2015-2018 DNREC Capital Plan

Investing in Delaware's Conservation Economy

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March 5, 2015

Investing in Delaware's Conservation Economy

Members of the Bond Bill Committee,

I am pleased to provide you with a copy of the Department of Natural Resources and Environmental Control's Capital Plan that outlines a series of key DNREC projects, each of which demonstrates that strategic environmental investments can help drive economic prosperity. By providing sustained funding for critical infrastructure needs, we help strengthen Delaware's economy and improve the health of our environment.

Through the support of Governor Jack Markell and the General Assembly, we have begun to increase our investment in environmental infrastructure that supports tourism, recreation, health, and public safety.

Thousands of Delaware jobs in businesses like hotels, restaurants, retail outlets, bait and tackle shops, recreational equipment stores, boat sales, as well as commercial watermen, farmers, and tour operators, depend upon a healthy environment. According to a 2012 Outdoor Industry Association report, more than 60 percent of Delawareans participate in outdoor recreation. Residents and visitor spending generates almost $4 billion annually, with $1.1 billion in salaries and wages and more than $300 million in state and local taxes. In addition, our natural resources provide hundreds of millions of dollars of irreplaceable economic value by purifying air and water, mitigating flooding, and supporting diverse species, along with recreational amenities, such as biking and walking trails, that reduce health care costs as Delawareans adopt healthier lifestyles. This is "Delaware's conservation economy."

While some still argue that we must choose between our environment and economy, more and more Delawareans recognize that a healthy environment is integral to Delaware's economic success and that conservation can be a driver of economic growth. Visitors come to Delaware to experience and enjoy what they often don't have access to at home: pristine beaches, navigable waterways, rustic landscapes, world-class birding, hunting, fishing, biking, and hiking. Clean air, clean water, safe soils, and memorable recreational experiences, are absolutely necessary to attract visitors and new companies, not to mention retain businesses and their top talent.

So as various interests compete for limited resources, we encourage investment in Delaware's extraordinary natural environment and the thousands of jobs and billions of dollars of activity that depend upon DNREC's stewardship of Delaware's conservation economy. Let's ensure that it receives the same level of support and attention that we give every other vital sector of our economy – and create a stronger Delaware for generations to come.

Sincerely,

David Small
Secretary

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Critical Infrastructure and Resiliency $18.2M

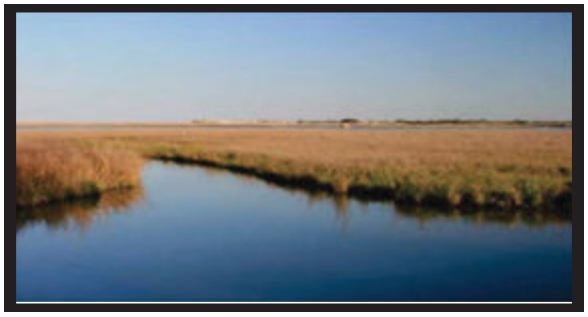
DAMS AND DIKES

FY2016 REQUEST: $1.5M

FY2016 RECOMMENDED: $1.5M

TOTAL NEED 2016-2018: $5M +

FUNDING OPTIONS: Bond, Federal



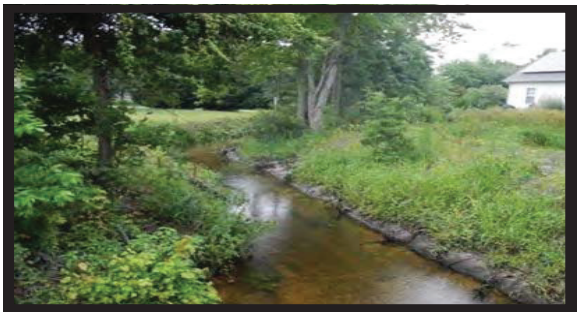
COASTAL IMPOUNDMENTS

FY2016 REQUEST: $1M

FY2016 RECOMMENDED: $0

TOTAL NEED 2016-2018: $3M +

FUNDING OPTIONS: Federal, Bond



TAX AND PUBLIC DITCHES

FY2016 REQUEST: $1.14M

FY2016 RECOMMENDED: $1.14M

TOTAL NEED 2016-2018: $3.4M

FUNDING OPTIONS: Bond, County, Local

21ST CENTURY DRAINAGE

FY2016 REQUEST: $1.5M

FY2016 RECOMMENDED: $0

TOTAL NEED 2016-2018: $4.5M

FUNDING OPTIONS: Bond, County, CTF

BURIED DEBRIS PITS

FY2016 REQUEST: $750M

FY2016 RECOMMENDED: $0

TOTAL NEED 2016-2018: $2.25M

FUNDING OPTIONS: Bond, County, CTF

Critical Infrastructure Investments

High Hazard Dam and Dike Repair/Replacement

Dams are an important but aging part of Delaware's infrastructure. Dams were originally constructed for milling grain in the southern part of the state and for industrial purposes, including making gunpowder in the north. Today, dams provide recreational and fishing opportunities, however, if dams fail downstream communities and infrastructure could be threatened.

Dikes consist of low-wall earthen embankments with tide gage structures designed to prevent flooding of adjacent properties and infrastructure. The five dikes, in and near the city of New Castle, were originally built by Dutch and Swedish settlers between 200 and 350 years ago. While the dikes have been reinforced and repaired over the years, recent intense storms and waves have resulted in severe erosion and overtopping by waters.

Concord Pond Dam

Storm damage at Craig's Mill Pond Dam, 2006

Gambacorta Dike

Funding FY 2016 Request for Dams and Dikes: $1.5 Million

Dams: Emergency planning and monitoring, engineering, maintenance repairs and rehabilitation for state-owned dams

- Rehabilitation of Hearns Pond Dam - the highest priority for dam safety
- Other operations and repair projects at the following dams: Trap Pond, Chipmans Pond, Concord Pond, Craigs Mill Pond, Mudmill Pond, Hudson Pond, Garrisons Lake and Records Pond

Dikes: Further construction funding needs will be identified after a full dikes inventory and investigation are completed.

FY 2017 - 2018 Funding Needs for Dams and Dikes: $1.5 Million/Year

Dams: Continue making investments to maintain and upgrade dams (in coordination with DelDOT)

Dikes: Further construction funding needs will be identified after a full dikes inventory and investigation are completed.

Dams:

- State-owned dams are classified based upon their threat to downstream communities and infrastructure in the event of a dam failure and not solely on the condition of a dam.
- DelDOT and DNREC developed a dam deficiency ranking system which prioritizes state-owned dams for necessary upgrades and rehabilitation. A dam's ranking is based on factors such as condition, spillway capacity and population that could be at risk should a dam fail.

Construction of a low-level outlet at Trap Pond Dam

Current Projects - FY 2015 - 2016

Dam Rehabilitation Projects:

- **Hearns Pond Dam,** Seaford: Construction begins spring 2015
- **Records Pond Dam**, Laurel: Construction expected in 2017

Dam Operations/Repair Projects:

Help manage water levels to prepare for storm events

Design of these projects was completed in spring 2014. Projects will be prioritized, if necessary, based on construction costs and available funding.

- Trap Pond Dam, Laurel: Replace a low-level outlet gate
- Chipmans Pond Dam, Laurel: Install operable gates
- Concord Pond Dam, Seaford: Install operable gates
- Craigs Mill Pond Dam, Seaford: Install a low-level outlet gate and repair concrete
- Mudmill Pond Dam, Kent County: Install operable gates
- Hudson Pond Dam, Milford: Install operable gates; repair concrete; and stabilize embankment
- Garrisons Lake Dam, Smyrna: Replace failed low-level outlet culvert; install operable gates; and stabilize embankment
- Water Level Monitoring, statewide: Install equipment in key locations to facilitate improved monitoring and response

High Hazard Dams:

- Delaware has 48 regulated dams - 42 of these are state-owned dams, while the others are owned by New Castle County and the cities of Wilmington, Newark and Dover.
- All state-owned regulated dams have been inspected regularly since 2009 and draft Emergency Action Plans have been prepared for all of them.
- Delaware's Dam Safety Law was passed by the state legislature in 2004. The regulations adopted in 2009 require upgrades to ensure dam safety.
- DNREC receives a Dam Safety Grant of about $50,000 annually from the U.S. Federal Emergency Management Agency.

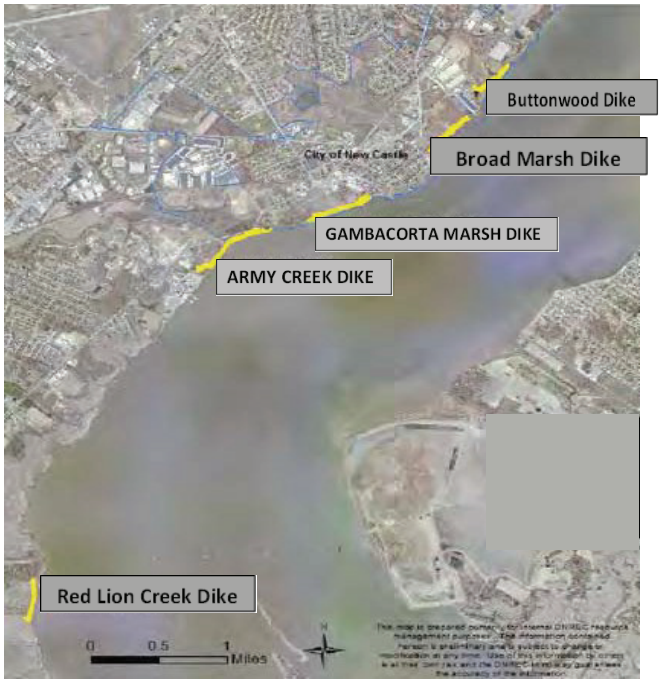
Installing a cofferdam at the low-level outlet at Trap Pond Dam

DNREC and DelDOT partner on:

- Dam inspections, preparing Emergency Action Plans and coordinating maintenance, operations, and emergency management activities
- Leveraging state funding to perform dam break inundation mapping, engineering studies and the design and construction of improvement and rehabilitation projects

Dikes:

Five dikes in and near the city of New Castle were repaired and restored in 2014 - 2015. The restored dikes provide the City of New Castle and surrounding areas with increased flood protection from the Delaware River and reduced impacts from coastal storms. The improvements represent a significant milestone in coastal resiliency, benefit the local economy and provide recreational opportunities for the community through new or enhanced walking and biking trails at the crests of Army Creek, Gambacorta and Broad Marsh Dikes.



New Castle dikes along the Delaware River

Funding for the New Castle dike repairs was more than $7 million and included 2012 - 2014 Bond Bill funding, and other funding including Delaware's Hazardous Substances Control Act funds for Red Lion Dike and FEMA for repairs from Hurricane Sandy.

The U.S. Army Corps of Engineers' review of New Castle dikes for their Rehabilitation and Inspection Program is underway.

A statewide dikes inventory will be underway in 2015.

Red Lion Dike while under construction

Dikes Projects Accomplishments: 2014 -2015

The five reconstructed dikes generally consist of earthen embankments with stone armoring and water control structures designed to reduce flooding on adjacent and upstream properties.

- **Army Creek Dike:** Located on the south side of the City of New Castle, this dike protects Delaware's Bayshore Byway (Rt. 9) just south of Dobbinsville and a few surrounding structures.
- **Gambacorta Marsh Dike:** Located south of Battery Park in the city of New Castle, this dike protects businesses and homes, as well as a section of Delaware's Bayshore Byway (Rt. 9).
  - Improvements were made to the recreational trail extending from the southern end of Army Creek Dike, along the Delaware River east of Dobbinsville, up to the northern end of Gambacorta Marsh Dike. The trail, just over 1.75 miles long, was widened and paved and is heavily used by residents and visitors to the city.
- **Broad Marsh Dike:** Located just north of the City of New Castle's historic town center, this dike was recently acquired by the City and is being protected along with adjacent wetlands by a permanent conservation easement. The dike includes an unpaved trail with recreational access.
- **Buttonwood Dike:** Located at the confluence of Buttonwood Ditch and the Delaware River, this dike is the northernmost flood protection dike in the City of New Castle. The levee and floodgate protect the historic Buttonwood community from coastal flooding and help improve the health of adjacent wetlands.
- **Red Lion Dike:** Located north of Delaware City, this dike protects the industrial complex.
  - This dike was accepted into the U.S. Army Corps of Engineers Rehabilitation and Inspection Program providing 80% of future repair costs.

DNREC Watershed Stewardship & Coastal Programs - Dams and Dikes

Capital Project Funding Priorities and Cash Flow Estimate FY2015-2018

Last Updated 3/1/2015

PROJECT	County	FY 2015	FY 2016	FY 2017	FY 2018	Total by Project
July 1 Carryforward		$ 966,377	$ 1,079,992	$ (91,008)	$ 338,992	
Fiscal Bond Bill Appropriation		1,900,000	$ 1,500,000	$ 1,900,000	$ 1,900,000	
Cost Recoveries from FEMA (Army Creed/Gambacorta)		338,615				
Total Resources for Fiscal Year		**3,204,992**	**2,579,992**	**1,808,992**	**2,238,992**	
Dike Rehabilitation:						
Red Lion Dike - Completed	New Castle					
Army Creek & Gambacorta Dikes - Completed	New Castle					
Buttonwood Dike - Completed	New Castle					
Broad Marsh Dike - Completed	New Castle					
Emergency Action Plans for all 5 Dikes - Completed	New Castle					
RIP Inspections of Flood Gates (required by Corp) - Completed	New Castle					
Permit Mitigation Project at Peterson Refuge - constructed in fiscal 2014 with final vegatation, seeding, and as-buildt survey completed in fall 2014. Site monitoring continues.	New Castle	20,000				$ 20,000
Dike Inventory and Assessment	Statewide	300,000				$ 300,000
Dike Repairs and Maintenance*	Statewide	500,000	200,000	200,000	200,000	$ 1,100,000
Dam Rehabilitation and Repairs:						
Hearns Pond Dam ($3,429,000 to DelDOT in January 2014)	Sussex					
Records Pond Dam ($1,000,000 to DelDOT in June 2014)	Sussex					
Trap Pond Dam - Funds encumbered in Fiscal 2014 with repairs underway in Fiscal 2015	Sussex					
Red Clay Dam		$ 150,000				$ 150,000
Garrisons Lake Dam - Funds encumbered in Fiscal 2014 with emergency repairs underway in Fiscal 2015	Kent	555,000				$ 555,000
Chipmans Pond Dam	Sussex		460,000			$ 460,000
Concord Pond Dam	Sussex		550,000			$ 550,000

DNREC Watershed Stewardship & Coastal Programs - Dams and Dikes

Capital Project Funding Priorities and Cash Flow Estimate FY2015-2018

Last Updated 3/1/2015

PROJECT	County	FY 2015	FY 2016	FY 2017	FY 2018	Total by Project
Craigs Pond Dam	Sussex		470,000			$ 470,000
Mudmill Pond Dam	Kent			370,000		$ 370,000
Hudson Pond Dam	Sussex				400,000	$ 400,000
Silver Lake Dam-Milford (still determining ownership)	Kent					$ -
Blairs Mill Dam				100,000		$ 100,000
Dam Planning, Design, and Engineering	Statewide	360,000	400,000	400,000	400,000	$ 1,560,000
Dam Annual Maintenance	Statewide	200,000	200,000	200,000	200,000	$ 800,000
Pond-side Vegetation Clearing & Maintenance (State-owned upstream slope for 18 dams)	Statewide		300,000	150,000	150,000	$ 600,000
Water-level Monitoring (Installation of 14 stations & ongoing maintenance)	Statewide	40,000	91,000	50,000	50,000	$ 231,000
June 30 Projected Balance		**1,079,992**	**(91,008)**	**338,992**	**838,992**	

Note: These project estimates are based on engineering, design, site visits and input from DNREC, DelDOT, and contracted engineering firms for Dam Repairs/Rehabilitation. Dike repair needs will be further refined when statewide inventory and assessments are completed.

