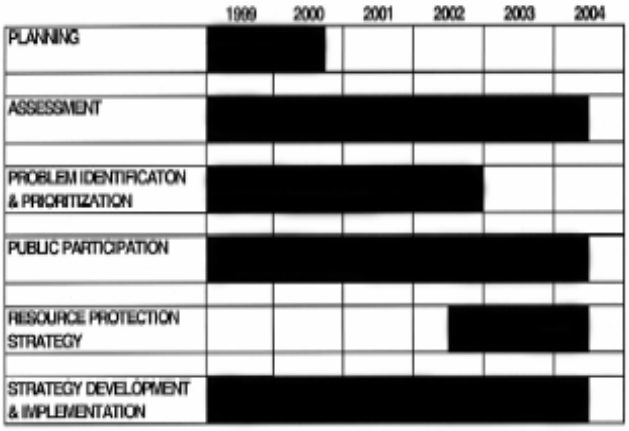
APPENDIX F

STATE OF DELAWARE
WHOLE BASIN MANAGEMENT
PROCESS AND TIMELINE FOR

Table 1.1-1
Whole Basin Management Plan Progress

PHASE I: Planning (Months 0 – 4)
• Assemble team. • Select team leader. • Conduct training on consensus and team building. • Develop outline for assessment. • Develop Stakeholder Involvement Plan.
PHASE II: Assessment (Months 5 – 28)
• Inventory existing data and information. • Assess status and identify trends. • Identify specific issues of interest/concern. • Make recommendations for focus and integration. • Identify data gaps. • Determine how issues and concerns are related to other media. • Determine targeted indicators and how they should be monitored in the future. • Determine if additional indicators need to be monitored in the future.
PHASE III: Intensive Problem Identification and Prioritization (Months 16 – 20)
• Incorporate existing white papers on key issues relevant to the Basin into the draft assessment and submit draft to external editor.
PHASE IV: Public Participation (Months 0 – 60)
• Perform agency and public review of draft assessment. • Address public concerns and incorporate appropriate recommendations into assessment.
PHASE V: Resource Protection Strategies (Months 42 – 60)
• Develop pollution protection and watershed restoration strategies and management options.
PHASE VI: Strategy Development and Implementation (Months 0 – 60)
• Monitor, collect, analyze and/or organize (database development) information. • Identify the roles and responsibilities of agencies involved in the priority issues. • Modify Department monitoring programs to meet characterization needs (if necessary). • Solicit public input on what should be done about the issue/problem. • Select appropriate management options. • Update Project Planning Document.

Figure 1.1-2
Delaware Bay & Estuary Basin Timeline



APPENDIX G

DELAWARE SITES LISTING IN THE NATIONAL HISTORIC REGISTER OF HISTORIC PLACES

AND

DELAWARE CULTURAL RESOURCE UNDERTAKING REVIEW SHEET

New Castle County

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	**Academy of Newark**	Main and Academy Sts.	Newark	1976-05-24	
New Castle	**Achmester**	N of Middletown on SR 429	Middletown	1979-12-28	
New Castle	**Aetna Hose, Hook and Ladder Company Fire Station No. 2**	31 Academy St.	Newark	1982-05-07	Newark MRA
New Castle	**Aetna Hose, Hook and Ladder Company, Fire Station No. 1**	26 Academy St.	Newark	1982-05-07	Newark MRA
New Castle	**Aiken's Tavern Historic District**	Jct. of U.S. 40 and DE 896	Newark	1977-12-06	
New Castle	**Air Service, Inc. Hangar at Bellanca Airfield**	DE 273 and Center Point Blvd	New Castle	2005-06-15	
New Castle	**Allen, Charles, House**	855 Canoe Rd.	Christina	1983-08-19	White Clay Creek Hundred MRA
New Castle	**Amstel House**	Delaware and 4th Sts.	New Castle	1977-05-12	
New Castle	**Anderson House**	50 W. Park Pl.	Newark	1983-02-24	Newark MRA
New Castle	**Appoquinimink Friends Meetinghouse**	Main St.	Odessa	1972-12-04	
New Castle	**Archmere**	3600 Philadelphia Pike	Claymont	1992-09-09	
New Castle	**Ardens Historic District**	Address Restricted	Arden	2003-05-30	
New Castle	**Armor, James, House**	4905 Lancaster Pike, Christiana Hundred	Wilmington	1992-08-31	
New Castle	**Armstrong Lodge No. 26, A. F. & A. M.**	112--114 E. Market St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	**Armstrong, A., Farm**	Old Wilmington Rd. W of Brackenville Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800--1840 TR
New Castle	**Armstrong-Walker House**	DE 71	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850--1880 TR
New Castle	**Ashland Bridge**	S of Ashland over Red Clay Creek	Ashland	1973-03-20	
New Castle	**Ashton Historic District**	N of Port Penn on Thormton Rd.	Port Penn	1978-11-15	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	**Auburn Mills Historic District**	W of Yorklyn on DE 82 and DE 253	Yorklyn	1980-01-22	
New Castle	**Augustine Beach Hotel**	S of Port Penn on DE 9	Port Penn	1973-04-03	
New Castle	Augustine Paper Mill	N. Brandywine Park Dr.	Wilmington	1978-08-03	
New Castle	Baily House	166 W. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Bancroft and Sons Cotton Mills	Rockford Rd.	Wilmington	1984-12-20	
New Castle	Bank of Newark Building	102 E. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Bartley--Tweed Farm	Foxden Rd. E of Polly Drummond Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-840 TR
New Castle	Baynard Boulevard Historic District	Baynard Blvd. between 18th St. and Concord Ave.	Wilmington	1979-07-26	
New Castle	Beard, Duncan, Site	Address Restricted	Odessa	1973-12-18	
New Castle	Beaver Valley Rock Shelter Site	Address Restricted	Wilmington	1978-09-01	
New Castle	Bell Farmhouse	401 Nottingham Rd.	Newark	1983-02-24	Newark MRA
New Castle	Belleview	Rt. 428	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-880 TR
New Castle	Belmont Hall	302 W. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Biddle House	S of St. Georges on U.S. 13	St. Georges	1978-12-08	
New Castle	Biggs, Gov. Benjamin T., Farm	CR 435, Choptank Rd.	Middletown	1987-09-11	
New Castle	Bloomfield	US 13	St. Georges	1982-04-08	Red Lion Hundred MRA
New Castle	Blue Hen Farm	505 Stamford Dr.	Newark	1983-02-24	Newark MRA
New Castle	Brandywine Manufacturers Sunday School	N of Wilmington on Hagley Rd.	Wilmington	1972-04-13	
New Castle	Brandywine Park	Roughly bounded by Augustine, 18th, and Market Sts. and Lovering Ave.	Wilmington	1976-12-22	
New Castle	Brandywine Park and Kentmere Parkway (Boundary Increase)	Roughly bounded by Kentmere Pkwy., Augustine Cutoff, Lovering Ave., 18th and Market Sts.	Wilmington	1981-07-23	
New Castle	Brandywine Powder	DE 141 and Brandywine	Wilmington	1984-05-03	

County	Resource Name	Address	City	Date Listed	Multiple
	Mills District	River			
New Castle	Brandywine Village Historic District	Roughly bounded by Brandywine Creek, Tatnall, 22nd, Gordon Sts. ,Vandever Ave., Mabel St., and 14th St. bridge	Wilmington	1971-02-24	
	Brandywine Village Historic District (Boundary Increase)	Along 16th St. between Market St. bridge and 14th St. bridge	Brandywine	1976-10-21	
New Castle	Braunstein's Building	704--706 N. Market St.	Wilmington	1985-12-19	Market Street MRA
New Castle	Breck's Mill Area	Breck's Lane and Creek Rd.	Wilmington	1971-11-05	
New Castle	Breck's Mill Area--Henry Clay Village Historic District (Boundary Decrease)	Roughly bounded by Mill Rd., Henry Clay Rd., Breck's Lane and Michigan Rd.	Wilmington	1988-01-25	
New Castle	Breck's Mill Area--Henry Clay Village Historic District (Boundary Increase)	Rising Sun La. and Kennett Pike	Wilmington	1988-01-25	
New Castle	Brindley Farm	W of Wilmington at Barley Mill Rd. and Kennett Pike	Wilmington	1976-09-28	
New Castle	Brook Ramble	Jct. of Co. Rds. 458 and 459, Appoquinimink Hundred	Townsend	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Broom, Jacob, House	1 mi. NW of Wilmington	Montchanin	1974-12-02	
New Castle	Brown, Dr. John A., House	4 7th Ave.	Wilmington	1979-04-24	
New Castle	Buena Vista	N of St. Georges on U.S. 13	St. Georges	1971-04-16	
New Castle	Brandywine Village Historic District (Boundary Increase)	Along 16th St. between Market St. bridge and 14th St. bridge	Brandywine	1976-10-21	
New Castle	Braunstein's Building	704--706 N. Market St.	Wilmington	1985-12-19	Market Street MRA
New Castle	Breck's Mill Area	Breck's Lane and Creek Rd.	Wilmington	1971-11-05	
New Castle	Breck's Mill Area--Henry Clay Village Historic District (Boundary Decrease)	Roughly bounded by Mill Rd., Henry Clay Rd., Breck's Lane and Michigan Rd.	Wilmington	1988-01-25	
New Castle	Breck's Mill Area--Henry Clay Village Historic District	Rising Sun La. and Kennett Pike	Wilmington	1988-01-25	

County	Resource Name	Address	City	Date Listed	Multiple
	(Boundary Increase)				
New Castle	Brindley Farm	W of Wilmington at Barley Mill Rd. and Kennett Pike	Wilmington	1976-09-28	
New Castle	Brook Ramble	Jct. of Co. Rds. 458 and 459, Appoquinimink Hundred	Townsend	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Broom, Jacob, House	1 mi. NW of Wilmington	Montchanin	1974-12-02	
New Castle	Brown, Dr. John A., House	4 7th Ave.	Wilmington	1979-04-24	
New Castle	Buena Vista	N of St. Georges on U.S. 13	St. Georges	1971-04-16	
New Castle	Building at 140 W. Main Street	140 Main St.	Newark	1982-05-07	Newark MRA
New Castle	Building at 28--34 1/2 Academy Street	28--34 1/2 Academy St.	Newark	1982-05-07	Newark MRA
New Castle	Building at 34 Choate Street	34 Choate St.	Newark	1983-02-24	Newark MRA
New Castle	Carpenter-Lippincott House	5620 Kennett Pike	Centreville	1983-04-13	Centreville MRA
New Castle	Casperson, W., House	Kirkwood Rd.	St. Georges	1982-04-08	Red Lion Hundred MRA
New Castle	Center Meeting and Schoolhouse	Center Meeting Rd.	Centerville	1971-12-16	
New Castle	Centreville Historic District	Kenneth Pike and Owls Nest/Twaddell Mill Rd.	Centreville	1983-04-13	Centreville MRA
New Castle	Chambers House	S. College Ave.	Newark	1983-02-24	Newark MRA
New Castle	Chambers House	Hopkins and Creek Rds.	Newark	1988-11-29	
New Castle	Chandler, Joseph, House	5826 Kennett Pike	Centreville	1983-04-13	Centreville MRA
New Castle	Chelsea	DE 9	Delaware City	1982-04-08	Red Lion Hundred MRA
New Castle	Choptank	Rt. 435	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Choptank-Upon-The-Hill	Rt. 435	Middletown	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Christiana Historic	Jct. of DE 7 and 273	Christiana	1974-12-16	