Critical Infrastructure Investments

Coastal Impoundments and Mispillion Harbor Rehabilitation

Coastal impoundments are tidal marsh areas where tidal flow is restricted by levees to provide pooled water for waterfowl, shorebirds and other wetland wildlife. Water levels are manipulated using water-control structures to encourage growth of vegetation beneficial to wildlife and to support other wetland functions.

The ability to control water levels in coastal impoundments also provides mosquito control and flood control benefits to surrounding communities. The Division of Fish and Wildlife manages five major impoundment systems statewide: Augustine; Taylors Gut; Little Creek; Ted Harvey; and Assawoman.

Mispillion Harbor is renowned as globally significant for the extraordinary concentration of spawning horseshoe crabs and migratory shorebirds each spring. A public aquatic education facility in the harbor serves local school and youth groups. Public visitation exceeds 15,000 people annually. Two public boat ramps support key recreational boating and fishing access to Delaware Bay. Mispillion Harbor also supports a commercial marina and a maritime supply service that delivers provisions and personnel to vessels in the Delaware Bay.

Ted Harvey Conservation Area south impoundment

Urgency of Rehabilitation:

- Repair and rehabilitation are urgently needed to stabilize and increase the resiliency of impoundments and the harbor to coastal storms and sea level rise.
- Impoundments and the harbor are highly vulnerable to erosion under current degraded conditions; repairs will proactively extend key ecological and economic benefits.
- Delays will risk catastrophic loss of coastal wetlands and the loss of a critical maritime harbor.

Benefits of Coastal Impoundments and Mispillion Harbor Rehabilitation

- Increase coastal ecosystem resiliency by absorbing storm surges
- Provide flood mitigation and control for Bayshore communities and Route 9 – a major coastal evacuation route
- Increase opportunities for outdoor recreational pursuits and support local economies
- Increase habitat for shorebirds and waterfowl, support muskrat and juvenile fish populations and reduce mosquito breeding areas
- Increase the resiliency of the harbor to protect multiple public assets resulting in community and regional economic benefits

FY 2016 Funding Request: $1 million

Water control structure design and engineering at Woodland Beach/Taylors Gut Impoundment and Augustine Lang Marsh.

Ted Harvey Conservation Area south impoundment breach emergency spillway

Funding:

Impoundment maintenance and habitat work have been supported by federal funding, waterfowl conservation funds and funding from conservation partners, including Ducks Unlimited. However, grant funds must be matched with local funding.

Woodland Beach Wildlife Area Taylors Gut water control structure erosion (March 2013)

FY 2015 Projects:

Mispillion Harbor Reserve

Restore and stabilize the sea wall protecting the harbor; and replenish sand to protect and maintain the harbor shoreline. **Benefits:** Will support a key spawning area for horseshoe crabs and a migratory area for shorebirds and also protect navigation channels for recreational and commercial fishing vessels. The Town of Slaughter Beach will also benefit from maintaining the hydrology of the creek and marsh systems connected to the harbor.

Little Creek Wildlife Area Mahon Impoundment

Add a new water-control structure and fill interior borrow channels. **Benefits:** Will help protect 450 acres of fresh/brackish marsh and provide a protective buffer for adjacent farmlands and the Town of Little Creek.

Little Creek Wildlife Area Impoundment

Design restoration for more than 100 acres of salt-marsh habitat and shoreline along the bay-front levee; fill interior borrow channels and increase the capacity of two water-control structures to adapt to sea level rise. **Benefits:** Will protect 480 acres of coastal impoundment marsh habitat and provide a buffer for the Little River and the Town of Little Creek.

Ted Harvey Conservation Area South Impoundment

Refurbish the levee; retrofit the emergency spillway; and replace two water-control structures to adapt to sea level rise. **Benefits:** Will improve the resiliency of 880 acres of two impoundments, provide a protective buffer along the St. Jones River, and provide flood protection for the community of Kitts Hummock.

FY 2016 Projects:

Woodland Beach Wildlife Area Taylors Gut Impoundment

Replace a water-control structure severely damaged by repeated storm events. **Benefits:** Will increase resiliency of 250 acres of fresh/ brackish impoundment marsh habitat that supports waterfowl hunting and is a popular wildlife-viewing area. In addition, a new water-control structure will protect Rt. 9 from erosion.

Augustine Wildlife Area Lang Marsh

Refurbish the levee; replace a water-control structure; and fill interior borrow channels. **Benefits:** Will protect 100 acres of marsh habitat and provide a buffer for Rt. 9 from storm surges.

Funding Needs: FY 2017 - $1 Million; FY 2018 - $500,000

Continue critical investments to stabilize and increase resiliency of coastal wetland impoundments and rehabilitate water control structures

Critical Infrastructure Investments

Tax Ditches and Public Ditches

Tax Ditches

In 1956, the General Assembly passed the Tax Ditch Law, which authorized the creation of tax ditch organizations by Superior Court Order. Currently, there are 241 organizations statewide that maintain more than 2,000 miles of tax ditches. These ditches are the backbone of drainage infrastructure and provide drainage to more than 50 percent of our state roads, 23 municipalities, three counties, 38,000 properties and 829 square miles, or about one-third of the state.

The Tax Ditch Law requires DNREC to provide technical and administrative assistance to the tax ditch organizations. Since severe flooding occurred in 2010, four new tax ditch petitions have been received, which have resulted in one new tax ditch being formed and two tax ditch planning orders being received from Superior Court.

Tax Ditch Administration is a partnership among:

- DNREC Division of Watershed Stewardship
- Sussex, Kent and New Castle Conservation Districts
- Tax Ditch organizations

Little Bay Tax Ditch near Ocean View

Public Ditches

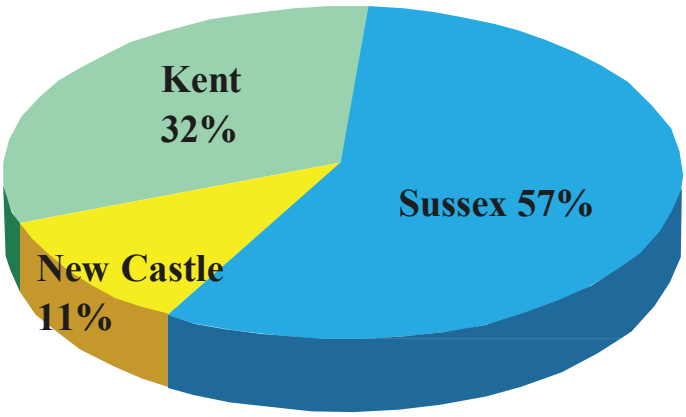
In 1996, the Joint Committee for Capital Improvement authorized 21st Century Funds for resource, conservation and development projects for watershed and drainage improvements. These projects became known as "public ditches" because public funding was used for construction.

Funding FY 2016 Request: $1.14 Million

- Continue providing technical assistance to the state's 241 tax ditches
- Development of both tax and public ditch projects. Tasks include: drainage and watershed investigations; planning; surveying; engineering; permitting; and contract administration of these projects. Use funds as leverage for grant opportunities including USDA Natural Resources Conservation Service's Regional Conservation Partnership Program and Chesapeake Bay Grants.
- Changes in 2008 to the Tax Ditch Law have dramatically increased the number of right-of-way requests and court order changes processed.
- Aging infrastructure is increasing the number of requests for technical and financial assistance.
- Severe flooding in 2010 and 2013 have resulted in four new tax ditch petitions and millions of dollars of new Public Ditch /21st Century Fund project requests.

Little Bay Filtrex Installation

Tax Ditches by County
(total 241 ditches)



Tax Ditch Accomplishments: FY 2014

- Provided right-of-way research to the owners of 1,193 parcels
- Received requests for 61 court order changes (90% were to reduce rights-of-way resulting from inquiries)
- Filed 41 court order changes with Superior Court; Attended 107 annual meetings
- Audited the financial reports of 95 tax ditches
- Provided environmental permitting for 41 tax ditch projects
- Provided updated tax ditch assessment information to county tax offices
- Provided updated certified lists of tax ditch watershed parcels and rights-of-way to the Recorder of Deeds of each county
- Hudson Road Tax Ditch was formed by Superior Court Order December 31, 2013; Construction began in October 2014.

Active Tax Ditch Petitions:

- **Kitts Hummock Tax Ditch**, Kent County
- **Town of Houston Tax Ditch**, Kent County
- **Guinea Creek Tax Ditch**, near Long Neck, Sussex County

Public Ditch Accomplishments: FY 2014

- Drainage program and partners responded to 484 new drainage concerns. Drainage concerns resulted in 117 new 21st Century Fund projects.
- Completed landowner contacts, surveying, engineering, and environmental permitting on approved 21st Century Fund projects. $1.16 million in 21st Century Funds were expended in support of these activities.

FY 2017 - 2018 Funding Needs: $1.14 Million/Year

Continue planning, design, surveying, inspection and technical assistance for the tax ditch and public ditch programs

Critical Infrastructure Investments

21st Century Fund Water Resource Projects

Regional Resource Conservation and Development (RC&D) Account

The 21st Century Fund Investments Act of 1995 created the 21st Century Fund to make long-term investments that will enhance the state's infrastructure and economic development and improve our quality of life. A special fund appropriation account was created in DNREC, known as the Resource Conservation and Development Account that is dedicated to improving the health of communities by addressing statewide watershed and drainage issues. More than 1,400 projects totaling $55 million have been completed since 1996.

Storm drain on the Plantation Crossing Drainage Improvement Project near Clayton (Kent County)

Compost filter log on the Little Bay Tax Ditch Bank Stabilization Project, Ocean View

Today, the RC&D account list includes 754 active projects with total project costs estimated at almost $85 million. The account, which funds primarily small to mid-size drainage improvement projects, currently holds $7 million in funds, which have been appropriated for active projects statewide. DNREC expects to spend $4 million of the account funds during FY 2015.

All funds previously allocated to Sussex County are anticipated to be depleted in FY 2015 and those allocated to Kent Country are anticipated to be spent in FY 2016. Funding for FY 2016 is being sought for critical large projects that address current flooding, stormwater, and drainage problems.

FY 2016 Funding Request: $1.5 Million

Examples of projects ready for construction, pending available funding:

- Christina River Stabilization Project, Newark
- Baltimore Ave., Cheeks, Banks Acres Project, Ocean View
- White Oak Road, Dover
- Duross Heights, New Castle
- Avalon Woods, Georgetown

Examples of projects ready for engineering and design:

- Oak Orchard and Long Neck drainage studies, Millsboro
- Bay Beach/Back Bay flooding projects, statewide

Flooding at Oak Orchard, Millsboro

FY 2017 - 2018 Funding Needs: $1.5 Million/Year

Engineering and construction of regional water resource management projects

Critical Infrastructure Investments

Buried Wood Debris Pit Remediation

DNREC's Debris Pit Program has identified more than 200 debris pits that can pose threats to human health. Created when trees and stumps were buried under ground when land was being developed in the 1960s, 70s and 80s, debris pits can form sinkholes. The sinkholes can literally open up and create holes in the ground. These voids are sometimes narrow and devoid of oxygen, making them difficult to escape and potentially lethal.

Decaying wood in debris pits can also host concentrated pockets of methane, a health hazard. In addition, if structures have been built over debris pits the settling of debris can lead to significant structural damage.

Woody debris has been removed and work is underway to backfill dirt and restore property.

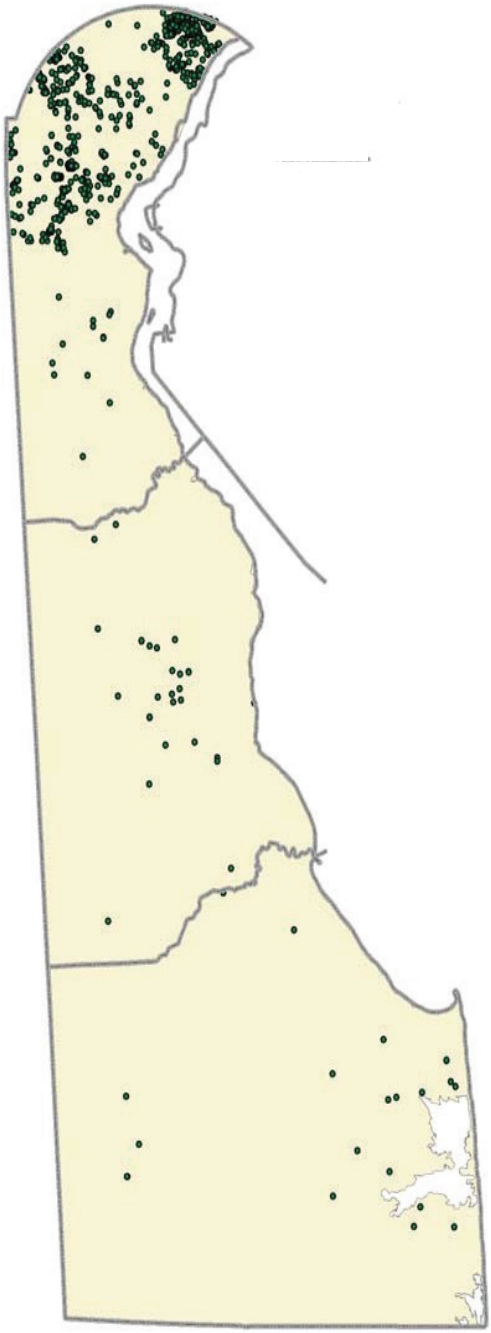
Excavated debris is loaded into a dumpster for disposal.

Facts and Figures:

- Debris pits are located on private properties in all three counties.
- DNREC estimates that about 2,500 buried debris pits are located on residential properties statewide.
- Currently, more than 200 properties with debris pits are on the waiting list to be remediated.
- Wait time for remediation is estimated at 7 to 8 years.
- The average cost of remediating a property is $40,000.
- The State Bond Bill ($749,900) and New Castle County ($100,000) allocated funding to remediate debris pits in FY 2015.

FY 2016 Funding Request: $750,000

Remediate buried debris pits on private properties statewide



Buried debris is ready to be sent to a recycling facility.

Accomplishments: FY 2015

- 30 debris pits are on schedule to be remediated.
- Number of calls reporting debris pit problems: 66
- DNREC performs remediation on multiple debris pits under one contract, increasing the efficiency of the program.

All buried debris has been removed and property has been restored.

Debris Pit Inquiries:

Since 2001, DNREC has responded to more than 1,228 calls from constituents statewide regarding debris pits. Most debris pit inquiries come from property owners in New Castle County.

FY 2017 - 2018 Funding Needs: $750,000/Year

Continue remediation of buried debris pits that pose threats to human health and safety and cause property damage

Tourism Assets and Healthy Families $208.5M

STATE PARKS AND FISH & WILDLIFE AREAS

FY2016 REQUEST: $6.4M

FY2016 RECOMMENDED: $3.5M

*OTHER ASSET NEEDS:

$750k	Owens Station
$8M+	Killens Pond Waterpark
$13.5M	Cape Henlopen Fishing Pier
$2M	Brandywine Zoo

TOTAL NEED 2016-2018: $150M+

FUNDING OPTIONS: Bond, Federal, Fees, Other Dedicated Revenues

STATEWIDE TRAILS & PATHWAYS

FY2016 REQUEST: $3M

FY2016 RECOMMENDED: $3M

TOTAL NEED 2016-2018: $9M

FUNDING OPTIONS: Bond, Federal, CTF, Local

OCEAN AND BAY BEACHES

FY2016 REQUEST: $6.5M

FY2016 RECOMMENDED: $0M

TOTAL NEED 2016-2018: $28M+

FUNDING OPTIONS: Bond, Federal, Local, Expansion of Accommodations Tax

WATERWAYS

FY2016 REQUEST: $1.5M

FY2016 RECOMMENDED: $1.5M

TOTALNEED 2016-2018: $11M+

FUNDING OPTIONS: Bond, Federal, Local, Marine Fuels Tax, Boat Registrations

DELAWARE BAYSHORE

FY2016 REQUEST: $0.5M

FY2016 RECOMMENDED: $0.5M

TOTAL NEED 2016-2018: $1.5M+

FUNDING OPTIONS: Bond, Federal, Foundation

STRATEGIC SITES: NVF/FT. DUPONT

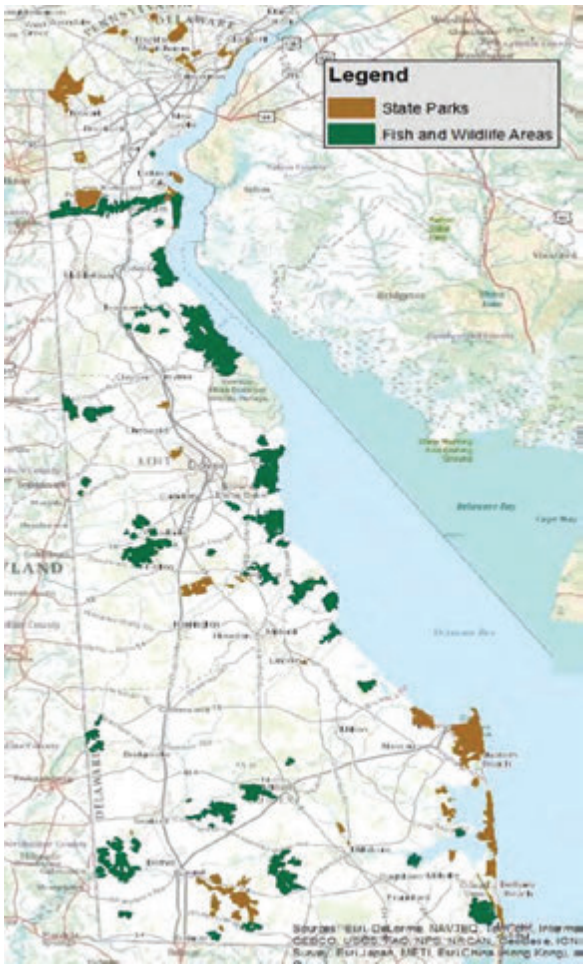
FY2016 REQUEST: $3.5M

FY2016 RECOMMENDED: $3.5M

TOTAL NEED 2016-2018: $9M

FUNDING OPTIONS: Bond, Federal, HSCA, Private Partners

Support Healthy Families: Parks and Fish and Wildlife Rehabilitation of Critical Facilities



State Parks and Fish & Wildlife Areas

The Divisions of Parks and Recreation and Fish and Wildlife depend on the collection of fees and charges from licenses and services to maintain and improve infrastructure and protect the state's ecological, cultural and recreational resources. Funding is needed for the growing maintenance and restoration needs of historic structures, recreation facilities and utility systems.

The State's Park and Fish & Wildlife areas include 92,209 acres and contain more than 700 buildings in 32 public-access areas and 10 preserves.

Fish and Wildlife Management Areas

Assawoman Wildlife Area (W.A.)
Augustine W.A.
Blackbird Reserve W.A.
Blackiston W. A.
C&D Canal W. A.
Cedar Swamp W. A.
Little Creek W. A.
Marshy Hope W. A.
Midlands W. A.
Milford Neck W. A.
Nanticoke W. A.
Old Furnace W. A.
Petersburg W. A.
Prime Hook W. A.
Ted Harvey Conservation Area
Woodland Beach W. A.

Delaware State Parks and Facilities

Alacopas State Park
Auburn Heights Preserve
Baynard Stadium and Brandywine Zoo
Bellevue State Park
Brandywine Creek State Park
Cape Henlopen State Park
Delaware Seashore State Park
Fenwick Island State Park
First State Heritage Park
Fort Delaware State Park
Fort DuPont State Park
Fort Miles Historical Area
Fox Point State Park
Holts Landing State Park
Indian River Life-Saving Station
Killens Pond State Park
Lums Pond State Park
Trap Pond State Park
White Clay Creek State Park
Wilmington State Parks

FY 2016 Funding Request Parks/Fish and Wildlife: $6.4 Million

FY 2017- 2018 Funding Needs Parks/Fish and Wildlife: $5.9 Million/Year

Delaware State Parks

The Division of Parks and Recreation manages 30,811 acres, 151 miles of trails, 43 miles of roadways, 731 buildings in 16 state parks, the Brandywine Zoo and Baynard Stadium, 10 preserves and 92 conservation and other easements.

More than 5 million people visited Delaware State Parks in 2012. Nearly two-thirds of Delaware residents think parks and recreation facilities are a necessity.

The Parks Division has maintenance and project backlogs of critical infrastructure projects greater than $100 million. Additional potential enhancement projects could double that amount.

Gordons Pond Trail

Recent Accomplishments: FY 2014

- **Cape Henlopen State Park:** Phase II sewerlining of the 70-year old system
- **Wilmington Parks:** Swinging Bridge repairs; Tamaran exhibit replacement construction and master plan completed for the Rain Forest at the zoo
- **Killens Pond:** Master plan completed for the entire pool complex
- **Parks:** Building, roofing and utility repairs on individual projects across the state

Indian River Inlet

FY 2016 Projects:

Funding is requested to:

- Maintain and replace the pools and slides at the Killens Pond Water Park
- Paint numerous barns and residences statewide
- Repair and replace existing recreational and athletic facilities statewide
- Make life and safety improvements to facilities statewide
- Make improvements necessary for continued Americans with Disabilities Act (ADA) compliance
- Repair or replace roofs, windows and install air conditioning at various youth camps and recreational facilities in Cape Henlopen and Delaware Seashore State Parks
- Pave roadways at Cape Henlopen, Killens Pond, Lums Pond and White Clay Creek State Parks
- Make parking lot improvements throughout Delaware State Parks
- Upgrade electrical, install new sewer and new water utility and upgrade wastewater collection utilities at Lums Pond campground
- Upgrade electrical utility and wastewater collection utilities at Cape Henlopen State Park
- Install additional cabins and 3-point hook ups in the campground at Cape Henlopen State Park

Current Projects: FY 2015

- **Bellevue Indoor Tennis Center:** Demolition plans complete with construction to commence winter of 2014
- **Cape Henlopen State Park:** On-going sewer repairs; upgrade sewer utilities and wastewater treatment plant; remove and replace bathhouse facility and add additional facility at campground; and make repairs to fishing pier piles
- **Delaware Seashore State Park:** Indian River Inlet improvements; and installation of 3-point hook up in new campground
- **Fort Miles:** Critical and immediate facility repairs; design and development of gun pads and interpretive gun park
- **Killens Pond:** Waterpark improvements
- **Holts Landing:** Boat launch design and installation
- **Park Road**: Completion

FY 2016 - 2017 Parks Projects:

- Continue repair and maintenance of parking lots and roadways
- Make upgrades and boat dock repairs at Lums Pond State Park
- Update Cape Henlopen State Park public facilities
- Repair roof at Fort Delaware State Park
- Repair roof and replace numerous buildings and facilities
- Repair and restore guard house at Fort DuPont State Park
- Repair bridges at Brandywine Creek and Alapocas Run State Parks
- Secure Battery Smith at Cape Henlopen State Park
- Repair roadway, curbs, walkway and fencing at Wilmington State Park

Existing conditions at Bellevue State Park indoor tennis center

Division of Fish and Wildlife

The Division of Fish and Wildlife has more than $10 million in critical infrastructure projects including: repair and rehabilitation of historic buildings; energy upgrades (new roofs, windows, insulation); mold remediation; structural improvements to buildings; improvements to parking lots, boat ramps and fishing access areas, roads, office buildings and equipment storage facilities; and demolition of unsafe structures.

The Division manages approximately 61,000 acres of land in 16 wildlife and 57 fishing and boating access areas that provide opportunities for hunting, fishing, boating and wildlife observation which benefit:

- 123,382 resident/non-resident anglers fishing in Delaware waters
- 29,366 resident/non-resident hunters who use protected lands or harvest managed species
- 900,000 resident Delawareans, 2 million+ visitors
- 1,000 managed wildlife species

FY 2016 Fish and Wildlife Projects:

- Make parking lot repairs at boat ramps
- Make repairs to roads and parking lots at F&W areas
- Continue upgrades to Milford Mosquito Control Facility
- Complete design and engineering of the Dobbinsville Fishing Pier (City of New Castle)
- Demolish unsafe structures on F&W areas that are open for public use

Proposed Location for Dobbinsville Fishing Pier

Fish and Wildlife Accomplishments: FY 2014

- Wildlife/Bayshore Facility at Little Creek WA: Secured $1.3 in federal funds to design and construct the Wildlife/ Bayshore Facility. FY 2014 Bond funds will be used as match on the federal grant. The design of the facility is underway.
- Repair and rehabilitate historic buildings: Rehabilitation of the Yardley Dale historic residence is underway.

Current projects: FY 2015

- Construct 2 new pole barns for construction and research staff equipment and materials at Little Creek Wildlife Area.
- Upgrade the Augustine shop including utilities, office repairs, and mold remediation.
- Demolish unsafe structures on wildlife areas open for public use.
- Paint the exterior of the DuPont Nature Center.
- Upgrade the Little Creek Fisheries Office – floor replacement, wet/dry lab, and interior painting.
- Complete engineering and design, and obtain permits for statewide impoundment levee repairs and water control structure replacements. Funding for the restoration of these projects is being provided through one-time Hurricane Sandy Disaster Relief funding and Wildlife Restoration Act funding through the U.S. Fish and Wildlife Service.

Broken corrugated metal pipe with flapgate (e.g. Water Control Structure)

FY 2017 - 2018 Fish and Wildlife Projects:

- Construct courtesy docks in ponds
- Construct boat storage for Enforcement
- Demolish unsafe structures of areas
- Construct Dobbinsville fishing pier
- Repair roads at Little Creek Wildlife Area
- Repair and rehabilitate houses on state wildlife areas
- Repair roads and parking lots at areas
- Install energy upgrades to buildings
- Provide erosion control at Poplar Thicket
- Upgrade Ommelanden Range
- Improve parking lots at boat ramps
- Continue to upgrade the Milford Mosquito Control Office

Severe deterioration of a significant historic structure at Thousand Acre Marsh

Support Healthy Families

Owens Station Shooting Sports and Hunter Education Center

Downstate Delaware's only state-owned public shooting sports range, Owens Station near Greenwood was dedicated in September 2014. Developed as a private facility over about 30 years, the 104-acre property and facilities were acquired by the state with a series of Bond Bill appropriations, one each in FY 2014 and 2015, with the final appropriation requested for FY 2016.

The facility is operated under a public-private partnership between the Division of Fish and Wildlife and two fee-for-service commercial businesses, Owens Station Sporting Clays, which operates the shooting range, and Turtle Creek Retrievers, which offers professional sporting dog training and kennel services. Lease payments from the private business partners are reinvested into the oversight and maintenance of the facilities, at no net operating cost to the state. The Division's Sussex County hunter safety education courses also are held at the facility.

Shooting sporting clays at Owens Station

Unveiling the new sign, left to right, are: *Rep. Bobby Outten, DNREC Director of Community Services Patrick Emory, Sen. Brian Pettyjohn, former Rep. Bobby Walls, DNREC Director of Fish and Wildlife David Saveikis, Rep. David Wilson, Governor Jack Markell, First Lady Carla Markell, DNREC Secretary David Small, Chuck Morton of Owens Station Sporting Clays, and Rep. Daniel Short*

Highlights:

- Owens Station supports Delaware's great outdoor sporting traditions and is an investment in the future of hunting, shooting sports and sporting dogs.
- The Center features a circular 60-station sporting clays course, trap shooting range and "five-stand" warmup range, and a 50-dog kennel facility with surrounding dog training grounds.
- The Center provides access for hunters and shooting sports participants to refine safe firearm use and acquire professional sporting dog training. The State provides hunter safety education classes at the Center, including the required hands-on firearm training.

FY 2016 Funding Request: $750,000

- Past Bond Bill funds have supported replacing the dog kennel septic system, a building roof and a road culvert and are being used to upgrade old, dysfunctional shooting range infrastructure.
- $200,000 of the FY 2015 appropriation is being used to extend high speed internet to the site and construct an environmental enforcement building with remaining funds.
- $750,000 is being requested for FY 2016 to provide the final site acquisition installment and provide a small amount of funding for needed site and facility infrastructure upgrades.

FY 2017 - 2018 Funding Needs: None

Support Healthy Families

Killens Pond Waterpark

Natural and recreational opportunities abound at Killens Pond State Park, centrally located in the heart of Kent County. The park's centerpiece is the 66-acre millpond which features boating and fishing. The Park offers hiking and biking trails, a cross-county running course, game courts, ball fields, an 18-hole disc golf course, playground equipment and picnic areas. At the Nature Center visitors can view a large collection of native reptiles and amphibians and on the observation deck, view wildlife and the beauty of Killens Pond.

The Waterpark offers resort entertainment in a serene, natural setting and includes a main pool with interactive water features such as the Floating Lily Pad Fun Walk, a tot pool, pool-side waterplay system, food concession and Swim Shop.

Funding is requested for the construction of the first phase of a four-phase total renovation of the Killens Pond Waterpark. The current facility has reached the end of its useful life. The components are failing and need to be repaired or replaced. In addition, customer satisfaction continues to drop, as the facility continues to age. No new features or services have been added since its initial construction.

Phase I construction consists of new slides, a new concession stand and bathroom, as well as numerous infrastructure improvements. Phases II and III will continue to add new amenities while replacing key portions of the aging facility, including the main pool. Phase IV focuses on improved parking and vehicular and pedestrian access around the facility.

Plans include completing one phase of the renovation each fiscal year during the off season.

Highlights:

- Killens Pond State Park is Kent County's only state park and a major recreational attraction drawing more than 180,000 visitors each year.
- The Park's attractions, such as year-round camping, Killens Pond Waterpark, disc golf course, and ball fields, make this park a popular travel destination.
- The Waterpark is open from Memorial Day weekend through Labor Day.
- Waterpark revenues, including entrance fees and concession sales, totaled about $239,000 in 2014.

FY 2016 Funding Request: $2.8 Million

Construct Phase I of the Killens Pond Water Park Renovation

FY 2017 – 2018 Funding Needs: $2.75 Million/Year

Develop design and construction documents and complete construction of Phases II and III of the pool

Support Healthy Families

Cape Henlopen Pier Design and Permitting

At the onset of World War II, the U.S. Army established a military base at Cape Henlopen and built a wooden fishing pier to serve as a mining wharf. The pier became state property in 1964 when the State of Delaware accepted Cape lands and established Cape Henlopen State Park.

The aging pier has undergone several rehabilitative efforts since 2007, including extensive repairs to its pilings. The T-head portion of the pier was demolished in 2012 after its deteriorated condition was deemed a threat to safety and navigation.