County	Resource Name	Address	City	Date Listed	Multiple
	District				
New Castle	Church Street Historic District	Bounded by Eighth, Locust, Seventh, and Church Sts.	Wilmington	1987-06-12	
New Castle	Clearfield Farm	SR 485, 1.5 mi. N of Smyrna Landing	Smyrna	1973-03-20	
New Castle	Cleaver House	Off Biddle's Corner Rd.	Port Penn	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Cloud, Abner, House	14 Ravine Rd., Brandywine Hundred	Wilmington	1992-08-31	
New Castle	Cloud--Reese House	2202 Old Kennett Rd.	Wilmington	2001-08-17	
New Castle	Clyde Farm Site	Address Restricted	Stanton	1977-07-29	
New Castle	Cochran Grange	W of Middletown on DE 4	Middletown	1973-04-03	
New Castle	Coffee Run Mission Site	SE of Hockessin off DE 48	Hockessin	1973-04-11	
New Castle	Collison House	21 N. Walnut St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Continental Army Encampment Site	Lovering Ave. near Broom St.	Wilmington	1973-12-18	
New Castle	Cooch's Bridge Historic District	N of Newark off DE 896	Newark	1973-04-11	
New Castle	Cooch's Bridge Historic District (Boundary Decrease)	W of Newark, off DE 896	Newark	1999-11-12	
New Castle	Cool Spring Park Historic District	Bounded by Park Pl., Jackson, Van Buren, and 10th Sts.	Wilmington	1983-12-27	
New Castle	Corbit-Sharp House	SW corner of Main and 2nd Sts.	Odessa	1967-12-24	
New Castle	Cornucopia	CR 433, Bethel Rd.	Middletown	1987-09-08	
New Castle	Correll's Farm and Lawn Supply	DE 71	Kirkwood	1982-04-08	Red Lion Hundred MRA
New Castle	Crosby and Hill Building	605 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Curtis Mansion	W. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Curtis Paper Mill Workers' Houses	Curtis Lane	Newark	1982-05-07	Newark MRA
New Castle	Darley House	Darley Rd. and Philadelphia Pike (U.S. 13)	Claymont	1973-07-02	
New Castle	Dean, Joseph, & Son Woolen Mill	Race and Deandale Sts.	Newark	1978-05-22	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Deer Park Farm	48 W. Park Pl.	Newark	1983-02-24	Newark MRA
New Castle	Deer Park Hotel	108 W. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Delaware Academy of Medicine	1925 Lovering Ave.	Wilmington	2003-04-17	
New Castle	Delaware Avenue Historic District	Delaware Ave. from N. Harrison to N. Broom Sts. (both sides)	Wilmington	1976-09-13	
New Castle	Delaware Avenue Historic District (Boundary Increase)	Roughly bounded by Shallcross Ave., Harrison St., Pennsylvania Ave., and Rodney St.	Wilmington	1987-05-12	
New Castle	Delaware Boundary Markers	State boundary lines between DE-MD/DE-PA	Not Applicable	1975-02-18	
New Castle	Delaware City Historic District	Roughly bounded by the Delaware River, Dragon Creek, DE 9, and the Delaware and Chesapeake Canals	Delaware City	1983-12-15	
New Castle	Delaware Trust Building	900-912 N. Market St.	Wilmington	2003-04-18	
New Castle	Delmarva Power and Light Building	600 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Dilworth House	Off DE 9	Port Penn	1973-11-27	
New Castle	Dingee, Jacob, House	105 E. 7th St.	Wilmington	1970-10-16	
New Castle	Dingee, Obadiah, House	107 E. 7th St.	Wilmington	1970-10-21	
New Castle	Dixon, S. P., Farm	Wooddale and Brackenville Rds.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Dragon Run Farm	McCoy Rd.	Kirkwood	1982-04-08	Red Lion Hundred MRA
New Castle	Dupont, P. S., High School	Thirty-fourth St. between N. Monroe and N. Franklin Sts.	Wilmington	1986-10-23	
New Castle	East Brandywine Historic District	Roughly Bounded by Sixteenth St., Brandywine Creek, Twelfth St., and US 13	Wilmington	1985-12-19	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Eastburn, Davis, Farm	Corner Ketch Rd. SE of Wilmington-Landenberg Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Eastburn, J., Barn	Pleasant Hill Rd. SW of Corner Ketch Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Eastburn--Jeanes Lime Kilns Historic District	N of Newark on Limestone Rd.	Newark	1977-04-28	
New Castle	Eastern Lock of the Chesapeake and Delaware Canal	Battery Park	Delaware City	1975-04-21	
New Castle	Eighth Street Park Historic District	Roughly bounded by 6th, 10th, Harrison, and Broom Sts.	Wilmington	1983-08-04	
New Castle	Eighth Street Park Historic District (Boundary Increase)	Broom and 10th Sts.	Wilmington	1984-05-03	
New Castle	Eleutherian Mills	N of Wilmington on DE 141 at Brandywine Creek Bridge	Wilmington	1966-11-13	
New Castle	Eliason, A., House	Rt. 896	Mt. Pleasant	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Elm Grange	US 13	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	England House and Mill	81 Red Mill Rd.	Newark	1972-02-23	
New Castle	Evans, George, House	5 W. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Evans, John, House	W. Main St. and N. College Ave.	Newark	1983-02-24	Newark MRA
New Castle	Exchange Building	154--158 E. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Fairview	SE of Odessa	Odessa	1984-05-03	
New Castle	Fairview	US 13	Delaware City	1982-04-08	Red Lion Hundred MRA

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Fairview	CR 433, Bethel Church Rd.	Middletown	1987-09-08	
New Castle	Fairview	Rt. 412	Odessa	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Fell Historic District	Faulkland Rd. and New Fell's Lane	Wilmington	1983-06-16	
New Castle	Ferguson, Robert, House	E of Newark at 636 Chestnut Hill Rd.	Newark	1979-07-22	
New Castle	Ferris, Zachariah, House	414 W. 2nd St.	Wilmington	1970-10-19	
New Castle	Fields Heirs	Off DE 71	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Fisher, Andrew, House	725 Art Lane	Newark	1973-05-08	
New Castle	Fleming House	NE of Smyrna on DE 9	Smyrna	1980-01-31	
New Castle	Fort Christina	E. 7th St. and the Christina River, Fort Christina State Park	Wilmington	1966-10-15	
New Castle	Fort Delaware on Pea Patch Island	Pea Patch Island in the Delaware River	Delaware City	1971-12-16	
New Castle	Fort Dupont Historic District	DE 9, S of Chesapeake and Delaware Canal	Delaware City	1999-10-28	
New Castle	Friends Meetinghouse	4th and West Sts.	Wilmington	1976-11-07	
New Castle	Galloway--Walker House	107 John St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Garrett Snuff Mill	Jct. DE 82 and Yorklyn Rd.	Yorklyn	1978-05-22	
New Castle	Garrett Snuff Mills Historic District	DE 82 and Yorklyn Rd.	Yorklyn	1980-01-24	
New Castle	Gibraltar	250 Pennsylvania Ave.	Wilmington	1998-09-14	
New Castle	Glebe House	DE 9	New Castle	1973-04-03	
New Castle	Glynrich	Mill Rd. and Race St.	Wilmington	1979-11-01	
New Castle	Gordon, J. M., House	Rt. 44	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Govatos'/McVey Building	800 N. Market St.	Wilmington	1985-01-30	Market Street MRA

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Grace United Methodist Church	9th and West Sts.	Wilmington	1983-11-12	
New Castle	Graham, Robert, House	751 Crossan Rd.	Newark	1997-08-01	
New Castle	Granite Mansion	292 W. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Graves Mill Historic District	E of Yorklyn on Way Rd.	Yorklyn	1979-12-19	
New Castle	Gray, Charles, Printing Shop	11 E. 8th St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Green Mansion	94-96 E. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Green Meadow	Thomas Landing Rd. (DE 440), Appoquinimink Hundred	Odessa	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Greenbank Historic Area	Greenbank Mill Rd., N of jct. of DE 41 and DE 2	Marshallton	1973-07-02	
New Castle	Greenbank Historic Area (Boundary Increase)	Greenbank Mill Road, N. of jct. of DE 41 and DE 2	Marshallton	1979-07-24	
New Castle	Greenlawn	N. Broad St.	Middletown	1973-04-24	
New Castle	Grose, Robert, House	1000 Port Penn Rd.	Port Penn	2001-09-21	House and Garden in Central Delaware MPS
New Castle	Hale-Byrnes House	Corner of DE 7 and 4	Stanton	1972-06-02	
New Castle	Hanson, B. F., House	W of Middletown	Middletown	1982-04-27	
New Castle	Harlan and Hollingsworth Office Building	West St.	Wilmington	1979-04-26	
New Castle	Hart House	E of Taylors Bridge on DE 453	Taylors Bridge	1973-03-20	
New Castle	Hazel Glen	W of Port Penn on DE 420	Port Penn	1978-11-20	
New Castle	Head of Christiana United Presbyterian Church	1100 Church Rd.	Newark	1983-08-19	White Clay Creek Hundred MRA
New Castle	Hedgelawn	1.2 mi. W of Middletown on DE 4	Middletown	1973-04-03	
New Castle	Hell Island Site	Address Restricted	Odessa	1977-04-13	
New Castle	Hermitage, The	On DE 273	New Castle	1973-03-01	
New Castle	Hersey--Duncan House	2116 Duncan Rd., Mill Creek Hundred	Wilmington	1990-11-15	
New Castle	Hicklen, William, House	Address Restricted	Talleyville	1983-10-06	
New Castle	Hickman Blacksmith	1201 and 1203	Marshallton	1994-09-02	