The Division of Parks and Recreation has been monitoring the condition of the pier annually and has noticed an increasing rate of deterioration in the structure. In Oct. 2014 the pier was closed as a safety measure after an engineer's analysis recommended that pedestrian and vehicular traffic should not be permitted on the pier until repairs are made to a minimum of 24 wooden piles holding up the structure. The report also found that because the pilings are rapidly deteriorating, repairs to more than 24 pilings may be required depending on how quickly the repairs are implemented. Those repairs are expected to be a short term fix, as repairs to additional pilings will be required within the next year. For a long term solution, repairs to approximately 125 pilings are anticipated along with extensive decking and superstructure repair.

The Division of Parks and Recreation intends to make one more round of temporary repairs to keep the structure operational until a new, permanent structure can be designed and constructed.

Cape Henlopen State Park Fishing Pier

Highlights:

- More than 1.2 million people visit Cape Henlopen State Park each year.
- The pier creates habitat for fish and other sea life and is used extensively by anglers, birdwatchers, and nature lovers.
- Over the years, the pier has served as a landing point for ships and a platform for events and special promotions.
- The pier's bait and tackle concessionaire serves the public and generates income for the park system.

FY 2016 Funding Request: $1.5 Million

Complete the design and permitting of a new Cape Henlopen State Park pier to replace the 70-year-old failed structure

FY 2017 - 2018 Funding Needs: FY 2017 - $0; FY 2018 - $12 Million

Bidding and construction of the new, permanent replacement pier

Support Healthy Families

Brandywine Zoo

Located on North Park Drive in Wilmington, the Brandywine Zoo opened in 1905 and has operated continuously since then. The 13-acre property located in Brandywine Park is part of the Delaware State Parks and is managed by the Delaware Division of Parks and Recreation in cooperation with the Delaware Zoological Society.

The Division of Parks and Recreation handles the responsibility for the funding and operation of the zoo, including staffing and care of all animals, facilities and grounds. The Delaware Zoological Society runs the zoo's business enterprise, which includes memberships, admissions, marketing, advertising, fundraising, the Zootique and snack bar. The Society also funds 3 full-time positions (the curator, assistant curator and outreach program coordinator) in the zoo's education department.

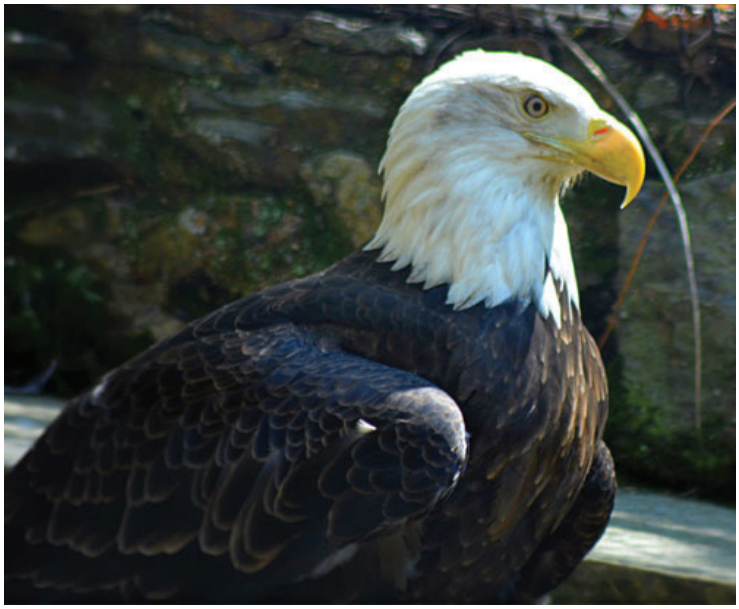
Zhanna the Amur Tiger

- On average, the Brandywine Zoo hosts about 80,000 visitors annually. Thanks to the addition of two major animal exhibits, Red Pandas and Bald Eagles, zoo attendance increased 12% in 2014.

- About 120 animals, including mammals, birds, reptiles and insects, inhabit the zoo – primarily from the temperate forests of North America and Asia and a few animals from tropical South American rainforests and Southeast Asia.

- Since 1983 the zoo has been an accredited member of the American Association of Zoos and Aquariums, a distinction that marks its commitment to providing excellent care for animals, a great experience for the visitors and a better future for all living things.

Red Panda Exhibit



Eagle Ridge - aviary overlooking the otter pool

Plans for the Rainforest Building

As the first phase of the Zoo's master plan, conceptual illustrations have been developed for an attractive new Rainforest Building that will transport zoo visitors from the banks of the Brandywine River to an Amazon riverbank. This modern building is needed now more than ever due to the loss of the monkey house and required changes in the field of animal care.

The building will feature an immersive walk-through experience of the rainforest and will include dramatic learning stations. The building's indoor assembly space overlooks the entire exhibit that will provide the zoo with a much-needed, all-weather, multi-function space, ideal for special events, entertaining and rentals. This unique new exhibit is designed to be a perfect setting for conveying a number of important conservation messages that will attract new visitors to the zoo for years to come.

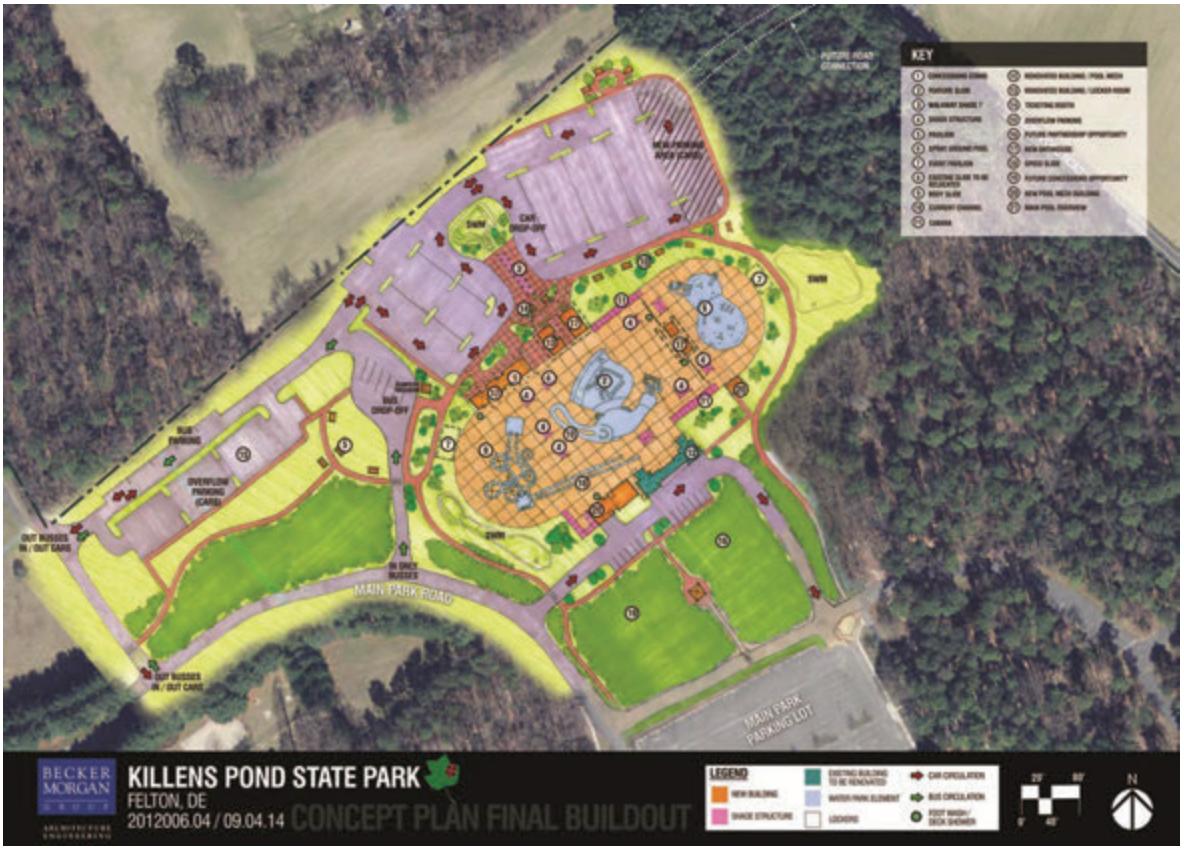
The Delaware Zoological Society, led by Megan McGlinchey, Board President, and Mike Allen, Executive Director, is launching a major capital fundraising effort which will support a series of projects planned at the zoo, including the Rainforest Building.

Conceptual illustration of the rainforest building (exterior)

Conceptual illustration of the rainforest building (interior)

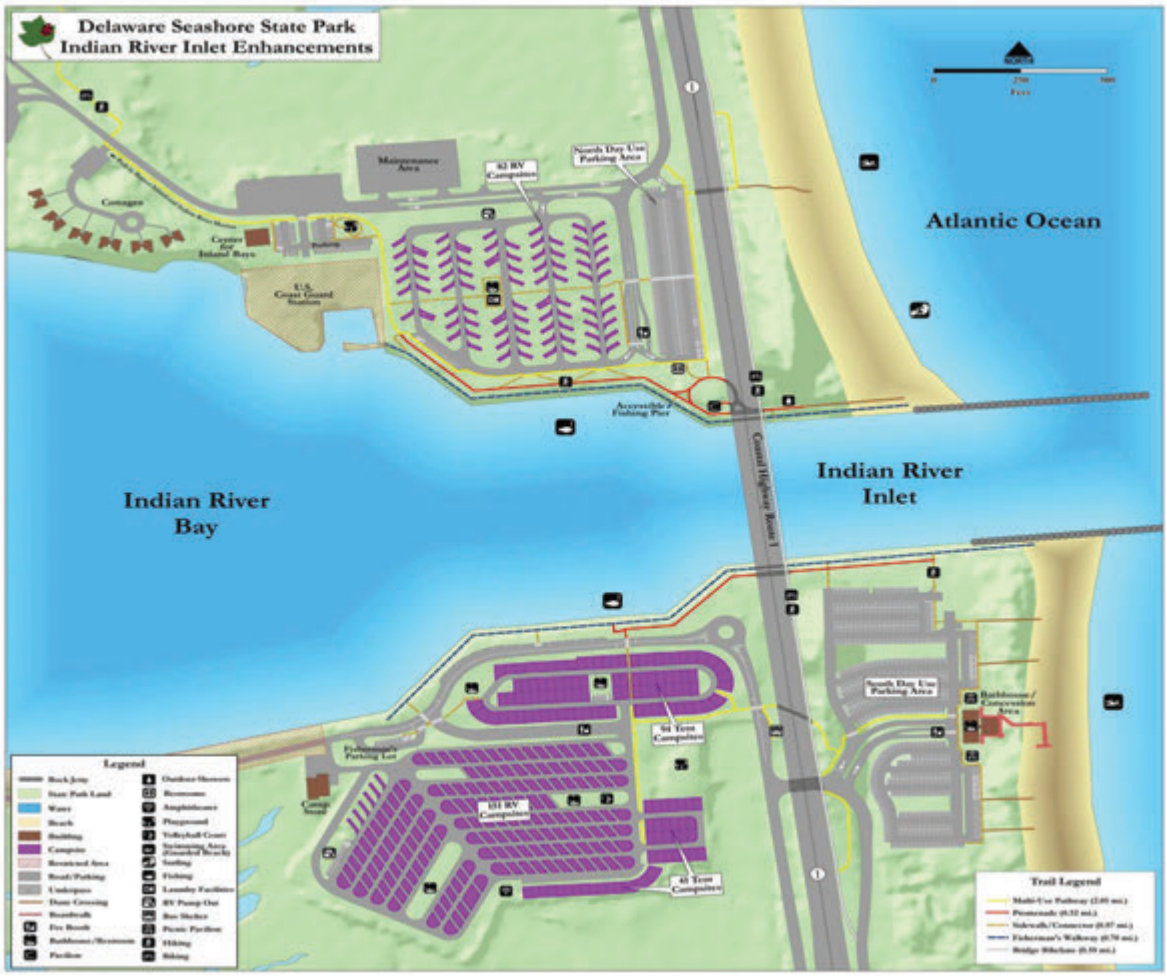
Future Funding Need: $2 Million

The Rainforest Building project is expected to cost $11 million and will be funded through private donations and public and private foundation grants. However, as a partner in the project the State is anticipating a funding request from the Delaware Zoological Society. In the future, DNREC expects to be requesting $2 million for the rainforest exhibit.



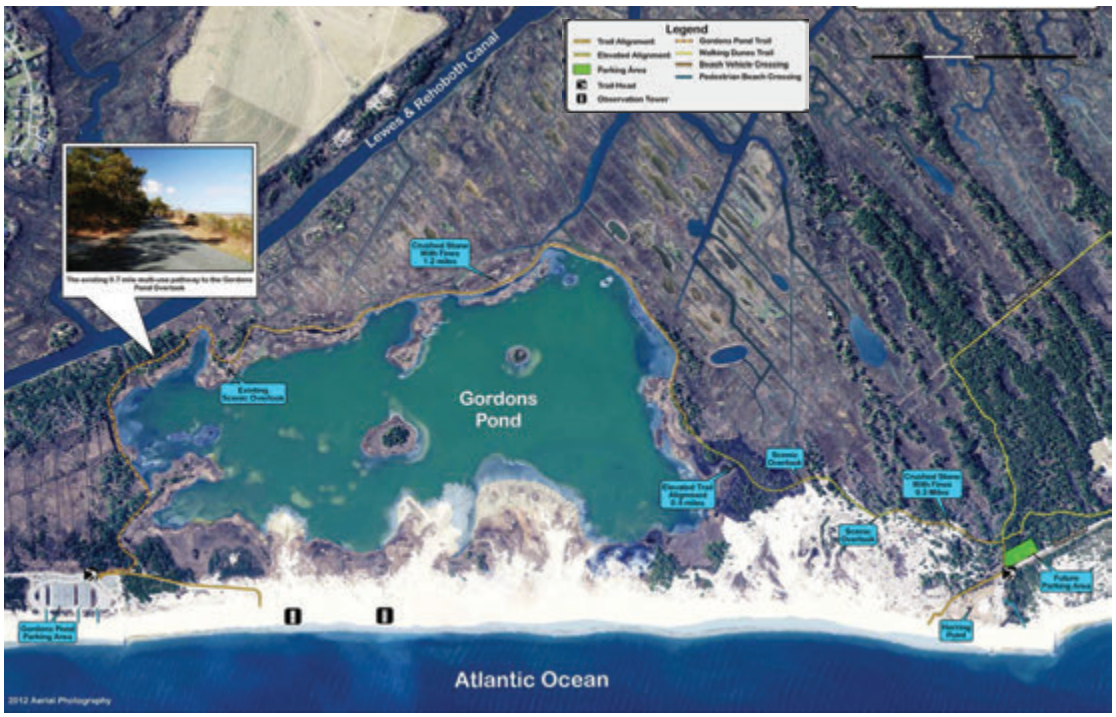
Killens Waterpark Master Plan

- **Master Plan Completed:** Jul 2014
- **Phase 1 Construction Documents:** Mar 2015



Delaware Seashore Indian River Inlet Campground

- **S. Campground Completion:** Jun 2014
- **N. Campground Complete:** Dec 2014

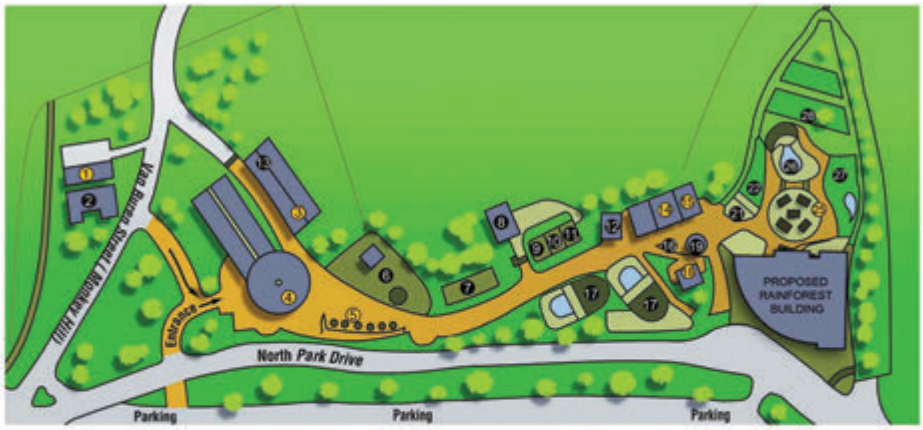


Gordons Pond Trail

- **Project Complete:** Jun 2014

Park Road

- **Complete:** Sep 2014



GUEST SERVICES
FIRST AID & ADMINISTRATION OFFICES.....14
ZOOTIQUE (BRANDYWINE ZOO STORE).....4
RESTROOMS.....3, 18

FOOD & REFRESHMENTS
CONCESSION STAND.....15
PICNIC AREA & WATER FOUNTAIN.....25

SPECIAL FEATURES
EDUCATION BUILDING.....1
ARTHUR A. CAROTA EDUCATION PAVILION.....5

FORMER EXOTIC ANIMAL HOUSE.....2
ANDEAN CONDORS.....6
BOBCAT & FOXES.....7
ZOO ANIMAL HOSPITAL.....8
RED PANDAS.....9
CLOUDED LEOPARD.....10
SERVAL.....11
FUTURE TAMARIN EXHIBIT.....12
ANIMAL FOOD COMMISSARY.....13

BURROWING OWLS.....16
PETTINARO AMUR TIGER EXHIBIT.....17
BLACK HEADED CAIQUES.....19
SLOTH/EXOTIC ANIMALS.....21
SANDHILL CRANE & RABBITS.....22
RIVER OTTERS.....26
WILD DUCK & EXOTIC ANIMALS.....27
BALD EAGLES.....28

Zoo Master Plan

- **Public Meeting:** 9 Jun 2014
- **Tamarin Complete:** NOV 2014

Cape Henlopen Sewer Lining

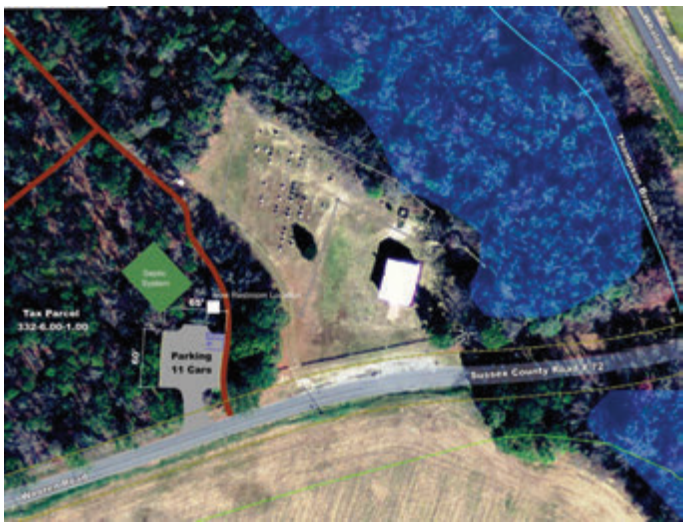
- **Construction Commence:** Aug 2014
- **Complete:** Nov 2014
- **Plant Upgrade:** Nov 2015

Tri-Valley Trail

- **Design Phase:** Feb 2015
- **Construction Documents:** Jul 2015
- **Construction Commence:** Nov 2015

Swinging Bridge

- **Complete:** Sep 2014

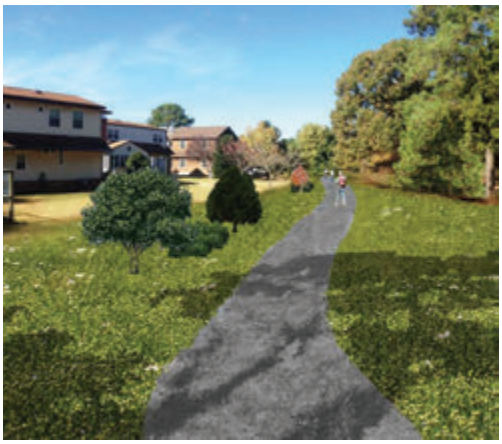


Bethesda Church

- **Parking Lot:** Nov 2014
- **Septic System:** Design Phase
- **Restroom:** Design Phase

Bellevue Tennis Center

•**Design Complete:**	Sep 2014
•**Bid Advertisement:**	Oct 2014
•**Award Demo:**	Dec 2014
•**Construction Commence:**	Jan 2015
•**Complete:**	Jun 2015



Assawoman Canal Trail

- **Design Complete:** Sep 2014
- **Bid Advertisement:** Oct 2014
- **Award Construction:** Jan 2015
- **Construction Commence:** Mar 2015
- **Complete:** May 2015

Gun Club Road

- **Construction Award:** Feb 2014
- **Construction Commence:** Mar 2014
- **Complete:** Apr 2015

Fort DuPont Master Plan

• **Authority Creation:**	Jul 2014 - Dec 2014
• **Historic Building Stabilization:**	Jul 2014 - Jul 2015
• **Phase I Residential RFP:**	Mar 2015 - Oct 2015
• **Parade Ground Facelift:**	Mar 2015 - Oct 2015
• **Phase II Marina Permitting:**	Aug 2015 - Aug 2016

Fort Miles Master Plan

- **Phase I Conceptual Design-Site & Battery 519 Museum:** Completed in 2013
- **Phase II A Bathhouse/Concession Building:** Design 2014 - Construction 2015
- **Phase II B Entrance Road & Parking Lot:** Design 2014 - Construction 2015
- **Phase II C Orientation Pavilion:** Design 2014 - Construction 2015
- **Phase III A Big Gun Restoration & Mount** 2014-2017
- **Phase III B Artillery Park** Design 2015 - Construction 2016
- **Phase IV Cantonment Restoration** 2016-2018
- **Phase V Battery 519 Museum** 2016-2018

Cape Henlopen Campground Bathhouse

- **Bid Advertisement:** Jan 2015
- **Construction Commence:** Mar 2015

Cape Henlopen Youth Camp Upgrades

- **Bid Advertisement:** Jan 2015
- **Construction Commence:** Mar 2015

Fort Delaware Safety Projects
(Masonry, Pilings, Railings, Overlook)

- **Bid Advertisement:** Nov 2015
- **Construction Commence:** Jan—Sep 2015

Killens Pond Spillway Repairs

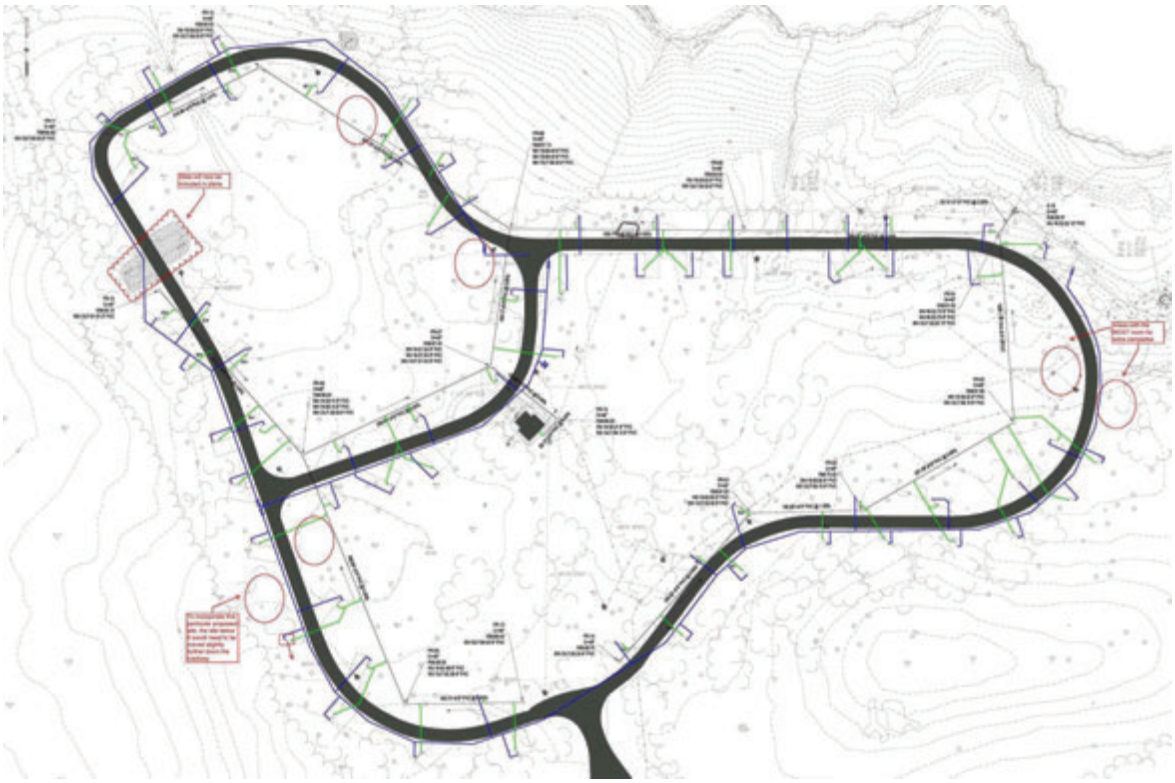
- **Bid Advertisement:** Jan 2015
- **Construction Commence:** Apr 2015

Cape Henlopen Fishing Pier Stabilization

- **Study Completed:** Dec 2014

Cape Henlopen Fire Control Tower Stairs Engineering

- **Design Documents:** Jul 2015



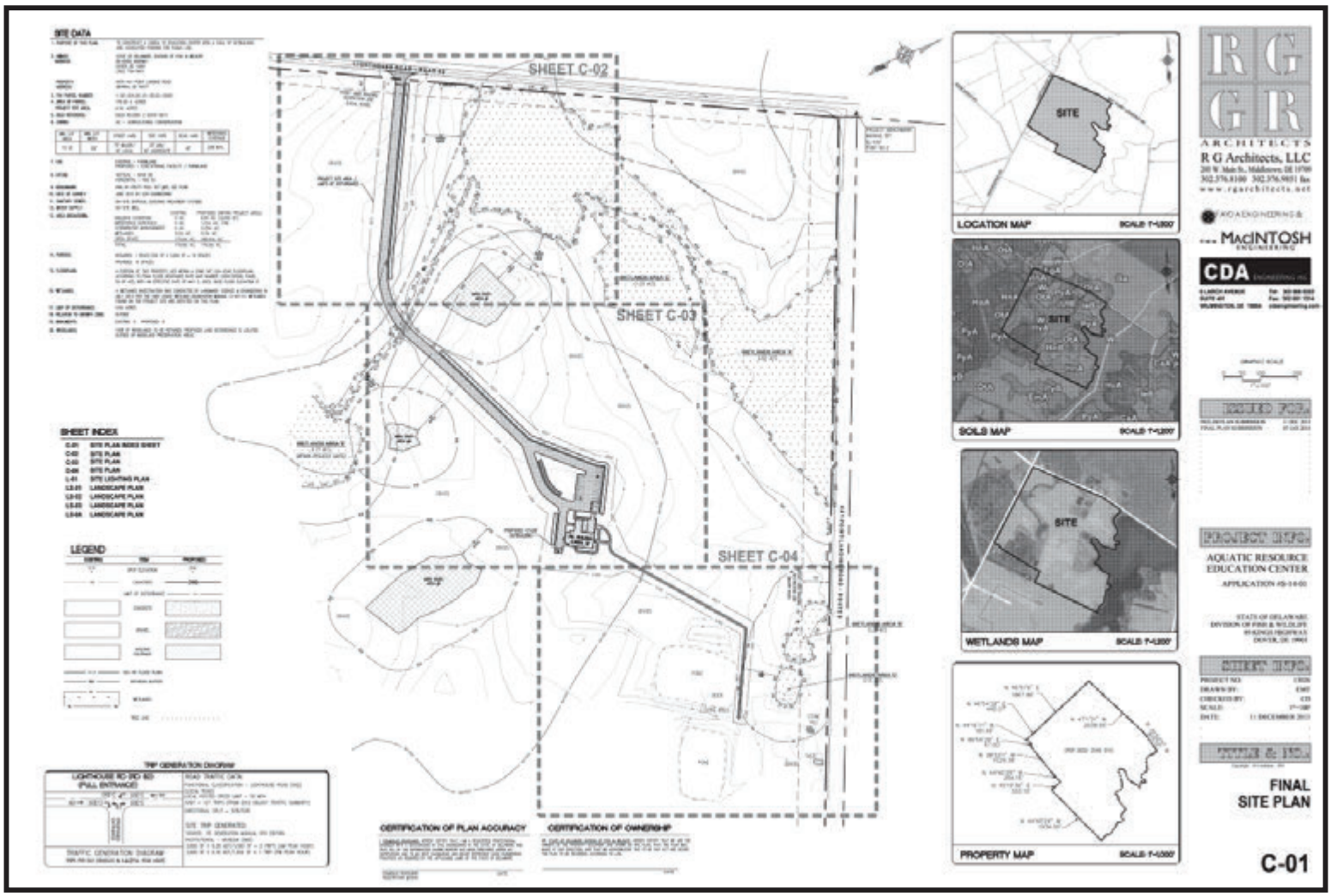
Lums Pond Campground Upgrades

- **Design Documents:** Apr 2015
- **Bid Advertisement:** Aug 2015
- **Construction Commence:** Nov 2015

Brandywine Creek Rocky Run Bridge

- **Design Documents:** Nov 2014
- **Bid Advertisement:** Dec 2014
- **Construction Commence:** Feb 2015

Aquatic Resource Education Center



- $617,621.00 budgeted
- Construction to begin in April
- Completed 3 months after start date

NE Elevation

Birds Eye

NW Elevation

- DuPont Nature Center - Painting of exterior to be completed Spring of 2015

- Repair/repainting pole sheds
- New roofs on pole sheds
- Construct new pole sheds

C&R Center

Construction Completed in the Summer of 2014

Little Creek Bayshore Visitor Center and Fish & Wildlife Field Office

- $2,300,000.00 budgeted

Pre-Design:

- Complete

Construction:

- Plan, Review & Approval - Completed by April 2015
- Construction - July - December 2015

DE Bayshore Coastal Resiliency - Mahon to St. Jones

Secured $2 Million in Federal funds through Hurricane Sandy Disaster Relief funds. Total budget of $3.1 Million includes:

- Ted Harvey Impoundment Restoration – water control structures, levee and spillway
- Little Creek Impoundment Restoration –engineering, design and water control structure
- Mahon Impoundment Restoration – water control structure
- Port Mahon Shoreline & Tidal Marsh – hydrodynamic, wave and sediment modeling for restoration alternatives

DE Bayshore Coastal Resiliency - Mispillion to Milford Neck

Secured $4.5 Million in Hurricane Sandy Disaster Relief funds. Total budget of $6 million includes:

- Restore beach and dune habitat along rock sill
- Evaluate additional vulnerability and flood risk management strategies for Mispillion Harbor and the Inlet
- Develop hydrodynamic and salinity models for Milford Neck Conservation Area
- Develop restoration alternatives for Milford Neck Conservation Area

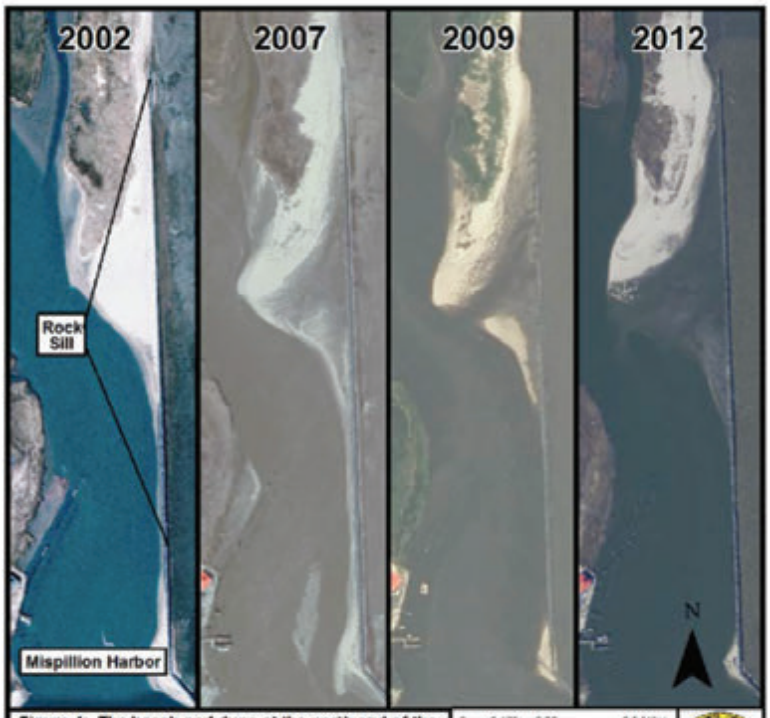


Figure 4: The beach and dune at the north end of the existing rock sill has been severely eroded by repeated coastal storms since prior to 2007.