County	Resource Name	Address	City	Date Listed	Multiple
	Shop and House	Greenbank Rd.			
New Castle	Higgins, S., Farm	Rt. 423	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 R
New Castle	Hill Island Farm	3379 Dupont Pkwy. (US 13), Appoquinimink Hundred	Odessa	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Hockessin Friends Meetinghouse	DE 275 and 254 at Meetinghouse Rd.	Hockessin	1973-03-20	
New Castle	Holladay--Harrington House	3705 Kennett Pike	Greenville	2004-09-30	
New Castle	Holton, S., Farm	Rt. 435	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Holy Trinity	7th and Church Sts.	Wilmington	1966-10-15	
New Castle	Howard High School	13th and Poplar Sts.	Wilmington	1985-02-21	
New Castle	Huguenot House	W of Taylors Bridge on DE 9	Taylors Bridge	1973-03-20	
New Castle	Idalia Manor	Rt. 13	Mt. Pleasant	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Iron Hill School No. 112C	1335 Old Baltimore Pike, Pencader Hundred	Newark	1995-08-18	
New Castle	Ivyside Farm	1301 Naaman's Rd.	Claymont	1982-01-04	
New Castle	Johnson Home Farm	Co. Rd. 453 E of jct. with DE 9, Blackbird Hundred	Taylor's Bridge	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
	Johnson, William Julius "Judy" House	3701 Kiamensi Ave., Christiana Hundred	Marshallton	1995-10-10	
New Castle	Justis, Thomas, House	1001 Milltown Rd., Mill Creek Hundred	Wilmington	1993-09-23	
New Castle	Justis--Jones House	2606 Newport Gap Pike	Wilmington	1998-08-28	
New Castle	Keil, Max, Building	712 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Keil, Max, Building	700 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Kerr, Andrew, House	812 Elkton Rd.	Newark	1983-08-19	White Clay Creek Hundred MRA

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Killgore Hall	101 N. James St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Killgore, Joseph, House	107 N. James St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Kingswood Methodist Episcopal Church	Fourteenth and Claymont Sts.	Wilmington	1989-02-09	
New Castle	La Grange	Near jct. of U.S. 40 and DE 896	Glasgow	1974-07-10	
New Castle	Laurel	619 Shipley Rd.	Wilmington	1974-12-04	
New Castle	Lesley-Travers Mansion	112 W. 6th St.	New Castle	1973-04-03	
New Castle	Lewden, John, House	107 E. Main St.	Christiana	1979-09-24	
New Castle	Linden Hill	US 13	St. Georges	1982-04-08	Red Lion Hundred MRA
New Castle	Lindsay, J., Barn	Middleton Rd. near Mermaid-Stoney Batter Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Lindsey, Samuel, House	New London Rd.	McClellandville	1983-08-19	White Clay Creek Hundred MRA
New Castle	Liston House	E of Taylors Bridge on DE 453	Taylors Bridge	1973-03-26	
New Castle	Liston Range Front Lighthouse	1600 Belts Rd.	Bay View Beach	2004-01-14	
New Castle	Liston Ranger Rear Light Station	W of Port Penn on DE 2	Port Penn	1978-11-15	
New Castle	Lobdell Estate, Minquadale Home	U.S. 13	Wilmington	1973-06-04	
New Castle	Logan House	1701 Delaware Ave.	Wilmington	1980-04-02	
New Castle	Lombardy Hall	U.S. 202	Wilmington	1972-12-05	
New Castle	Lore, Charles B., Elementary School	Fourth St. and Woodlawn Ave.	Wilmington	1983-06-16	
New Castle	Louviers	10 Black Gates Rd.	Wilmington	1971-12-13	
New Castle	Lower Louviers and Chicken Alley	N of Wilmington on Black Gates Rd.	Wilmington	1972-02-01	
New Castle	Lower Market Street Historic District	Market St.	Wilmington	1980-05-15	
New Castle	Lower Market Street Historic District (Boundary Increase)	Bounded by 4th, 5th, King and Shipley Sts.	Wilmington	1985-02-21	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Lum's Mill House	Lums Pond State Park on DE 71	Kirkwood	1973-05-22	
New Castle	MacDonough, Comdr. Thomas, House	N of Odessa on U.S. 13	Odessa	1978-12-12	
New Castle	Main Office of the New Castle Leather Company	Eleventh and Poplar Sts.	Wilmington	1985-12-19	
New Castle	Maple Grove Farm	Rt. 299	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Maples	W of Middletown on Bunker Hill Rd.	Middletown	1978-02-17	
New Castle	Marcus Hook Range Rear Light	Light House Rd.	Wilmington	1989-03-27	
New Castle	Marshallton United Methodist Church	1105 Stanton Rd.	Marshallton	1987-02-18	
New Castle	Mason, J., Farm	DE 82 S of Way Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Masonic Hall and Grand Theater	818 N. Market St.	Wilmington	1972-12-11	
New Castle	Mayfield	1603 Levels Rd.	Middletown	1997-08-01	
New Castle	McCormack, J., Farm	Newport Gap Turnpike N of Mill Creek Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	McCoy House	Kirkwood and McCoy Rds.	Kirkwood	1973-04-24	
New Castle	McDaniel, J., Farm	Paper Mill Rd. E of Pike Creek Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	McIntyre, J., Farm	Limestone Rd. N of Valley Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	McLane, Louis, House	606 Market St.	Wilmington	1973-04-24	
New Castle	McWhorter House	Rt. 412	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Meeteer House	801 Kirkwood Hwy., Mill Creek Hundred	Newark	1993-09-02	
New Castle	Memorial Hall	University of Delaware campus	Newark	1982-05-07	Newark MRA
New Castle	Merestone	1610--1620 Yeatman's Mill Rd., Mill Creek Hundred (Delware); Yeatman's Station Rd., New Garden Township (Pennsylvania)	Newark	1995-03-02	
New Castle	Mermaid Tavern	NE of Newark on DE 7	Newark	1973-12-18	
New Castle	Meteer Store House	325 Paper Mill Rd.	Newark	1983-02-24	Newark MRA
New Castle	Middletown Academy	218 N. Broad St.	Middletown	1972-12-05	
New Castle	Middletown Historic District	Roughly bounded by Redding, Scott, Lockwood, and Catherine Sts.	Middletown	1978-10-04	
New Castle	Mill Creek Friends Meetinghouse	6 mi. N of Newark on Landenburg Rd.	Newark	1973-04-03	
New Castle	Misty Vale	Rt. 423	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Mondamon Farm	Rt. 2	Odessa	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Montchanin Historic District	DE 100	Montchanin	1978-06-09	
New Castle	Monterey	N of Odessa on Bayview Rd.	Odessa	1980-12-05	
New Castle	Montgomery House	2900 Old Limestone Rd.	Wilmington	1988-07-28	
New Castle	Morgan, William, Farm	Wilmington-Landenberg Rd. N of Corner Ketch	Newark	1986-11-13	Agricultural Buildings and

County	Resource Name	Address	City	Date Listed	Multiple
		Rd.			Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Morrow, James, House	1210 Ogletown Rd.	Newark	1983-08-19	White Clay Creek Hundred MRA
New Castle	Mount Cuba	3120 Barley Mill Rd.	Greenville	2003-04-02	
New Castle	Mount Cuba Historic District	SR 261 and DE 82	Mount Cuba	1979-12-19	
New Castle	Mount Lebanon Methodist Episcopal Church	850 Mount Lebanon Rd.	Wilmington	1984-05-03	
New Castle	Mount Pleasant	Sunnyside Rd. (Rt. 90), Duck Creek Hundred	Smyrna	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Mount Pleasant Methodist Episcopal Church and Parsonage	1009 Philadephia Pike	Wilmington	1998-08-28	
New Castle	Mt. Airy School No. 27	5925 Kennett Pike	Centreville	1983-04-13	Centreville MRA
New Castle	Naaman's Creek School	Jct. of Philadelphia Pike and Darley Rd., Brandywine Creek	Claymont	1990-11-15	
New Castle	Naudain, Arnold S., House	S of Middletown on DE 71	Middletown	1973-04-24	
New Castle	Nelson, John B., House	W of Port Penn off U.S. 13	Port Penn	1978-12-08	
New Castle	New Castle and Frenchtown Railroad Right-of-Way	Off U.S. 40 between Porter, DE, and Frenchtown, MD	Porter	1976-09-01	
New Castle	New Castle County Court House	Delaware St., between 2nd and 3rd Sts.	New Castle	1972-11-28	
New Castle	New Castle Historic District	Roughly bounded by the Delaware River, Broad Dike, 4th, 6th,7th, and Penn Sts.	New Castle	1984-11-08	
New Castle	New Castle Historic District	Bounded by Harmony St., The Strand, 3rd St., and Delaware St.	New Castle	1967-12-24	
New Castle	New Castle Ice Piers	Delaware River	New Castle	1982-02-04	
New Castle	New Castle Leather Raw Stock Warehouse	14th and Poplar Sts.	Wilmington	1983-06-16	
New Castle	New Century Club	1014 Delaware Ave.	Wilmington	1983-06-16	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Newark Opera House	95 E. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Newark Passenger Station	S. College Ave. and Amtrak Conrail RR	Newark	1982-05-07	Newark MRA
New Castle	Newport National Bank	100 E. Market St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Newport Railroad Station	James St. at Penn Central RR tracks, N side	Newport	1994-01-21	
New Castle	North Saint Georges Historic District	Roughly, along Main, Broad, Delaware and Church Sts., Red Lion Hundred	St. Georges	1995-08-22	
New Castle	Noxontown	S of Middletown off DE 896	Middletown	1973-07-02	
New Castle	Odessa Historic District	Bounded roughly by Appoquinimink Creek on SE, High St. on NE, 4th St. on NW, and Main St. on SW	Odessa	1971-06-21	African-American Resources in Delaware MPS (AD)
New Castle	Odessa Historic District (Boundary Increase)	Roughly Main and High Sts. between Appoquinimink River and DE 4	Odessa	1984-08-09	
New Castle	Okolona	Rt. 429	Middletown	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Old Asbury Methodist Church	Walnut and 3rd Sts.	Wilmington	1976-11-07	
New Castle	Old Brick Store	NE of Smyrna off U.S. 13	Smyrna	1973-08-14	
New Castle	Old Cann Mansion House	DE 71	Kirkwood	1982-04-08	Red Lion Hundred MRA
New Castle	Old College Historic District	Main and College Sts. on University of Delaware campus	Newark	1973-06-04	
New Castle	Old Customshouse	6th and King Sts.	Wilmington	1974-11-21	
New Castle	Old Drawyers Church	U.S. 13	Odessa	1973-02-06	
New Castle	Old First Presbyterian Church	W. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Old First Presbyterian Church of Wilmington	West St. on Brandywine Park Dr.	Wilmington	1972-04-13	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Old Ford Dairy	US 13	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Old Ford Dairy (Boundary Increase)	US 13	Odessa	1986-12-11	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Old Fort Church	Old Baltimore Pike	Christiana	1983-08-19	White Clay Creek Hundred MRA
New Castle	Old Newark Comprehensive School	83 E. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Old Post Ofice	Kirkwood and St. Georges Rd.	Kirkwood	1982-04-08	Red Lion Hundred MRA
New Castle	Old St. Anne's Church	S of Middletown off DE 71	Middletown	1973-03-07	
New Castle	Old St. Paul's Methodist Episcopal Church	High St.	Odessa	1982-05-13	
New Castle	Old Town Hall	512 Market St.	Wilmington	1974-12-31	
New Castle	Old Town Hall Commercial Historic District	Roughly bounded by 5th, N. King, 6th, and Shipley Sts.	Wilmington	1985-01-30	Market Street MRA
New Castle	Old Union Methodist Church	0.2 mi. N of Blackbird Crossroads on U.S. 13	Blackbird Crossroads	1973-01-18	
New Castle	Ott's Chapel	CR 397	Newark	1986-08-13	
New Castle	Penn Farm of the Trustees of the New Castle Common	807 Frenchtown Pike	New Castle	1997-09-11	
New Castle	Pharo House	Odessa and Silver Lake Rds.	Middletown	1984-08-09	
New Castle	Philips-Thompson Buildings	200-206 E. 4th St.	Wilmington	1980-04-16	
New Castle	Phillips, Thomas, Mill Complex	708 and 712 Nottingham Rd.	Newark	1983-08-19	White Clay Creek Hundred MRA
New Castle	Pierson, T., Farm	Southwood Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek

County	Resource Name	Address	City	Date Listed	Multiple
					Hundred, 1800-1840 TR
New Castle	Point Farm	US 301 South	Kirkwood	1982-04-08	Red Lion Hundred MRA
New Castle	Poplar Hall	3176 Denny Rd.	Newark	1988-01-26	
New Castle	Port Penn Historic District	DE 9	Port Penn	1978-11-20	
New Castle	Postles House	1007 N. Broom St.	Wilmington	1982-11-12	
New Castle	Public School No. 111-C	DE 7	Christiana	1979-10-18	
New Castle	Public School No. 19	801 S. Harrison St.	Wilmington	1984-12-20	
New Castle	Public School No. 29	Valley Rd. and Old Lancaster Pike	Hockessin	1978-05-22	
New Castle	Pyle, Howard, Studios	1305 and 1307 N. Franklin St.	Wilmington	1978-03-08	
New Castle	Pyle, Joshua, House and Wagon Barn	2603 Foulk Rd., Brandywine Hundred	Wilmington	1993-09-13	
New Castle	Quaker Hill Historic District	Roughly bounded by Tatnall, Jefferson, 2nd and 7th Sts.	Wilmington	1979-09-06	
New Castle	Quaker Hill Historic District (Boundary Increase)	Roughly bounded by Eighth, Catawba and Washington, Sixth and Seventh, and Wollaston Sts.	Wilmington	1985-12-19	
New Castle	Reading, Philip, Tannery	201 E. Main St.	Yiddletown	1978-04-26	
New Castle	Red Clay Creek Presbyterian Church	Mill Creek and McKennan's Church Rds.	Newport	1973-04-11	
New Castle	Reedy Island Range Rear Light	Jct. of DE 9 and Rd. 453	Taylor's Bridge	1989-03-27	
New Castle	Retirement Farm	US 13	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Reynold's Candy Company Building	703 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Rhodes Pharmacy	36 E. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Riverdale	Off Bay View and Silver Run Rds.	Odessa	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Robinson House	Naaman's Corner	Claymont	1971-06-21	
New Castle	Rockford Park	Roughly bounded by	Wilmington	1978-09-20	

County	Resource Name	Address	City	Date Listed	Multiple
		Red Oak and Rockford Rds., Church and Rising Sun Lanes, and the Brandywine River			
New Castle	Rockland Historic District	Town of Rockland and its environs along Rockland Rd. and Brandywine Creek	Rockland	1972-02-01	
New Castle	Rockwood	610 Shipley Rd.	Wilmington	1976-07-12	
New Castle	Rodney Court	1100 Pennsylvania Ave.	Wilmington	1980-04-02	
New Castle	Rosedale	Rt. 437	Middletown	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Rotheram Mill House	318 Harmony Rd.	Newark	1972-01-04	
New Castle	Rumsey Farm	W of Middletown on DE4	Middletown	1978-03-30	
New Castle	Savin--Wilson House	Co. Rd. 326, between DE 12 and Co. Rd. 83, Duck Creek Hundred	Smyrna	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Schagrin, Charles, Building	608 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Schoonover, Frank E., Studios	1616 Rodney St.	Wilmington	1979-04-20	
New Castle	Shallcross, Sereck, House	W of Odessa off U.S. 13	Odessa	1973-04-03	
New Castle	Shipley Run Historic District	Roughly bounded by Adams, 11th, Jefferson, and 7th Sts.	Wilmington	1984-08-09	
New Castle	Springer Farm	Limestone Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Springer, Charles, Tavern	4921 Lancaster Pike, Christiana Hundred	Wilmington	1992-09-11	
New Castle	Springer--Cranston House	1015 Stanton Rd., Mill Creek Hundred	Marshalltown	1994-09-30	
New Castle	St. Anthony's Roman Catholic Church	W. Ninth and N. DuPont Sts.	Wilmington	1984-05-03	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	St. Georges Cemetery Caretaker's House	Kirkwood and St. Georges Rd.	St. Georges	1982-04-08	Red Lion Hundred MRA
New Castle	St. Georges Presbyterian Church	Main St.	St. Georges	1984-11-07	
New Castle	St. Hedwig's Roman Catholic Church	Linden and S. Harrison Sts.	Wilmington	1982-11-12	
New Castle	St. James Church	W of Stanton on St. James Church Rd.	Stanton	1973-05-08	
New Castle	St. John the Baptist Roman Catholic Church	200 E. Main St	Newark	1982-05-07	Newark MRA
New Castle	St. Joseph's Catholic Church	1012 French St.	Wilmington	2004-01-14	
New Castle	St. Joseph's Church	15 W. Cochran St.	Middletown	1978-02-17	
New Castle	St. Joseph's on the Brandywine	10 Barley Mill Rd.	Greenville	1976-11-07	
New Castle	St. Mary of the Immaculate Conception Church	6th and Pine Sts.	Wilmington	1976-12-12	
New Castle	St. Mary's School	502 Pine St.	Wilmington	1983-01-05	
New Castle	St. Thomas Episcopal Church	21 Elkton Rd.	Newark	1982-05-07	Newark MRA
New Castle	Starl House	US 13	St. Georges	1982-04-08	Red Lion Hundred MRA
New Castle	Starr House	1310 King St.	Wilmington	1971-03-24	
New Castle	STATE OF PENNSYLVANIA (steamboat)	Christina River	Wilmington	1979-04-20	
New Castle	State Theater	39 E. Main St.	Newark	1983-02-24	Newark MRA
New Castle	Steel, James, House	1016 W. Church St.	Newark	1983-08-19	White Clay Creek Hundred MRA
New Castle	Stewart, James, House	CR 401	Glascow	1986-06-11	
New Castle	Stewart, James, Jr., House	Whitten Rd.	Christina	1983-08-19	White Clay Creek Hundred MRA
New Castle	Stinson, J., Farm	750 Corner Ketch Rd.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Stonum	9th and Washington Sts.	New Castle	1973-11-07	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Strand Millas and Rock Spring	Between Rockland and Montchanin off DE 100	Montchanin	1973-07-16	
New Castle	Sutton House	Broad and Delaware Sts.	St. Georges	1973-04-24	
New Castle	Swanwyck	65 Landers Lane	New Castle	1977-03-17	
New Castle	Talley, William, House	1813 Foulk Rd.	Wilmington	1985-02-21	
New Castle	Tatnall, Joseph, House	S. James St., W side, near Christiana Cr., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Thomas, David W., House	326 Thomas Landing Rd., Appoquinimink Hundred	Odessa	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Torbert Street Livery Stables	305-307 Torbert St.	Wilmington	1998-09-14	
New Castle	Townsend Historic District	Roughly bounded by Gray, Ginn and South, Lattamus and Main Sts., and Commerce St. and Cannery Ln. and Railroad Ave.	Townsend	1986-05-08	
New Castle	Townsend, Henry, Building	709 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Trinity Episcopal Church	1108 N. Adams St.	Wilmington	1984-08-16	
New Castle	U.S. Post Office, Courthouse, and Customhouse	11th and Market Sts.	Wilmington	1979-06-14	
New Castle	Vail, A. M., House	Rt. 299	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Vandegrift, J., House	Rt. 44	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Vandyke--Heath House	385 Green Spring--Vandyke Rd. (Co. Rd. 47), Appoquinimink Hundred	Townsend	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Vansant, John C., House	110 Possum Hollow Rd.	Newark	1989-02-16	
New Castle	Vernacular Frame House	Delaware St.	St. Georges	1982-04-08	Red Lion Hundred MRA

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Village of Arden	6 mi. N of Wilmington between Marsh Rd., Naaman's Creek, and Ardentown	Wilmington	1973-02-06	
New Castle	White Hall	130 Michael Ln.	Bear	1990-07-12	
New Castle	Walker, R., Barn	Near corner of Skyline and Foxcroft Drs.	Newark	1986-11-13	Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840 TR
New Castle	Walnut Green School	Jct. of DE 82 and Owl's Nest Rd.	Greenville	1994-08-19	
New Castle	Walnut Lane	E of Newark at 4133 Ogletown Rd.	Newark	1979-07-22	
New Castle	Wawaset Park Historic District	Bounded by Pennsylvania Ave., Woodlawn Ave., Seventh St., and Greenhill Ave.	Wilmington	1986-01-03	
New Castle	Weldin, Lewis, House	7--9 W. Market St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Welsh Tract Baptist Church	Welsh Tract Rd.	Newark	1973-03-01	
New Castle	Wesley M.E. Church	DE 896	McClellandville	1983-08-19	White Clay Creek Hundred MRA
New Castle	Weston	Off DE 71	Middletown	1985-11-19	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	White Clay Creek Presbyterian Church	2 mi. NE of Newark on DE 2	Newark	1973-03-20	
New Castle	White Hall	130 Michael Ln.	Bear	1990-07-12	
New Castle	Williams House	1.2 mi. NW of Odessa on Marl Pit Rd.	Odessa	1973-06-04	
New Castle	Williams, J. K., House	DE 4	Odessa	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Wilmington Amtrak Station	Front and French Sts.	Wilmington	1976-11-21	
New Castle	Wilmington and Western Railroad	DE 41	Hockessin and	1980-09-08	