Milford Mosquito Control

- Roof Replacement on Milford Mosquito Control shop to the left to begin in Spring of 2015

- Design of new office at Milford Mosquito Control – to replace old facility images to the right.

Glasgow Mosquito Control - Climate Control System for Pesticide Storage

Dupont Nature Center - Storage Shed for Education Kits and Equipment

DNREC - Parks and Recreation

Capital Project Priorities FY 2015 - 2019

Last Update: 2/23/2015

Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
26	75	Cape Henlopen State Park	Sussex County	Cape Sewer and plant upgrades	Safety, High	Legislative and Leverage	Property Pres High	$ 4,000,000.00				
22	360	Killens Pond State Park	Kent County	Killens Water Park: renovations: slide repair and/or replacement $300k, re-plastering pools and coping repair, other system upgrades $170k	Safety, High	Legislative and Leverage	Property Pres Low	$ 470,000.00				
21	348	Brandywine Creek State Park	New Castle County	Brandywine Repairs to Rocky Run Bridge	Safety, High	Property Pres High	NA	$ 800,000.00				
21	315	Fort Delaware State Park	New Castle County	Fort Delaware Island tram path: repair resurface path	Safety, High	Property Pres High	NA	$ 200,000.00				
21	291	Wilmington State Parks	New Castle County	Brandywine Park: swinging bridge; repaint steel structure and replace deck boards	Safety, High	Property Pres High	NA	$ 550,000.00				
21	221	Auburn Heights Preserve	New Castle County	Auburn Heights - NVF	Safety, High	Legislative and Leverage	Recreational Need	$ 7,000,000.00				
21	42	Auburn Heights Preserve	New Castle County	Auburn Heights Museum: retrofit sprinkler system and freeze proofing	Safety, High	Property Pres High	NA	$ 75,000.00				
21	19	Bellevue State Park	New Castle County	Bellevue Indoor Tennis Courts: Remove	Safety, High	Property Pres High	NA	$ 1,600,000.00				
19	239	Wilmington State Parks	New Castle County	Wilmington H. Fletcher Brown Park - Rotary park project, complete overhaul	Safety, Low	Property Pres High	Legislative and Leverage	$ 1,500,000.00				
19	111	Fort DuPont State Park	New Castle County	Fort DuPont Shop amenities -water, sewer and restrooms, fencing and regrade (possible relocation to Grassdale)	Safety, Low	Legislative and Leverage	Property Pres High	$ 60,000.00				
		Holts Landing State Park	Sussex County	Boat launch design and installation	Continuation	Legislative and Leverage	Recreational Need	$ 300,000.00				
		Cape Henlopen State Park	Sussex County	Design and development of gun pads and interpretive gun park	Continuation	Legislative and Leverage	Property Pres High	$ 470,000.00				
1	82	Cape Henlopen State Park	Sussex County	Cape Fort Miles restroom	Recreational Need	NA	NA	$ 100,000.00				
13	79	Cape Henlopen State Park	Sussex County	Cape - U of D Park Road	Continuation	Legislative and Leverage	Recreational Need	$ 1,800,000.00				
17	143	Lums Pond State Park	New Castle County	Lums Pond Phase II utility upgrades	Continuation	Property Pres High	Revenue Generation	$ 2,000,000.00	$ 2,700,000.00			
4	67	Cape Henlopen State Park	Sussex County	Cape campground: additional cabins and 3-point electrical hookups	Revenue Generation	NA	NA		$ 1,107,000.00			
16	232	Killens Pond State Park	Kent County	Killens Pond safe pedestrian connector between boat rental and boat ramp	Safety, High	Recreational Need	NA		$ 2,000,000.00			
16	117	Fort Delaware State Park	New Castle County	Fort Delaware Landing Site	Continuation	Legislative and Leverage	Revenue Generation		$ 350,000.00			
15	444	Delaware Seashore State Park	Sussex County	DSSP IR Marina - Marina boat ramp north side does not have any railing next to the side walk. The ramp has a 8 foot fall that is not protected with railing	Safety, High	NA	NA		$ 25,000.00			

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15	435	Fort Delaware State Park	New Castle County	Fort Delaware - Railing replacement on top of the Fort. The Fort's roof railing needs to be replace to prevent visitors and employees from falling	Safety, High	NA	NA		$ 50,000.00			
15	433	Fort Delaware State Park	New Castle County	Fort Delaware Heronry overlook replacement. The current heronry look out is improperly constructed and is unstable	Safety, High	NA	NA		$ 50,000.00			
15	431	Fort Delaware State Park	New Castle County	Fort Delaware - 2 pilings to be filled, braced, and wrapped, approximately 20' vertically, from low tide to high tide lines. Replacement of 3 diagonal cross members below high tide line.	Safety, High	NA	NA		$ 30,000.00			
15	404	Auburn Heights Preserve	New Castle County	Auburn Heights Carriage House offices secondary egress. The carriage house second floor offices do not have secondary egress in case of an emergency	Safety, High	NA	NA		$ 35,000.00			
15	395	Killens Pond State Park	Kent County	Killens Waterpark Renovation	Safety, High	Recreational Need	NA		$ 10,000,000.00			
15	386	Fort Delaware State Park	New Castle County	Fort Delaware masonry repairs	Safety, High	NA	NA		$ 100,000.00			
15	384	Delaware Seashore State Park	Sussex County	Holts landing courtesy dock replacement	Safety, High	NA	NA		$ 55,000.00			
15	375	Fox Point State Park	New Castle County	Bellevue Fox Point - Elimination of standing water per SIRS	Safety, High	NA	NA		$ 120,000.00			
15	368	Cape Henlopen State Park	Sussex County	Cape Fishing Pier: piling repair	Safety, High	NA	NA		$ 1,000,000.00			
15		Cape Henlopen State Park	Sussex County	Cape Fishing Pier: Replacement	Safety, High	NA	NA		$ 4,000,000.00	$ 8,000,000.00		
15	355	Cape Henlopen State Park	Sussex County	Cape Engineering for stair repair at Tower 7	Safety, High	NA	NA			$ 200,000.00		
15	225	Wilmington State Parks	New Castle County	Brandywine Park: North Park Drive; replace curb,walkway and fence	Safety, High	NA	NA			$ 150,000.00		
15	84	Cape Henlopen State Park	Sussex County	Cape - Biden center renovations or replacement	Safety, High	NA	NA			$ 4,000,000.00		
14	31	Bellevue State Park	New Castle County	Bellevue pond: repair retaining wall at bridge	Safety, Low	Property Pres High	NA			$ 60,000.00		
13	285	Fort Delaware State Park	New Castle County	Fort Delaware - repair leaks on terre plain	Continuation	Property Pres High	NA			$ 50,000.00		
13	283	Delaware Seashore State Park	Sussex County	DSSP old camp: bathhouse #4; install floor, wall and shower tile	Continuation	Property Pres High	NA			$ 26,000.00		
13	280	Delaware Seashore State Park	Sussex County	DSSP old camp: bathhouse #3; install floor, wall & shower tile	Continuation	Property Pres High	NA			$ 26,000.00		
13	257	Fort DuPont State Park	New Castle County	Fort DuPont - Demolition of three (3) buildings: White Warehouse, Old Fort Delaware Historical Society building ($22,000), and Motor Pool Building	Safety, Low	Legislative and Leverage	NA			$ 80,000.00		

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13	88	Fenwick Island State Park	Sussex County	DSSP Fenwick island parking expansion	Safety, Low	Revenue Generation	Recreational Need			$ 1,800,000.00		
13	81	Cape Henlopen State Park	Sussex County	Cape J& B trail improvements	Continuation	Property Pres High	NA			$ 16,000.00		
13	18	Bellevue State Park	New Castle County	Bellevue Percheron Barn Roof- Structural repairs and roof shingles	Continuation	Property Pres High	NA			$ 400,000.00		
12	369	Auburn Heights Preserve	New Castle County	Auburn - Construction of new maintenance building.	Continuation	Legislative and Leverage	NA			$ 100,000.00		
11	449	Killens Pond State Park	Kent County	Killens Pond Spillway gates require repair. The current boards on the spillway are rotted and allowing too much water to escape the pond and are on the verge of catastrophic failure	Property Pres High	Legislative and Leverage	NA			$ 75,000.00		
11	402	Fort Delaware State Park	New Castle County	Fort Delaware Endicott Roof waterproofing and preparation for solar project	Property Pres High	Legislative and Leverage	NA			$ 1,200,000.00		
11	124	Fort DuPont State Park	New Castle County	Fort DuPont 1905 guard house restoration	Property Pres High	Legislative and Leverage	NA			$ 65,000.00		
11	109	Fort DuPont State Park	New Castle County	Fort DuPont Roof Replacements	Property Pres High	Legislative and Leverage	NA			$ 250,000.00		
10	461	White Clay Creek State Park	New Castle County	White Clay Judge Morris Estate-Exterior repairs and painting: Wood shingle roof repairs, soffit repairs and painting, repair and painting of window frames, sills, shutters, doors, door frames.	Property Pres High	Revenue Generation	NA			$ 60,000.00		
10	372	Auburn Heights Preserve	New Castle County	Auburn Oversee Farm new septic system and renovations	Property Pres High	Revenue Generation	NA			$ 45,000.00		
10	353	Alapocas Run State Park	New Castle County	Alapocas Woods: Alapocas Run waterfall bridge- stone walls stabilization(engineering review)	Safety, Low	Property Pres Low	NA			$ 250,000.00		
10	341	Cape Henlopen State Park	Sussex County	Cape FMHA: Museum plan development and implementation	Legislative and Leverage	Revenue Generation	Recreational Need			$ 4,000,000.00	$ 5,000,000.00	
10	301	Brandywine Creek State Park	New Castle County	Brandywine - Northern Delaware Greenway trail: repair drainage and erosion issues. Repairs to 4 pipe culverts/ swales/ trail surface along greenway; repair drainage issues at overlook	Safety, Low	Property Pres Low	NA				$ 50,000.00	
10	292	Cape Henlopen State Park	Sussex County	Cape - securing: battery smith and mine casement	Safety, Low	Property Pres Low	NA				$ 15,000.00	
10	151	Trap Pond State Park	Sussex County	Trap Pond - Bethesda Church: composting toilet, benches, parking	Revenue Generation	Legislative and Leverage	Recreational Need				$ 150,000.00	
10	146	Lums Pond State Park		Lums Boat rental Area: boat dock repairs ($10k/yr for 3 yrs.)	Property Pres High	Revenue Generation	NA				$ 30,000.00	
9	245	Wilmington State Parks	New Castle County	Wilmington Rockford Park: develop one-way traffic flow and provide parking	Safety, Low	Recreational Need	NA				$ 100,000.00	

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8	436	Fort Delaware State Park	New Castle County	Fort Delaware - Pathway leveling on the Fort walkways. The Fort's granite walkways are extremely uneven with lots of tripping hazards and need to be reset.	Safety, Low	NA	NA				$ 75,000.00	
8	427	Delaware Seashore State Park	Sussex County	DSSP Life Saving station flag tower repairs. The tower support straps broken and is becoming unstable	Safety, Low	NA	NA				$ 25,000.00	
8	422	Cape Henlopen State Park	Sussex County	Cape Park fuel tank replacements. These tanks are single wall tanks and do not have secondary containment in the event of a spill	Safety, Low	NA	NA				$ 60,000.00	
8	417	Brandywine Creek State Park	New Castle County	Brandywine Park entrance road sink hole repairs. The entrance road has sink holes due an improperly installed or failed culvert	Safety, Low	NA	NA				$ 75,000.00	
8	413	Bellevue State Park	New Castle County	Bellevue Fox Point parking lot lights are not operational. The inoperable parking lot lights are a security concern	Safety, Low	NA	NA				$ 25,000.00	
8	401	White Clay Creek State Park	New Castle County	White Clay - Deerfield sewer repairs/upgrades	Safety, Low	NA	NA				$ 25,000.00	
8	357	Cape Henlopen State Park	Sussex County	Cape - New bathhouse and campground store	Continuation	Recreational Need	NA				$ 3,000,000.00	
8	331	White Clay Creek State Park	New Castle County	White Clay Niven Property: structural repairs to Niven Barn or documentation of historic significance for demo	Safety, Low	NA	NA				$ 400,000.00	
8	316	Fort Delaware State Park	New Castle County	Fort Delaware Mainland landing craft work dock: replace existing dock that is too short and not adequately anchored	Safety, Low	NA	NA				$ 100,000.00	
8	255	Alapocas Run State Park	New Castle County	Alapocas Weldin Road: Provide safe pedestrian crossing between lot D and CanDo playground/ athletic fields	Safety, Low	NA	NA					
8	238	Wilmington State Parks	New Castle County	Wilmington north park drive: Provide safe pedestrian crossing near condos; close off cut through	Safety, Low	NA	NA				$ 200,000.00	
8	168	White Clay Creek State Park	New Castle County	White Clay - 840 creek road: demolish house	Safety, Low	NA	NA				$ 20,000.00	
8	41	Auburn Heights Preserve	New Castle County	Auburn - Septic Tank replacement and/or connection to sewer on Benge Road	Safety, Low	NA	NA				$ 35,000.00	
7	453	Lums Pond State Park	New Castle County	Lums Park Office accessibility upgrades. The entrance ramp and restrooms do not meet current ADA accessibility requirements.	Continuation	NA	NA				$ 65,000.00	
7	392	Fort Delaware State Park	New Castle County	Ft. DE repair and repaint windows	Continuation	NA	NA				$ 40,000.00	
7	387	Fort Delaware State Park	New Castle County	Ft DE dock repairs	Continuation	NA	NA				$ 65,000.00	