County	Resource Name	Address	City	Date Listed	Multiple
New Castle	Wilmington Rail Viaduct	Amtrak's NE corridor through Wilmington	Wilmington	1999-11-10	
New Castle	Wilmington Savings Fund Society	838 N. Market St.	Wilmington	1985-01-30	Market Street MRA
New Castle	Wilmington Trust Company Bank	82 E. Main St.	Newark	1982-05-07	Newark MRA
New Castle	Wilmington YMCA	501 W. 11th St.	Wilmington	2002-02-20	
New Castle	Wilson, Edward R., House	521 S. College Ave	Newark	1983-04-25	Newark MRA
New Castle	Windsor	1060 Dutch Neck Rd., St. Georges Hundred	Port Penn	1992-09-11	Dwellings of the Rural Elite in Central Delaware MPS
New Castle	Winterthur Museum and Gardens	6 mi. NW of Wilmington on DE 52	Wilmington	1971-02-24	
New Castle	Woman's Club of Newport	15 N. Augustine St., Christiana Hundred	Newport	1993-07-14	Newport Delaware MPS
New Castle	Wooddale Bridge	Over Red Clay Creek off DE 48	Wooddale	1973-04-11	
New Castle	Wooddale Historic District	NW of Newport on Wooddale Rd	Newport	1979-08-24	
New Castle	Woodside	Rt. 435	Mt. Pleasant	1985-09-13	Rebuilding St. Georges Hundred 1850-1880 TR
New Castle	Woodstock	102 Middleboro Rd.	Wilmington	1973-09-07	
New Castle	Woodward Houses	701--703 West St.	Wilmington	1979-04-20	
New Castle	Woolworth, F. W., Company Building	839 N. Market St.	Wilmington	1987-01-02	Market Street MRA
New Castle	Wright House	47 Kent Way	Newark	1982-05-07	Newark MRA
New Castle	Young, William, House	E of Rockland on SR 228	Rockland	1982-10-29	

National Register Sites
County: Kent

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Allee House**	Off DE 9 on Dutch Neck Rd.	Dutch Neck Crossroads	1971-03-24	
Kent	**Archeological Site K-875 (7K-D-37/C)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-873 (7K-D-35/A, B and D)**	Address Restricted	Magnolia	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-876 (7K-D-38/C)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-880 (7K-D-42/F)**	Address Restricted	Magnolia	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-891 (7K-D-45/A and B)**	Address Restricted	Magnolia	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-913 (7K-D-47/C, D and E)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-914 (7K-D-48/F and G)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-915 (7K-D-86/C)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-916 (7K-D-49/C)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site K-920 (7K-D-52/A and C)**	Address Restricted	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Archeological Site No. 7K F 4 and 23**	Address Restricted	Milford	1982-06-03	
Kent	**Arnold, George, House**	DE 42	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Aspendale**	1 mi. W of Kenton on DE 300	Kenton	1970-04-15	
Kent	**Attix, Thomas, House**	DE 140	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Bank House**	119 N. Walnut St.	Milford	1978-07-31	
Kent	**Bannister Hall and Baynard House**	S of Smyrna off DE 300	Smyrna	1973-04-11	
Kent	**Barratt Hall**	S of Frederica off DE 372	Frederica	1973-04-13	
Kent	**Barratt's Chapel**	N of Frederica on U.S. 113	Frederica	1972-10-10	
Kent	**Belmont Hall**	1 mi. S of Smyrna on U.S. 13	Smyrna	1971-12-16	

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Bethel Methodist Protestant Church**	Jct. of DE 61, DE 114, and DE 304	Andrewsville	1998-09-14	
Kent	**Betz, J. F., House**	DE 6	Kenton	1983-08-29	Kenton Hundred MRA
Kent	**Blackiston, Benjamin, House**	Off DE 6	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Bonwell House**	4 mi. W of Frederica on DE 380	Frederica	1973-03-20	
Kent	**Bradford-Loockerman House**	419 S. State St.	Dover	1972-11-30	
Kent	**Brecknock**	0.5 mi. N of Camden off U.S. 13	Camden	1974-12-24	
Kent	**Building 1301, Dover Air Force Base**	Dover AFB, E. Dover Hundred	Dover	1994-12-07	
Kent	**Bullen, John, House**	214 S. State St.	Dover	1975-04-14	
Kent	**Burrows, W. D., House**	DE 42	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Byfield Historic District**	Address Restricted	Kitts Humock	1979-05-22	St. Jones Neck MRA
Kent	**Byrd's AME Church**	Smyrna Ave.	Clayton	1982-10-19	
Kent	**Byrd's AME Church**	Smyrna Ave.	Clayton	1982-10-19	
Kent	**Camden Friends Meetinghouse**	Commerce St.	Camden	1973-04-03	
Kent	**Camden Historic District**	Both sides of Camden-Wyoming Ave. and Main St.	Camden	1974-09-17	
Kent	**Carey Farm Site**	Address Restricted	Dover	1977-10-20	
Kent	**Cherbourg Round Barn**	SW of Little Creek off DE 9	Little Creek	1978-12-22	
Kent	**Cheyney Clow's Rebellion, Scene of**	W of Kenton on DE 300	Kenton	1974-01-14	
Kent	**Christ Church**	3rd and Church Sts.	Milford	1973-05-08	
Kent	**Christ Church**	S. State and Water Sts.	Dover	1972-12-04	
Kent	**Clark-Pratt House**	Main St.	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Clayton Railroad Station**	Bassett St.	Clayton	1986-11-06	
Kent	**Coombe Historic District**	W of Felton on DE 12 and SR 281	Felton	1982-04-08	

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Cooper House**	DE 300	Kenton	1973-03-20	
Kent	**Coursey, Thomas B., House**	Co. Rd. 388 N of Coursey Pond	Felton	1990-07-23	
Kent	**Cow Marsh Old School Baptist Church**	NE of Sandtown on DE 10	Sandtown	1976-06-24	
Kent	**Cummins, David J., House**	E of Smyrna	Smyrna	1983-10-06	
Kent	**Cummins, Timothy, House**	E of Smyrna	Smyrna	1983-10-06	
Kent	**Davis, Thomas, House**	DE 6	Kenton	1983-02-28	Kenton Hundred MRA
Kent	**Delaware Boundary Markers**	State boundary lines between DE-MD/DE-PA	Not Applicable	1975-02-18	
Kent	**Delaware State Museum Buildings**	316 S. Governors Ave.	Dover	1972-02-01	
Kent	**Denny, T. H., House**	DE 42	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Dickinson, John, House**	5 mi. SE of Dover and 3 mi. E of U.S. 13 on Kitts Hummock Rd.	Dover	1966-10-15	
Kent	**Dill Farm Site**	Address Restricted	Sandtown	1978-10-02	
Kent	**Dover Green Historic District**	Bounded by Governors Ave., North, South, and East Sts.	Dover	1977-05-05	
Kent	**Downs, N. C., House**	SR 1412	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Duck Creek Village**	DE 65, between Duck Creek and Green's Branch	Smyrna	1972-02-01	
Kent	**Durham--Shores House**	E side of DE 15	Dupont Station	2001-09-21	House and Garden in Central Delaware MPS
Kent	**Eden Hill**	W end of Water St.	Dover	1973-05-08	
Kent	**Felton Historic District**	Roughly bounded by North, Walnut, Main, and Niles Sts.	Felton	1988-01-26	
Kent	**Felton Railroad Station**	E. Railroad Ave.	Felton	1981-07-13	
Kent	**Fennimore Store**	Main, Lombard, and Front Sts.	Leipsic	1982-05-24	Leipsic and Little Creek MRA

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Fourteen Foot Bank Light**	On Fourteen Foot Bank in Delaware Bay, 12 mi. E of Bowers	Bowers	1989-03-27	
Kent	**Frederica Historic District**	Market, Front, and David Sts.	Frederica	1977-11-09	
Kent	**George Farmhouse**	E of Smyrna off DE 6	Smyrna	1982-10-19	
Kent	**Golden Mine**	W of Milford on DE 443	Milford	1978-08-24	
Kent	**Governor's House**	Kings Hwy.	Dover	1972-12-05	
Kent	**Great Geneva**	3 mi. S of Dover on DE 356	Dover	1973-03-26	
Kent	**Green Mansion House**	Main St.	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Greenwold**	625 S. State St.	Dover	1973-03-20	
Kent	**Griffith's Chapel**	Jct. of SR 442 and 443	Williamsville	1983-10-29	
Kent	**Hill, Robert, House**	DE 6	Kenton	1983-08-29	Kenton Hundred MRA
Kent	**Hoffecker-Lockwood House**	DE 6	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Hudson, Alfred L., House**	DE 90	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Hughes Early Man Sites**	Address Restricted	Felton	1979-07-24	
Kent	**Hughes-Willis Site**	Address Restricted	Dover	1978-11-21	
Kent	**Island Field Site**	Address Restricted	South Bowers	1972-02-01	
Kent	**Ivy Dale Farm**	S of Smyrna off DE 9	Smyrna	1973-04-24	
Kent	**Jones, Enoch, House**	SW of Clayton off DE 300	Clayton	1973-06-19	
Kent	**KATHERINE M. LEE (Schooner)**	Fox's Dock at Front and Lombard Sts.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**Kenton Historic District**	Commerce St.	Kenton	1983-08-29	Kenton Hundred MRA
Kent	**Kenton Post Office**	Main St.	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Lamb, Thomas, Farm**	DE 130	Kenton	1983-08-29	Kenton Hundred MRA
Kent	**Lamb, Thomas, House**	DE 129 and DE 130	Kenton	1983-08-29	Kenton Hundred MRA