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7	364	Bellevue State Park	New Castle County	Bellevue - place stone near horse barn accessway	Legislative and Leverage	Property Pres Low	NA				$ 15,000.00	
7	334	Wilmington State Parks	New Castle County	Wilmington Rockford tennis court area; repave existing parking area/ accessibility improvements	Legislative and Leverage	Property Pres Low	NA				$ 100,000.00	
7	266	Bellevue State Park	New Castle County	Bellevue - Repair damage to bike path (philadelphia pike)	Legislative and Leverage	Property Pres Low	NA				$ 100,000.00	
7	262	Bellevue State Park	New Castle County	Bellevue - Repair Percheron Barn and Office roads	Legislative and Leverage	Property Pres Low	NA				$ 40,000.00	
7	53	Brandywine Creek State Park	New Castle County	Brandywine - garden of eden road drainage study; possible replace culverts and catch basins	Legislative and Leverage	Property Pres Low	NA				$ 50,000.00	
7	32	Bellevue State Park	New Castle County	Bellevue Park Office: ADA improvements to office door and ramp	Legislative and Leverage	Property Pres Low	NA				$ 18,000.00	
6	460	Trap Pond State Park	Sussex County	Trap Pond Park Office roof repair. The Office roof has a sag in the roof	Property Pres High	NA	NA				$ 30,000.00	
6	459	Trap Pond State Park	Sussex County	Trap Pond - 3 each fishing dock replacements. The current fishing docks are worn out and unstable	Property Pres High	NA	NA				$ 45,000.00	
6	458	Trap Pond State Park	Sussex County	Trap Pond - Bethesda church roof requires resealing. The tin roof shingles are leaking around chimneys	Property Pres High	NA	NA				$ 28,000.00	
6	457	Trap Pond State Park	Sussex County	Trap Pond A Loop Bath house roof replacement. The current shingles have exceeded their expected life and the roof is currently leaking	Property Pres High	NA	NA				$ 30,000.00	
6	456	Lums Pond State Park	New Castle County	Lums Bath House roofs replacement. The current roofs are leaking and have exceeded their expected life and need to be replaced before we start to get structural damage	Property Pres High	NA	NA				$ 65,000.00	
6	454	Lums Pond State Park	New Castle County	Lums Pond Berm repair - The Pond berm has severe erosions and requires repair before complete failure	Property Pres High	NA	NA				$ 60,000.00	
6	448	Killens Pond State Park	Kent County	Killens Maintenance shop roof replacement. The current roof has exceeded it expected life and need to be replaced before we start to get structural damage	Property Pres High	NA	NA				$ 20,000.00	
6	447	Killens Pond State Park	Kent County	Killens - Boat rental dock needs replacement. The current boat dock is worn and does not meet Accessibility requirements	Property Pres High	NA	NA				$ 60,000.00	

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6	446	Delaware Seashore State Park	Sussex County	DSSP IR Marina Dry stack roof has deteriorated roof panels that require replacement. The roof is leaking and requires spot panel replacement	Property Pres High	NA	NA				$ 35,000.00	
6	445	Delaware Seashore State Park	Sussex County	DSSP Bulkhead walls sealant is separating from metal causing corrosion. If the corrosion continues untreated we could suffer premature bulkhead failure	Property Pres High	NA	NA				$ 350,000.00	
6	443	Holts Landing State Park	Sussex County	Holts Water building siding and window replacement. The windows are broken and the siding requires replacement	Property Pres High	NA	NA				$ 15,000.00	
6	441	Holts Landing State Park	Sussex County	Holts Bath house roof replacement. The shingles have exceeded their life expectancy and require replacement	Property Pres High	NA	NA				$ 20,000.00	
6	438	Fenwick Island State Park	Sussex County	DSSP Fenwick Island Bath House roof replacement. The bath house roof is leaking and requires replacement	Property Pres High	NA	NA				$ 75,000.00	
6	437	Fort Delaware State Park	New Castle County	Fort DuPont - Port Penn interpretive center roof replacement. The current roof wood shingles are starting to curl	Property Pres High	NA	NA				$ 60,000.00	
6	432	Fort Delaware State Park	New Castle County	Fort Delaware East Side Terreplein of fort. now there are major sink holes in that section of the Terreplein. soil is gradually filtering its way between the (engineered) gap between the outer & inner wall of the fort.	Property Pres High	NA	NA				$ 60,000.00	
6	429	Delaware Seashore State Park	Sussex County	DSSP Bath houses/concession. Prepare all exterior surfaces: remove any loose paint, spot prime any bare wood or block, caulk where needed. Paint 2 coats using top quality exterior latex paint - Tower Road	Property Pres High	NA	NA				$ 8,000.00	
6	425	Cape Henlopen State Park	Sussex County	Cape Primitive youth camp pavilion roof replacement. The shingles have exceeded their expected life and are in need of replacement	Property Pres High	NA	NA				$ 18,000.00	
6	424	Cape Henlopen State Park	Sussex County	Cape Point Comfort station roof replacement. The shingles have exceeded their expected life and need to be replace before damage to the super structure	Property Pres High	NA	NA				$ 15,000.00	

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6	420	Cape Henlopen State Park	Sussex County	Cape Main Beach Bath House roof replacement. The roof is currently leaking and will start to damage the super structure of the building	Property Pres High	NA	NA				$ 75,000.00	
6	415	Bellevue State Park	New Castle County	Bellevue Mount Pleasant Meeting House roof replacement. The current wood shingles have exceed their life expectancy and are close to leaking	Property Pres High	NA	NA				$ 70,000.00	
6	414	Bellevue State Park	New Castle County	Bellevue Mount Pleasant Parsonage repairs. The exterior of the parsonage has extreme rot and soffit damage	Property Pres High	NA	NA				$ 40,000.00	
6	412	Bellevue State Park	New Castle County	Bellevue Hall 3rd floor completion. This project will maximize the use of the facility	Revenue Generation	Property Pres Low	NA				$ 100,000.00	
6	405	Auburn Heights Preserve	New Castle County	Auburn Museum boiler room bump out roof replacement. The roof will start to leak on tot the boiler room equipment	Property Pres High	NA	NA				$ 10,000.00	
6	403	Alapocas Run State Park	New Castle County	Alapocas Bird Husband House roof replacement. The current shingles have exceeded their expected life and the roof is currently leaking	Property Pres High	NA	NA				$ 50,000.00	
6	394	Delaware Seashore State Park	Sussex County	DSSP IRM pilings sandblasted, sealed, and pile jackets	Property Pres High	NA	NA				$ 450,000.00	
6	388	Fort Delaware State Park	New Castle County	Ft. DE replacementof floating dock for Delafort	Property Pres High	NA	NA				$ 125,000.00	
6	381	Cape Henlopen State Park	Sussex County	Cape youth camps I and II masonry repairs	Property Pres High	NA	NA				$ 75,000.00	
6	380	Cape Henlopen State Park	Sussex County	Cape youth camps I and II electric upgrades	Property Pres High	NA	NA				$ 40,000.00	
6	379	Cape Henlopen State Park	Sussex County	Cape dorm addition of HVAC	Property Pres High	NA	NA				$ 50,000.00	
6	378	Cape Henlopen State Park	Sussex County	Cape Dorm restroom upgrades	Property Pres High	NA	NA				$ 35,000.00	
6	376	Bellevue State Park	New Castle County	Bellevue Cauffiel House HVAC system repair and/or replace	Property Pres High	NA	NA				$ 40,000.00	
6	373	Bellevue State Park	New Castle County	Bellevue - Green renovations for bathrooms	Property Pres High	NA	NA				$ 40,000.00	
6	371	Auburn Heights Preserve	New Castle County	Auburn - Repair/replace window sills, frames and trim at AH Mansion sunporch	Property Pres High	NA	NA				$ 30,000.00	
6	367	Trap Pond State Park	Sussex County	Trap Pond - Warrington house documentation	Property Pres High	NA	NA				$ 20,000.00	
6	345	Delaware Seashore State Park	Sussex County	DSSP Assawoman Canal Trail:phase I	Legislative and Leverage	Recreational Need	NA				$ 1,000,000.00	
6	343	Alapocas Run State Park	New Castle County	Alapocas Blue ball barn: correct moisture issues in ventilation system	Property Pres High	NA	NA				$ 100,000.00	

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6	305	Bellevue State Park	New Castle County	Bellevue pavilion #1 needs columns repair	Property Pres High	NA	NA				.	
6	281	Delaware Seashore State Park	Sussex County	DSSP Towers Road Ocean: bathhouse (lifeguard, mens, womens rooms); replace door & frame with fiberglass	Property Pres High	NA	NA				$ 8,000.00	
6	278	Bellevue State Park	New Castle County	Bellevue stables: replace shingles on wooden barn	Property Pres High	NA	NA				$ 40,000.00	
6	276	Cape Henlopen State Park	Sussex County	Cape Fort Miles: Waterproof Bunker 519 roof	Property Pres High	NA	NA					
6	272	White Clay Creek State Park	New Castle County	White Clay WSC: Replace roof on Wells barn	Property Pres High	NA	NA				$ 45,000.00	
6	241	Wilmington State Parks	New Castle County	Wilmington 18th Street Basket ball courts; asphalt overlay, surfacing, replace goals, repairs to concrete seating area	Property Pres High	NA	NA				$ 20,000.00	
6	230	Wilmington State Parks	New Castle County	Brandywine Park: Lovering Avenue Tennis Courts; Renovate or Remove	Property Pres High	NA	NA				$ 35,000.00	
6	169	White Clay Creek State Park	New Castle County	White Clay Old Coach road: demolish house	Property Pres High	NA	NA				$ 25,000.00	
6	165	White Clay Creek State Park	New Castle County	White Clay nature center: repair plaster and repaint interior	Property Pres High	NA	NA				$ 15,000.00	
6	125	Port Penn Interpretive Center	New Castle County	Fort DuPont - Port Penn Cleaver: repair/replace roof	Property Pres High	NA	NA				$ 100,000.00	
6	108	Fort Delaware State Park	New Castle County	Fort Delaware repair window sills at Fort	Property Pres High	NA	NA				$ 40,000.00	
6	86	Cape Henlopen State Park	Sussex County	Cape youth camps air conditioning	Revenue Generation	Property Pres Low	NA				$ 40,000.00	
6	77	Cape Henlopen State Park	Sussex County	Cape maintenance shop & Biden: fiber optic installation, phase II	Property Pres High	NA	NA				$ 170,000.00	
6	60	Brandywine Creek State Park	New Castle County	Brandywine Fenton Barn documentation - possible demo	Property Pres High	NA	NA				$ 340,000.00	
6	44	Auburn Heights Preserve	New Castle County	Auburn Heights: repair roof leak	Property Pres High	NA	NA				$ 45,000.00	
6	34	Bellevue State Park	New Castle County	Bellevue pond: gate valve replacement	Property Pres High	NA	NA				$ 50,000.00	
6	20	Bellevue State Park	New Castle County	Bellevue Horse Barn Roof: repair/replace metal roof	Property Pres High	NA	NA				$ 270,000.00	
6	17	Bellevue State Park	New Castle County	Bellevue Copper/ Fiber Optic Lines	Property Pres High	NA	NA				$ 102,000.00	
5	434	Fort Delaware State Park	New Castle County	Fort Delaware Pavilion construction. The Fort currently does not have a safe shade structure for the patrons to have their lunches, where the picnic tables currently are located there are falling bricks overhead	Revenue Generation	Recreational Need	NA				$ 60,000.00	

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5	421	Cape Henlopen State Park	Sussex County	Cape Day Camp Accessibility to Chapel.	Revenue Generation	Recreational Need	NA				$ 60,000.00	
5	349	Killens Pond State Park	Kent County	Killens Intern Housing($50K available via Americorp)	Legislative and Leverage	NA	NA				$ 50,000.00	
5	326	Lums Pond State Park		Lums - Demolish old water storage and treatment building	Legislative and Leverage	NA	NA				$ 36,850.00	
5	324	Killens Pond State Park	Kent County	Killens Campground: three-point hookups for host sites (funded via enterprise acccount) and electrical upgrade $9K/loop, 6 loops	Revenue Generation	Recreational Need	NA				$ 54,000.00	
5	287	White Clay Creek State Park	New Castle County	White Clay Robinson house: ADA upgrades to facility	Revenue Generation	Recreational Need	NA				$ 30,000.00	
5	167	White Clay Creek State Park	New Castle County	White Clay Judge Morris RFI for partner	Revenue Generation	Recreational Need	NA				$ 20,000.00	
5	153	Trap Pond State Park	Sussex County	Trap Pond - 2 new cabins	Revenue Generation	Recreational Need	NA				$ 100,000.00	
5	152	Trap Pond State Park	Sussex County	Trap Pond - 2 cabins	Revenue Generation	Recreational Need	NA				$ 70,000.00	
5	104	Delaware Seashore State Park	Sussex County	DSSP - kayak rental facility	Revenue Generation	Recreational Need	NA				$ 10,000.00	
5	99	Delaware Seashore State Park	Sussex County	DSSP IR Marina - Pavilion	Revenue Generation	Recreational Need	NA				$ 40,000.00	
5	30	Bellevue State Park	New Castle County	Bellevue figure 8/ hunter barn restrooms	Revenue Generation	Recreational Need	NA				$ 40,000.00	
4	398	Lums Pond State Park	New Castle County	Lums replace yurts with cabins	Revenue Generation	NA	NA				$ 600,000.00	
4	290	Alapocas Run State Park	New Castle County	Alapocas Fee Collection at Can-Do playground parking lot (automated parking meter kiosk)	Revenue Generation	NA	NA				$ 20,000.00	
3	226	Wilmington State Parks	New Castle County	Brandywine Park: Baynard stadium; Repair/repave roadways & improve traffic flow/parking in general	Property Pres Low	Recreational Need	NA				$ 200,000.00	
3	219	Statewide and Special	Statewide	Statewide Tree work & Landscaping	Property Pres Low	Recreational Need	NA				$ 40,000.00	
3	178	White Clay Creek State Park	New Castle County	White Clay Judge Morris: install new heaters in garage/office	Property Pres Low	Recreational Need	NA				$ 15,000.00	
3	114	Fort Delaware State Park	New Castle County	Fort Delaware bake oven room restoration for increased programming use	Property Pres Low	Recreational Need	NA				$ 60,000.00	
3	51	Brandywine Creek State Park	New Castle County	Brandywine YCC building/ spring house upgrades	Property Pres Low	Recreational Need	NA				$ 35,000.00	
3	29	Bellevue State Park	New Castle County	Bellevue office - central a/c, heat	Property Pres Low	Recreational Need	NA				$ 25,000.00	
3	24	Bellevue State Park	New Castle County	Bellevue School House Rehab	Property Pres Low	Recreational Need	NA				$ 200,000.00	

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2	455	Lums Pond State Park	New Castle County	Lums Sewer Plant Pit Doors replacement. The sewer plant pit doors are old steel doors that are severely deteriorated and need to be replaced with fiberglass doors	Property Pres Low	NA	NA				$ 10,000.00	
2	452	Lums Pond State Park	New Castle County	Lums Go Ape Parking Lot resurface. The parking lot has extreme deterioration and needs to be resurfaced	Property Pres Low	NA	NA				$ 100,000.00	
2	450	Lums Pond State Park	New Castle County	Lums Construction of maintenance pole shed.	Property Pres Low	NA	NA				$ 30,000.00	
2	442	Holts Landing State Park	Sussex County	Holts Parking lot paving requires resurfacing. The lot has pot holes and cracking	Property Pres Low	NA	NA				$ 80,000.00	
2	440	Holts Landing State Park	Sussex County	Holts Bath house remodel of interior. The interior of the bath house is in need of an complete renovation	Property Pres Low	NA	NA				$ 30,000.00	
2	428	Delaware Seashore State Park	Sussex County	DSSP - DE Sea Shore maintenance yard paving resurface. The paving has pot holes and cracking requires resurfacing	Property Pres Low	NA	NA				$ 60,000.00	
2	419	Cape Henlopen State Park	Sussex County	Cape Main Beach Bath House parking lot resurface. The parking lot has numerous pot holes and is severely cracked	Property Pres Low	NA	NA				$ 150,000.00	
2	418	Brandywine Creek State Park	New Castle County	Brandywine Maintenance road paving resurface. The maintenance road pavement has cracks and pot holes	Property Pres Low	NA	NA				$ 45,000.00	
2	416	Bellevue State Park	New Castle County	Bellevue Tennis Center parking lot resurface. The parking lot has excessive cracking and deterioration	Property Pres Low	NA	NA				$ 90,000.00	
2	411	Bellevue State Park	New Castle County	Bellevue Art Center exterior painting and door repairs. The paint is peeling and bare, the custom entrance doors are deteriorated and falling apart	Property Pres Low	NA	NA				$ 30,000.00	
2	410	Auburn Heights Preserve	New Castle County	Auburn Pond bridge does not have accessibility, there is a 10"step. The bridge is new but is not accessible to the public	Property Pres Low	NA	NA				$ 10,000.00	
2	393	Fort Delaware State Park	New Castle County	Ft. DE coating/sealing metal roofs	Property Pres Low	NA	NA				$ 100,000.00	
2	391	Fort Delaware State Park	New Castle County	Ft. DE POW barracks roof repair	Property Pres Low	NA	NA				$ 6,000.00	
2	390	Fort Delaware State Park	New Castle County	Ft. DE pathways (barge and stone)	Property Pres Low	NA	NA				$ 35,000.00	
2	389	Fort Delaware State Park	New Castle County	Ft. DE water tank replacement	Property Pres Low	NA	NA				$ 5,000.00	