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Laws, Alexander, House**	Front and Walnut Sts.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**Lewis Family Tenant Agricultural Complex**	CR 227	Wyoming	1986-08-13	
Kent	**Lewis, Jefferson, House**	DE 42	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Lindale,John B.,House**	24 Walnut St.	Magnolia	1973-05-08	
Kent	**Little Creek Hundred Rural Historic District**	DE 9	Little Creek	1984-11-07	
Kent	**Little Creek Methodist Church**	Main St.	Little Creek	1982-05-24	Leipsic and Little Creek MRA
Kent	**Lofland, Peter, House**	417 N. Walnut St.	Milford	1982-04-22	Milford MRA
Kent	**Logan School House K-834**	Rte. 68	Kitts Hummock	1979-05-22	St. Jones Neck MRA
Kent	**Loockerman Hall**	Delaware State College campus	Dover	1971-06-21	
Kent	**Lowber, Matthew, House**	E of Main St. (U.S. 113A)	Magnolia	1971-04-16	
Kent	**Lower St. Jones Neck Historic District**	Address Restricted	Kitts Humock	1979-05-22	St. Jones Neck MRA
Kent	**Macomb Farm**	Long Point Rd. off DE 8	Dover	1974-12-02	
Kent	**MAGGIE S. MYERS (schooner)**	Killen's Dock at Front and Lombard Sts.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**McClary House**	Main and McClary Sts.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**McColley, James, House**	414 NW Front St.	Milford	1983-01-07	Milford MRA
Kent	**McDaniel, Delaplane, House**	DE 92	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Mifflin-Marim Agricultural Complex**	DE 9	Dover	1984-11-07	
Kent	**Milford New Century Club**	6 S. Church Ave.	Milford	1982-04-22	Milford MRA
Kent	**Mill House**	414 NW Front St.	Milford	1983-01-07	Milford MRA
Kent	**Moore House**	511 W. Mt. Vernon St.	Smyrna	1982-10-19	

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Mordington**	S of Frederica on Canterbury Rd.	Frederica	1973-04-13	
Kent	**North Milford Historic District**	Roughly bounded by Mispillion River, Silver Lake, N. Walnut and NW 3rd Sts.	Milford	1983-01-07	Milford MRA
Kent	**Octagonal Schoolhouse**	E of Cowgill	Cowgill's Corner	1971-03-24	
Kent	**Old Fire House**	Church Ave.	Milford	1983-01-07	Milford MRA
Kent	**Old Statehouse**	The Green	Dover	1971-02-24	
Kent	**Old Stone Tavern**	Main St.	Little Creek	1973-07-02	Leipsic and Little Creek MRA (AD)
Kent	**Palmer Home**	115 American Ave.	Dover	1988-09-13	
Kent	**Peterson and Mustard's Hermitage Farm**	E of Smyrna off DE 325	Smyrna	1982-10-26	
Kent	**Poinsett House**	DE 6	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Port Mahon Lighthouse**	NE of Little Creek	Little Creek	1979-10-25	
Kent	**Rawley House**	Main St.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**Raymond Neck Historic District**	N of Leipsic between Leipsic River and CR 85	Leipsic	1982-11-08	
Kent	**Reed House**	Lombard St.	Leipsic	1983-04-25	Leipsic and Little Creek MRA
Kent	**Reed, Jehu, House**	U.S. 113 and DE 8	Little Heaven	1973-06-04	
Kent	**Ruth Mansion House**	Main St.	Leipsic	1973-04-11	Leipsic and Little Creek MRA (AD)
Kent	**Saxton United Methodist Church**	Jct. of Main and Church Sts.	Bowers	1990-07-23	
Kent	**Short's Landing Hotel Complex**	NE of Smyrna	Smyrna	1983-10-17	
Kent	**Sipple House**	Denny and Front Sts.	Leipsic	1982-05-24	Leipsic and Little Creek MRA
Kent	**Smyrna Historic District**	DE 6 and U.S. 13	Smyrna	1980-05-23	African--American Resources in Delaware MPS (AD)

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Snowland**	DE 42	Leipsic	1973-03-20	
Kent	**Somerville**	1 mi. E of Kenton on DE 42	Kenton	1974-12-31	
Kent	**St. Joseph's Industrial School**	355 W. Duck Creek Rd.	Clayton	2002-12-12	
Kent	**Star Hill AME Church**	Rt. 366 SE of Camden	Camden	1994-11-25	
Kent	**Stevens, William, House**	DE 6	Kenton	1983-08-29	Kenton Hundred MRA
Kent	**Stubbs, Elizabeth, House**	Main St.	Little Creek	1982-05-24	Leipsic and Little Creek MRA
Kent	**Sutton, Thomas, House**	DE 79, with Woodland Beach Wildlife Area	Woodland Beach	1973-04-11	
Kent	**Tharp House**	E of Farmington on U.S. 13	Farmington	1973-03-20	
Kent	**Thomas' Methodist Episcopal Chapel**	Rt. 206 W of Chapeltown, West Dover Hundred	Chapeltown	1994-01-26	
Kent	**Thorne, Parson, Mansion**	501 N.W. Front St.	Milford	1971-06-21	
Kent	**Todd's Chapel**	Jct. of Todd's Chapel Rd., and Hickman Rd.	Greenwood	1998-09-14	
Kent	**Town Point**	Kitts Hummock Rd.	Dover	1972-12-05	
Kent	**Truitt, Gov. George, House**	SW of Magnolia on Rte. 388	Magnolia	1978-12-12	
Kent	**Tyn Head Court**	E of Dover on S. Little Creek Rd.	Dover	1973-03-01	
Kent	**Victorian Dover Historic District**	Roughly bounded by Silver Lake, St. Jones River, North and Queen Sts.	Dover	1979-07-16	
Kent	**Vogl House**	W of Masten	Masten's Corner	1976-11-07	
Kent	**Voshell, John M., House**	E of Smyrna	Smyrna	1983-10-06	
Kent	**Walnut Farm**	Roosa Rd.	Milford	1982-11-10	
Kent	**Watson, Gov. William T., Mansion**	600 N. Walnut St.	Milford	1982-04-22	Milford MRA
Kent	**Wheel of Fortune**	S of Leipsic off DE 9	Leipsic	1973-04-11	
Kent	**White--Warren Tenant House**	NE side of DE 261	Sandtown	2001-09-21	House and Garden in Central Delaware MPS

County	Resource Name	Address	City	Date Listed	Multiple
Kent	**Wilkerson, J. H., & Son Brickworks**	Off SR 409	Milford	1978-07-12	
Kent	**Williams, James, House**	DE 42	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Woodlawn**	SE of Smyrna on US 13	Smyrna	1982-10-19	
Kent	**Woodley, Jonathan, House**	Main St.	Little Creek	1982-05-24	Leipsic and Little Creek MRA
Kent	**Woodside Methodist Episcopal Church**	Main St., North Murderkill Hundred	Woodside	1996-02-16	
Kent	**Wright-Carry House**	Commerce St.	Kenton	1983-06-27	Kenton Hundred MRA
Kent	**Wyoming Historic District**	Roughly bounded by Front St., Rodney Ave., Southern Blvd., and Mechanic St.	Wyoming	1987-02-18	
Kent	**Wyoming Railroad Station**	E. Railroad Ave.	Wyoming	1980-12-04	
Kent	**Zion African Methodist Episcopal Church**	Center St.	Camden	1994-11-25	

Sussex County

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Abbott's Mill	SW of Milford	Milford	1972-08-25	
Sussex	Abbott's Mill (Boundary Increase)	Rd. 620 W of DE 36	Milford	1979-05-17	
Sussex	Adams, Joseph T., House	12 E. Pine St.	Georgetown	1998-08-28	
Sussex	All Saints' Episcopal Church	18 Olive Ave., Lewes and Rehoboth Hundred	Rehoboth Beach	1991-08-02	
Sussex	Avery's Rest Site	Address Restricted	Rehoboth Beach	1978-12-15	
Sussex	Baltimore Mills Historic Archaeological Site	Address restricted	Omar	1997-08-12	
Sussex	Barnes Woods Archeological District	Address Restricted	Seaford	1996-12-11	
Sussex	Bethel Historic District	0.4 mi. W of Laurel	Bethel	1975-02-10	
Sussex	Blackwater Presbyterian Church	W of Clarksville on DE 54	Clarksville	1976-07-09	
Sussex	Brick Hotel	The Circle	Georgetown	1979-11-13	
Sussex	Bridgeville Historic District	Roughly bounded by Market, Main and Edgewood Sts., School House Ln., Maple Alley and the Penn Central RR tracks	Bridgeville	1994-04-14	
Sussex	Bridgeville Public Library	210 Market St.	Bridgeville	1990-07-23	
Sussex	Building at 200--202A High Street	200--202A High St.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Building at 218 High Street	218 High St.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Building at High and Cannon Streets	SE corner of High and Cannon Sts.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Burton Hardware Store	High St. and Spring Alley	Seaford	1978-04-20	
Sussex	Cannon's Ferry	Across the Nanticoke River	Woodland	1973-07-02	

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Cape Henlopen Archeological District	Address Restricted	Lewes	1978-11-21	
Sussex	Carey's Camp Meeting Ground	W of Millsboro off DE 24	Millsboro	1973-03-14	
Sussex	Carlisle House	205 S. Front St.	Milford	1982-04-22	Milford MRA
Sussex	Chandler, Capt. Ebe, House	Main and Reed Sts.	Frankford	1979-09-20	
Sussex	Chipman Potato House	Jct. of DE 465 and DE 465A	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Chipman's Mill	E of Laurel on SR 465	Laurel	1978-05-22	
Sussex	Coleman House	422 Kings Hwy.	Lewes	1977-04-11	
Sussex	Collins Potato House	Jct. of DE 509 and DE 510A	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Cool Spring Presbyterian Church	W of Lewes on SR 247	Lewes	1982-08-31	
Sussex	Cox, J. W., Dry Goods Store	214 High St.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Davis, Robert, Farmhouse	S of Rt. 24	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Dawson, Dr., House	200 SE Front St.	Milford	1983-01-07	Milford MRA
Sussex	De Vries Palisade	Address Restricted	Lewes	1972-02-23	
Sussex	Deep Creek Furnace Site	Address Restricted	Middleford	1977-10-20	
Sussex	Delaware Boundary Markers	State boundary lines between DE-MD/DE-PA	Not Applicable	1975-02-18	
Sussex	Delaware Breakwater and Lewes Harbor	E of Lewes at Cape Henlopen	Lewes	1976-12-12	
Sussex	Dickerson Potato House	Jct. of DE 494 and DE 498	Delmar	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Dodd Homestead	W of Rehoboth Beach on DE 1	Rehoboth Beach	1982-08-26	

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Draper House	200 Lakeview Ave.	Milford	1982-04-22	Milford MRA
Sussex	Draper-Adkins House	204 Federal St.	Milton	1973-04-11	
Sussex	Egglinton Hall	700 SE 2nd St.	Milford	1983-01-07	Milford MRA
Sussex	Ellendale State Forest Picnic Facility	US 113, 1/2 mi. S of DE 16, Georgetown Hundred	Ellendale	1991-07-22	
Sussex	Eratt House	W of Bridgeville on DE 572	Bridgeville	1983-10-29	
Sussex	Faucett, Peter S., House	W. Laurel St.	Georgetown	1985-09-05	
Sussex	Fenwick Island Lighthouse Station	Off DE 54	Fenwick Island	1979-08-13	
Sussex	First Broiler House	University of Delaware Experimental Station	Georgetown	1974-07-03	
Sussex	First National Bank of Seaford	118 Pine St.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Fisher Homestead	W of Lewes	Lewes	1980-12-11	
Sussex	Fisher's Paradise	624 Pilottown Rd.	Lewes	1972-12-04	
Sussex	Fort Miles Historic District	At the confluence of the Atlantic Ocean and Delaware Bay	Lewes	2004-09-30	
Sussex	Georgetown Coal Gasification Plant	N. Railroad Ave.	Georgetown	1985-09-30	
Sussex	Grier House	301 Lakeview Ave.	Milford	1983-01-07	Milford MRA
Sussex	Gyles, Stella Pepper, House	SW of Georgetown	Georgetown	1979-11-13	
Sussex	Hall, Col. David, House	107 King's Hwy.	Lewes	1976-04-26	
Sussex	Harmon School	S of jct. of Rt. 24 and CR 297	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Harmon, Isaac, Farmhouse	CR 312A	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Harmony Church	Rt. 24, E of CR 313	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Hazzard House	327 Union St.	Milton	1973-07-02	

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Hearn and Rawlins Mill	N of Seaford on U.S. 13A	Seaford	1978-05-22	
Sussex	Hearn Potato House	.6 mi. N of jct. of DE 74 and DE 62	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Highball Signal	City park, near Penn-Central RR.	Delmar	1973-07-02	
Sussex	Hitch, E. L., Potato House	Jct. of DE 460 and DE 489	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Hitchens, Ames, Chicken Farm	N of Rt. 24	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Hopkins' Covered Bridge Farm	N side Rd. 262, E of jct. with Rd. 286, Lewes and Rehoboth Hundred	Lewes	1991-08-02	
Sussex	Indian Mission Church	Jct. of Rt. 5 and CR 48	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Indian Mission School	Rt. 24 between CR 312A and 313A	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Indian River Archeological Complex	Address Restricted	Millsboro	1978-12-15	
Sussex	Indian River Life Saving Service Station	N of Bethany Beach on DE 14	Bethany Beach	1976-09-29	
Sussex	Johnson School	Rt. 24 between CR 309 and 310	Millsboro	1979-04-26	Nanticoke Indian Community TR
Sussex	Judge's House and Law Office	100 and 104 W. Market St	Georgetown	1979-11-13	
Sussex	Laurel Historic District	West St. to Rossakatum Creek to Tenth St.	Laurel	1988-07-27	
Sussex	Lawrence	N of Seaford on U.S. 13A	Seaford	1978-05-22	
Sussex	Lewes Historic District	Ship-carpenter, Front, Savannah, 2nd, 3rd, and 4th Sts.	Lewes	1977-09-19	African--American Resources in Delaware MPS (AD)
Sussex	Lewes Historic District (Boundary Increase)	Roughly bounded by Front St., Savannah Rd., McFee St. and the Penn Central RR tracks, Lewes and Rehoboth Hundred	Lewes	1992-09-11	African--American Resources in Delaware MPS (AD)

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Lewes Presbyterian Church	100 Kings Highway	Lewes	1977-10-05	
Sussex	Lightship WLV 539	Lewes--Rehoboth Canal between Shipcarpenter and Mulberry Sts.	Lewes	1989-02-16	
Sussex	Marsh, Peter, House	10 Dodd's Lane	Rehoboth Beach	1977-11-23	
Sussex	Maston House	3 mi. N of Seaford on Seaford-Atlanta Rd.	Seaford	1975-03-31	
Sussex	Maull House	542 Pilottown Rd.	Lewes	1970-11-20	
Sussex	Maull, Thomas, House (Boundary Increase)	542 Pilottown Rd.	Lewes	1978-04-26	
Sussex	Melson House	N of Atlanta on SR 30	Atlanta	1978-03-08	
Sussex	Messick, Dr. John W., House and Office	144 E. Market St.	Georgetown	1987-09-09	
Sussex	Milford Railroad Station	DE 36	Milford	1983-01-07	Milford MRA
Sussex	Milford Shipyard Area Historic District	Roughly bounded by Mispillion River, Franklin, Front and Marshall Sts.	Milford	1983-01-07	Milford MRA
Sussex	Milton Historic District	DE 5	Milton	1982-06-25	
Sussex	Mispillion Lighthouse and Beacon Tower	NE end of CR 203	Milford	1987-02-18	
Sussex	Moore Potato House	SE of jct. of DE 72 and DE 463	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	National Harbor of Refuge and Delaware Breakwater Harbor Historic District	Mouth of Delaware Bay at Cape Henlopen	Lewes	1989-03-27	
Sussex	Norwood House	SW of Lewes on DE 9	Lewes	1982-10-25	
Sussex	Old Bridgeville Fire House	102 William St.	Bridgeville	1984-08-09	
Sussex	Old Christ Church	SE of Laurel at jct. of SR 465 and 465A	Laurel	1972-04-13	
Sussex	Old Sussex County	S. Bedford St.	Georgetown	1971-03-24	

County	Resource Name	Address	City	Date Listed	Multiple
	Courthouse				
Sussex	Pagan Creek Dike	Pagan Creek near New Rd.	Lewes	1973-06-18	
Sussex	Pepper, Carlton, David, Farm	S of Georgetown on SR 469	Georgetown	1979-09-24	
Sussex	Perry-Shockley House	219 Washington St.	Millsboro	1985-09-05	
Sussex	Phillips Potato House	SW of jct. of DE 492 and DE 492A	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Pine Grove Furnace Site	Address Restricted	Concord	1978-01-26	
Sussex	Ponder, Gov. James, House	416 Federal St.	Milton	1973-05-24	
Sussex	Poplar Thicket	Address Restricted	Bethany Beach	1978-12-29	
Sussex	Portsville Lighthouse	N side of CR 493	Portsville	1987-09-08	
Sussex	Prince George's Chapel	E of Dagsboro on DE 26	Dagsboro	1971-03-24	
Sussex	Ralph Potato House	SE of jct. of DE 493 and DE 494	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Redden Forest Lodge, Forester's House, and Stable	Redden State Forest	Georgetown	1980-11-25	
Sussex	Richards Historic District	County Rd. 34	Greenwood	1983-12-15	
Sussex	Richards House-Linden Hall	E of Bridgeville on US 13	Bridgeville	1982-08-26	
Sussex	Richards Mansion	N. Bedford St. and the Circle	Georgetown	1979-07-26	
Sussex	Rider Potato House	SE of jct. of DE 506 and DE 505	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Robinson, Jesse, House	High St.	Seaford	1982-08-26	
Sussex	Ross Point School	CR 448 near Jct. with Rt. 62	Laurel	2001-08-17	
Sussex	Ross, Edgar and Rachel, House	413 High St.	Seaford	1997-09-11	

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Ross, Gov. William H., House	N of Seaford on Market St.	Seaford	1977-10-28	
Sussex	Russell, William, House	410 Pilot Town Rd.	Lewes	1977-04-18	
Sussex	Scott's Store	NW of Bridgeville on DE 404	Bridgeville	1983-10-29	
Sussex	Seaford Station Complex	Nanticoke River at Delaware Railroad Bridge	Seaford	1978-06-15	
Sussex	Short Homestead	W of Georgetown at DE 526 and DE 529	Georgetown	1982-04-01	
Sussex	Sipple, Thomas, House	N. Bedford & New Sts.	Georgetown	1985-09-05	
Sussex	South Milford Historic District	Roughly bounded by Mispillion River, Maple Ave., Church and Washington Sts.	Milford	1983-01-07	Milford MRA
Sussex	Spring Banke	NE of Clarksville on DE 26 and Irons Lane	Clarksville	1976-04-30	
Sussex	Spring Garden	NE of Laurel on Delaware Ave.	Laurel	1982-08-26	
Sussex	St. George's Chapel	9 mi. SW of Lewes on DE 5	Lewes	1973-11-30	
Sussex	St. John's Methodist Church	Springfield Crossroads, jct. of SR 30 and Co. Rd. 47	Georgetown	1990-07-12	
Sussex	St. Luke's Protestant Episcopal Church	Front St.	Seaford	1977-10-28	
Sussex	St. Paul's Episcopal Church	E. Pine St	Georgetown	1979-11-13	
Sussex	Stanley Potato House	N of jct. of DE 68 and DE 451	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Sudler House	N. Main St.	Bridgeville	1974-12-31	
Sussex	Sussex County Courthouse and the Circle	The Circle	Georgetown	1973-06-04	
Sussex	Sussex National Bank of Seaford	130 High St.	Seaford	1987-02-18	Seaford Commercial Buildings TR
Sussex	Teddy's Tavern	E side Du Pont Blvd., 0.6 mi. N of jct. with DE 16, Cedar Creek Hundred	Ellendale	1991-07-22	

County	Resource Name	Address	City	Date Listed	Multiple
Sussex	Thompson's Island Site (Boundary Increase)	address restricted	Rehoboth Beach	1997-07-16	
Sussex	Thompson's Loss and Gain Site	Address Restricted	Rehoboth Beach	1978-09-13	
Sussex	Thompsons Island Site	Address Restricted	Rehoboth Beach	1978-11-15	
Sussex	Townsend Site	Address Restricted	Lewes	1978-09-01	
Sussex	Trinity Methodist Episcopal Church	NW of Bridgeville on DE 31	Bridgeville	1978-05-05	
Sussex	Warren's Mill	NW of Millsboro on DE 326	Millsboro	1978-09-13	
Sussex	Warrington Site	Address Restricted	Rehoboth Beach	1977-10-20	
Sussex	West Potato House	US 13 N of jct. with DE 454A	Delmar	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	Wilgus Site	Address Restricted	Bethany Beach	1978-03-30	
Sussex	Wolfe's Neck Site	Address Restricted	Lewes	1978-11-21	
Sussex	Wright Potato House	SW of jct. of DE 24 and DE 510	Laurel	1990-11-15	Sweet Potato Houses of Sussex County MPS
Sussex	**Wright, Gardiner, Mansion**	228 S. Front St	Georgetown	1979-11-15	
Sussex	**Wright, Warren T., Farmhouse Site**	Address Restricted	Millsboro	1979-04-26	Nanticoke Indian Community TR

Source: www.nr.nps.gov/iwisapi/explorer.dll/x2_eanr4_3aNRIS1/script/report.iws

Undertaking Review Sheet

Created April 12, 2004

Date (mm/dd/yy) sent to NRCS State Office:
Date (mm/dd/yy) sent to SHPO:

1. Cooperators Name:_____ Planner:_____ C: NC

2. Describe Location (Nearby town, Rt. #, etc):

3. Description: Undertaking(s): Include Program undertaking falls under (EQIP, WRP, etc.)

Detailed Description of Proposed Disturbance:

Area of Potential Effect (APE): acres linear feet Soil Type

Is APE Previously disturbed? No ☐ Yes ☐ Please describe:_____

4. During field visit were any of the following present within APE (check all that apply):

☐ Standing Structures ☐ Foundation Remains (brick or stone)
☐ Flint Flakes ☐ Dug Well ☐ Arrowheads ☐ Fire cracked rock
☐ Other man-made feature over 50 yrs old ☐ Checked with landowner concerning known resources
☐ Shell
☐ Delmarva Bay Features within APE or on farm ☐ Pottery

5. Explain any above checks:

6. **<u>Please include</u>: Soils map, road map, and aerial photo (660) with APE and disturbance areas highlighted; Pictures of any standing structures and basic lay of land of APE, Preliminary Design if available**

7. NRCS State Office Findings: ☐ No Historic Properties Affected
☐ No adverse Effects ☐ Adverse Effects
☐ Field Investigation ☐ Report attached

CRS Comments

<u>SHPO EVALUATION RAPID RESPONSE</u>

_____ Concur with NRCS Findings
_____ Do Not concur with NRCS findings Reason:_____

Signature_____Date:

APPENDIX H

DELAWARE ENVIRONMENTAL EVALUATION CHECKLIST

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	**DELAWARE** **ENVIRONMENTAL EVALUATION CHECKLIST**	**DE-CPA-052** **(Revised 08/04)**
Client Name:	**Farm No:**	**Tract No:**
Address:	**Evaluator:**	**Date:**
Proposed Conservation Practices, Systems, or Activities *(describe)*:		

A. RESOURCE CONCERNS

During the planning process, inventory the planning unit for natural resources and economic and social information, as appropriate. Use this information to identify problems, consider alternatives and their potential impacts, and develop a conservation plan. Use the checklist below to summarize identified problems and the effects of the proposed conservation practices, systems, or activities. For each major natural resource listed below, check (✓) whether a resource concern (problem) was identified, and whether the planned project will adequately address the problem. Refer to Section III-A of the Field Office Technical Guide for more information about the Quality Criteria for soil, water, air, plant, and animal resources, and to identify concerns affecting the use, management, and sustainability of each resource.

Resource	Resource Concern Identified?		Planned Treatment Meets Quality Criteria?		Comments
	Yes	No	Yes	No	
Soil	☐	☐	☐	☐	
Water	☐	☐	☐	☐	
Air	☐	☐	☐	☐	
Plants	☐	☐	☐	☐	
Animals	☐	☐	☐	☐	

If the planned treatment will not meet the minimum Quality Criteria, explain why.

B. PROTECTED RESOURCES Evaluate the effects of the proposed conservation practices, systems, or activities on the significant natural and cultural resources listed below. These are resources that are located within the work zone or are close enough to be affected by the proposed activities. Check (✓) the available sources of information that were used, whether the resource is present or absent, and the effects of the proposed practices, systems, or activities on each resource. As appropriate, indicate whether the proposed project will need permits or approvals from regulatory agencies. Attach additional documentation as needed.	**Resource is:**		**Effect is:**			**Permits or approvals needed?**	
	Present	**Absent**	**Beneficial**	**Adverse**	**None**	**Yes**	**No**
1. SUBAQUEOUS LANDS *All tidal waters and non-tidal i**ntermittent** **or perennial streams, or other waterbodies, including channalized streams, regulated by the state of Delaware.*** Information source(s) used: ☐ USGS 7.5' topo quads (1:24,000) ☐ Aerial photos ☐ Soil maps ☐ Field investigations ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐

B. PROTECTED RESOURCES (Continued)	**Resource is:**		**Effect is:**			**Permits or approvals needed?**	
	Present	**Absent**	**Beneficial**	**Adverse**	**None**	**Yes**	**No**

B. PROTECTED RESOURCES (Continued)	Resource is:		Effect is:			Permits or approvals needed?	
	Present	Absent	Beneficial	Adverse	None	Yes	No
2. TIDAL WETLANDS ***Tidal wetlands regulated by the state of Delaware.*** Information source(s) used: ☐ State of Delaware Wetlands Maps (Tidal) ☐ Field investigations ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐
3. WETLANDS/WATERS OF THE US/SECTION 10 ***Tidal and nontidal wetlands regulated by the federal government, including COE 404 and Swampbuster.*** Information source(s) used: ☐ US Fish and Wildlife Service, National Wetland Inventory maps ☐ Aerial photos ☐ Soil maps ☐ Field investigations ☐ State of Delaware Wetland Maps (Tidal) ☐ State of Delaware Wetland Maps (Non-tidal) ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐
4. 100-YEAR FLOODPLAIN ***Area at or below the 100-year frequency flood elevation that is adjacent to a stream or other regulated waterbody.*** Information source(s) used: ☐ Federal Emergency Management Agency (FEMA) maps ☐ Field investigations/surveys ☐ Hydrologic & hydraulic computations ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐

B. PROTECTED RESOURCES (Continued)	Resource is:		Effect is:			Permits or approvals needed?	
	Present	Absent	Beneficial	Adverse	None	Yes	No
5. SCENIC AND WILD RIVERS ***Floodplain or channel of mainstem state designated Scenic & Wild Rivers, as follows: White Clay Creek and all second order tributaries.*** Information source(s) used: ☐ USGS 7.5' topo quads (1:24,000) ☐ Soil maps ☐ Field investigations ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐
6. COASTAL ZONE MANAGEMENT AREA ***All lands within the state of Delaware. Federal projects must be consistent with the state coastal zone policies.*** Information source(s) used: ☐ None needed:	☐	☐	☐	☐	☐	☐	☐
7. THREATENED or ENDANGERED SPECIES ***Plant or animal species listed by the state and/or federal government as endangered, threatened, or formally proposed as a candidate for listing or it's critical habitat.*** Information source(s) used: ☐ NRCS Delaware Field Office Technical Guide - T&E Species Lists ☐ Consultation with U.S. Fish and Wildlife Service ☐ Consultation with the state of Delaware, DNREC, Natural Heritage Program ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐

B. PROTECTED RESOURCES (Continued)	Resource is:		Effect is:			Permits or approvals needed?	
	Present	Absent	Beneficial	Adverse	None	Yes	No
8. PRIME FARMLAND ***Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Identified by soil survey map units that meet these requirements. Federal projects should not cause unnecessary and irreversible conversion of prime farmland to nonagricultural uses.*** Information source(s) used: ☐ NRCS Delaware Field Office Technical Guide - Cropland interpretations ☐ Soil maps ☐ Field investigations ☐ Other sources (describe):	☐	☐	☐	☐	☐	☐	☐
9. ARCHEOLOGICAL/ HISTORICAL SITE ***A cultural resource that is listed on or eligible for listing on, the National Register of Historic Places.*** Information source(s) used: ☐ NRCS Consultation Process Completed ☐ Consultation not needed (describe):	☐	☐	☐	☐	☐	☐	☐

C. OTHER ENVIRONMENTAL CONSIDERATIONS Are you aware of other important factors that could affect (or be affected) by the proposed practices, systems, or activities? ☐ ***Yes*** ☐ ***No*** Consider the presence of dump sites, hazardous materials, public or private pipelines, transmission lines, access roads, easements, or other legal restrictions. If "Yes," please explain.

D. PUBLIC INTEREST AND SOCIAL CONCERNS Are you aware of any social, economic, or other special concerns that relate to the proposed practices, systems, or activities? ☐ ***Yes*** ☐ ***No*** Will there be any adverse effects on minority or low-income communities? ☐ ***Yes*** ☐ ***No***
If you answer "Yes" to either of these questions, please explain.

B. PROTECTED RESOURCES (Continued)	Resource is:		Effect is:			Permits or approvals needed?	
	Present	Absent	Beneficial	Adverse	None	Yes	No

E. ALTERNATIVES Will alternatives to the proposed practices, systems, or activities have to be considered in order to avoid or minimize significant adverse effects on natural and cultural resources, and/or on social, economic, or other special concerns? ☐ ***Yes*** ☐ ***No***

If "Yes," briefly explain here, or attach a separate page describing other alternatives (including "no project") and the effects of each alternative.

F. CONCLUSION *Check one of the following boxes to summarize the results of this environmental evaluation:*

☐ **No Adverse Effects:** The proposed conservation practices, systems, or activities have been planned in accordance with NRCS policy, including compliance with all applicable federal, state, and local regulations. **There will be no significant adverse effects** on the quality of the environment (or significant adverse effects, if any, will be mitigated). To the best of my knowledge, no further environmental analysis is needed. The client has been informed that he/she is responsible for obtaining any needed permits or approvals from federal, state, or local government agencies before any work is performed.

☐ **Adverse Effects:** The proposed conservation practices, systems, or activities **will have significant adverse effects** that cannot be mitigated, sufficiently minimized, or avoided. Additional documentation for environmental compliance, such as preparation of an Environmental Assessment or Environmental Impact Statement may be required. Contact the Delaware NRCS State Resource Conservationist for additional guidance.

This DE-CPA-52 has been prepared based on the best available information and is true and correct to the best of my knowledge.

Signature of Preparer	Title & Agency/Company	Date

Responsible Federal Official (if not the same as Preparer) in NRCS or other federal agency responsible for NEPA compliance has reviewed this document and concurs with the above finding.

Signature of Responsible Federal Official	Title & Agency	Date

APPENDIX I
DELAWARE COASTAL MANAGEMENT FEDERAL CONSISTENCY CERTIFICATION

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

DELAWARE COASTAL
MANAGEMENT PROGRAM

TELEPHONE: (302) 739-9283
FAX: (302) 739-2048

November 6, 2006

Richard L. Bergold
State Executive Director
USDA Farm Service Agency
1221 College Park Dr., Suite 201
Dover, DE 19904

RE: Delaware Coastal Management Federal Consistency Certification Conservation Reserve Enhancement Program Draft Environmental Assessment (FC 06.141)

Dear Mr. Bergold:

The Delaware Coastal Management Program (DCMP) has received and reviewed your consistency determination for the above referenced project. Based upon our review and pursuant to National Oceanic & Atmospheric Administration regulations (15 CFR 930), the DCMP concurs with your consistency determination for the Conservation Reserve Enhancement Program and supporting Draft Environmental Assessment.

If you have any questions please feel free to contact me or Susan Love of my staff at (302) 739-9283.

Sincerely,

Sarah W. Cooksey, Administrator
Delaware Coastal Programs

File: 06.141
Norma Collins – Farm Service Agency