DNREC - Parks and Recreation

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Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
2	366	Bellevue State Park	New Castle County	Bellevue Cauffiel: water tower exterior repairs	Property Pres Low	NA	NA				$ 25,000.00	
2	359	Cape Henlopen State Park	Sussex County	Cape mechanics shop:exterior envelope maintenance	Property Pres Low	NA	NA				$ 65,000.00	
2	356	Statewide and Special	Statewide	Statewide structural study of all fire control towers	Property Pres Low	NA	NA				$ 90,000.00	
2	352	Alapocas Run State Park	New Castle County	Alapocas Blue ball barn: courtyard- stone wall masonry repairs	Property Pres Low	NA	NA				$ 60,000.00	
2	335	Wilmington State Parks	New Castle County	Wilmington Baynard stadium: paint north bleachers(lead paint issues)	Property Pres Low	NA	NA				$ 150,000.00	
2	327	Trap Pond State Park	Sussex County	Trap Boat rental Building; new siding, roof, doors, interior & exterior lights and plumbing fixtures	Property Pres Low	NA	NA				$ 28,000.00	
2	318	Fort DuPont State Park	New Castle County	Fort DuPont millings to patch potholes in roadways	Property Pres Low	NA	NA				$ 4,000.00	
2	314	Fort Delaware State Park	New Castle County	Fort Delaware Ticket sales/gift shop: purchase hardy board to re-side back side of building (park staff to install)	Property Pres Low	NA	NA				$ 5,000.00	
2	313	Fort Delaware State Park	New Castle County	Fort Delaware Island concession stand: replace rotten floor and wall boards	Property Pres Low	NA	NA				$ 3,000.00	
2	312	Fort Delaware State Park	New Castle County	Fort Delaware Island pier:replace deckboards (including fuel dock)	Property Pres Low	NA	NA				$ 5,000.00	
2	311	Fort Delaware State Park	New Castle County	Fort Delaware Island pier handrail: continue replacing handrail components	Property Pres Low	NA	NA				$ 2,500.00	
2	293	Cape Henlopen State Park	Sussex County	Cape road and parking improvements	Property Pres Low	NA	NA				$ 1,500,000.00	
2	288	White Clay Creek State Park	New Castle County	White Clay Creek Road: north of Hopkins road; grading/ drainage of this roadway entrance to the nature center	Property Pres Low	NA	NA				$ 10,000.00	
2	282	Delaware Seashore State Park	Sussex County	DSSP Towers Road Ocean: concession stand; replace overhead door	Property Pres Low	NA	NA				$ 4,000.00	
2	270	Fox Point State Park	New Castle County	Bellevue Fox Point - Pave phase II road and parking areas	Property Pres Low	NA	NA				$ 250,000.00	
2	263	Bellevue State Park	New Castle County	Bellevue - Reseal floors in main restrooms (Scrap House)	Property Pres Low	NA	NA				$ 20,000.00	
2	261	Bellevue State Park	New Castle County	Bellevue - Reseal Maintenance Parking Lot	Property Pres Low	NA	NA				$ 8,000.00	
2	256	Fort DuPont State Park	New Castle County	Fort DuPont tennis courts: Resurface, patch cracks, restore asphalt on two (2) at Fort DuPont State Park	Property Pres Low	NA	NA				$ 30,000.00	
2	248	Lums Pond State Park	New Castle County	Lums - Repair cracks in parking lots	Property Pres Low	NA	NA				$ 35,000.00	
2	244	Wilmington State Parks	New Castle County	Wilmington Bancroft Mills: Repave parking area	Property Pres Low	NA	NA				$ 60,000.00	

DNREC - Parks and Recreation

Capital Project Priorities FY 2015 - 2019

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Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
2	243	Wilmington State Parks	New Castle County	Wilmington Rockford Park: First Presbyterian Church regrade slope between church and raceway to allow easier mower access	Property Pres Low	NA	NA				$ 75,000.00	
2	240	Wilmington State Parks	New Castle County	Brandywine Park: Renovate/ repair Josephine fountain	Property Pres Low	NA	NA				$ 45,000.00	
2	227	Wilmington State Parks	New Castle County	Wilmington Rockford Park: Tennis Courts; Renovate	Property Pres Low	NA	NA				$ 40,000.00	
2	180	White Clay Creek State Park	New Castle County	White Clay Judge Morris: refinish wood floors	Property Pres Low	NA	NA				$ 20,000.00	
2	179	White Clay Creek State Park	New Castle County	White Clay WSC: stain bandstage	Property Pres Low	NA	NA				$ 10,000.00	
2	173	White Clay Creek State Park	New Castle County	White Clay Judge Morris: finish exterior painting	Property Pres Low	NA	NA				$ 60,000.00	
2	170	White Clay Creek State Park	New Castle County	White Clay Judge Morris: interior painting	Property Pres Low	NA	NA				$ 35,000.00	
2	162	White Clay Creek State Park	New Castle County	White Clay exterior paint all barns	Property Pres Low	NA	NA				$ 50,000.00	
2	161	White Clay Creek State Park	New Castle County	White Clay park office :exterior painting/ stucco repair	Property Pres Low	NA	NA				$ 25,000.00	
2	158	White Clay Creek State Park	New Castle County	White Clay - replace post/ rail fence @ 896 and wedgewood	Property Pres Low	NA	NA				$ 8,000.00	
2	150	Lums Pond State Park	New Castle County	Lums - resurface tennis courts	Property Pres Low	NA	NA				$ 30,000.00	
2	147	Lums Pond State Park	New Castle County	Lums boat ramp: replace ramp, parking	Property Pres Low	NA	NA				$ 500,000.00	
2	123	Fort DuPont State Park	New Castle County	Fort DuPont - duplex 92A repairs	Property Pres Low	NA	NA				$ 11,000.00	
2	120	Fort DuPont State Park	New Castle County	Fort DuPont Grass Dale : repair foundation	Property Pres Low	NA	NA				$ 45,000.00	
2	98	Delaware Seashore State Park	Sussex County	DSSP Tower Road parking lot repairs/ repaving	Property Pres Low	NA	NA				$ 250,000.00	
2	74	Cape Henlopen State Park	Sussex County	Cape - Youth camp 1, Mess Hall: replace floor	Property Pres Low	NA	NA					$ 10,000.00
2	56	Brandywine Creek State Park	New Castle County	Brandywine - barn painting	Property Pres Low	NA	NA					$ 25,000.00
2	55	Brandywine Creek State Park	New Castle County	Brandywine main park: replace contact station	Property Pres Low	NA	NA					$ 20,000.00
2	40	Auburn Heights Preserve	New Castle County	Auburn - Exterior Painting	Property Pres Low	NA	NA					$ 30,000.00
2	39	Auburn Heights Preserve	New Castle County	Auburn - Asphalt resurfacing	Property Pres Low	NA	NA					$ 35,000.00
2	27	Bellevue State Park	New Castle County	Bellevue Hunter Barn - Asphalt overlay	Property Pres Low	NA	NA					$ 30,000.00
1	78	Cape Henlopen State Park	Sussex County	Cape Parade Field irrigation	Recreational Need	NA	NA					$ 50,000.00

DNREC - Parks and Recreation

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Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
1	462	Lums Pond State Park	New Castle County	Lums Park office addition	Recreational Need	NA	NA					$ 60,000.00
1	400	Lums Pond State Park	New Castle County	Lums Ranger office addition	Recreational Need	NA	NA					$ 65,000.00
1	399	Lums Pond State Park	New Castle County	Lums pole building for boat rentals	Recreational Need	NA	NA					$ 30,000.00
1	397	Lums Pond State Park	New Castle County	Lums running 3 point hookups to future host site	Recreational Need	NA	NA					$ 30,000.00
1	396	Lums Pond State Park	New Castle County	Lums concrete paving for cricket field pitch	Recreational Need	NA	NA					$ 13,000.00
1	383	Delaware Seashore State Park	Sussex County	DSSP new signature signs	Recreational Need	NA	NA					$ 25,000.00
1	374	Bellevue State Park	New Castle County	Bellevue - Construct a new garage to replace exisitng shed	Recreational Need	NA	NA					$ 25,000.00
1	370	Auburn Heights Preserve	New Castle County	Auburn - Upgrade of restrooms at Auburn Heights to make them ADA compliant and year round	Recreational Need	NA	NA					$ 60,000.00
1	362	Lums Pond State Park	New Castle County	Lums - shade structure at maintenance complex for boat rental operation, to lessen UV deterioration	Recreational Need	NA	NA					$ 25,000.00
1	361	Lums Pond State Park	New Castle County	Lums - three point hookup for (3) host sites	Recreational Need	NA	NA					$ 30,000.00
1	358	Cape Henlopen State Park	Sussex County	Cape U of D dorm: electrical upgrade	Recreational Need	NA	NA					$ 30,000.00
1	344	Bellevue State Park	New Castle County	Bellevue - Sidewalk/circulation plan between arts building and mansion	Recreational Need	NA	NA					$ 75,000.00
1	333	Wilmington State Parks	New Castle County	Brandywine Park: replace life course trail	Recreational Need	NA	NA					$ 60,000.00
1	330	White Clay Creek State Park	New Castle County	White Clay Nature center Parking: convert turf parking area to gravel(10-12 spaces)	Recreational Need	NA	NA					$ 70,000.00
1	320	Lums Pond State Park	New Castle County	Lums concrete pitching area for cricket within Area One	Recreational Need	NA	NA					$ 8,000.00
1	310	Fort Delaware State Park	New Castle County	Fort Delaware Ticket sales/gift shop: upgrade exterior(including marquee roof and overhang)	Recreational Need	NA	NA					$ 40,000.00
1	300	Brandywine Creek State Park	New Castle County	Brandywine Maintenance area: construct 4 bay pole shed w/ security fencing	Recreational Need	NA	NA					$ 45,000.00
1	299	Alapocas Run State Park	New Castle County	Alapocas extend water and electric to shop near 202	Recreational Need	NA	NA					$ 150,000.00
1	297	Alapocas Run State Park	New Castle County	Alapocas pavilion across from Bancroft Mills bridge	Recreational Need	NA	NA					$ 30,000.00
1	294	Wilmington State Parks	New Castle County	Wilmington Rockford: remove or renovate ball field in lower field	Recreational Need	NA	NA					$ 30,000.00

DNREC - Parks and Recreation

Capital Project Priorities FY 2015 - 2019

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Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
1	268	Bellevue State Park	New Castle County	Bellevue Office: construct garage to replace existing shed (rental bike, GEM car and golf cart storage)	Recreational Need	NA	NA					$ 25,000.00
1	267	Bellevue State Park	New Castle County	Bellevue - Install biosun restroom near pavilions 1 & 3	Recreational Need	NA	NA					$ 60,000.00
1	254	Fox Point State Park	New Castle County	Bellevue Fox Point - pave bike path from railroad tracks to entrance	Recreational Need	NA	NA					$ 10,500.00
1	242	Alapocas Run State Park	New Castle County	Alapocas Blue Ball Barn: create stabilized turf overflow parking area adjacent to Barn	Recreational Need	NA	NA					$ 200,000.00
1	233	Fox Point State Park	New Castle County	Bellevue Fox Point - Construct 'Green' Pavilion	Recreational Need	NA	NA					$ 200,000.00
1	184	Wilmington State Parks	New Castle County	Wilmington - storage facility for interpretation	Recreational Need	NA	NA					$ 100,000.00
1	182	Wilmington State Parks	New Castle County	Brandywine Zoo: implement phase I master plan	Recreational Need	NA	NA					$ 12,000,000.00
1	176	White Clay Creek State Park	New Castle County	White Clay Judge Morris: fabricate and install decorative gates at main drive	Recreational Need	NA	NA					$ 50,000.00
1	175	White Clay Creek State Park	New Castle County	White Clay WSC; install chain link fence @ maint. Area shop/ pole shed	Recreational Need	NA	NA					$ 25,000.00
1	174	White Clay Creek State Park	New Castle County	White Clay Possum Hill; replace clivus with Bio-Sun	Recreational Need	NA	NA					$ 40,000.00
1	159	White Clay Creek State Park	New Castle County	White Clay - add playground equipment (2 - 5 yrs)	Recreational Need	NA	NA					$ 75,000.00
1	141	Fork Branch Nature Preserve		Killens - Fork Branch site plan; parking plan	Recreational Need	NA	NA					$ 150,000.00
1	138	Killens Pond State Park	Kent County	Killens - 2 shade structures	Recreational Need	NA	NA					$ 20,000.00
1	130	Killens Pond State Park	Kent County	Killens - restrooms for primitive and family camping	Recreational Need	NA	NA					$ 80,000.00
1	121	Fort DuPont State Park	New Castle County	Fort DuPont - pole building	Recreational Need	NA	NA					$ 25,000.00
1	116	Fort Delaware State Park	New Castle County	Fort Delaware - new benches for grand casemate	Recreational Need	NA	NA					$ 8,000.00
1	113	Fort Delaware State Park	New Castle County	Fort Delaware - composting toilet - island	Recreational Need	NA	NA					$ 120,000.00
1	112	Fort Delaware State Park	New Castle County	Fort Delaware - soldier sleeping room renovation	Recreational Need	NA	NA					$ 30,000.00
1	110	Fort Delaware State Park	New Castle County	Fort Delaware - blacksmith shop reconstruction	Recreational Need	NA	NA					$ 75,000.00
1	103	Delaware Seashore State Park	Sussex County	Fort Delaware - new air station (fresh pond trust)	Recreational Need	NA	NA					$ 25,000.00
1	102	Holts Landing State Park	Sussex County	Holts entrance sign(21st Century)	Recreational Need	NA	NA					$ 5,000.00
1	101	Delaware Seashore State Park	Sussex County	DSSP IR Marina - shuffleboard courts	Recreational Need	NA	NA					$ 50,000.00

DNREC - Parks and Recreation

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Ranking Priority Score	Project ID#	Park Unit	County	Project Details	Ranking Criteria	Criteria2	Criteria3	Fiscal 2014- 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019
1	97	Holts Landing State Park	Sussex County	Holts Landing Playground replacement	Recreational Need	NA	NA					$ 150,000.00
1	76	Cape Henlopen State Park	Sussex County	Cape park office expansion	Recreational Need	NA	NA					$ 75,000.00
1	73	Cape Henlopen State Park	Sussex County	Cape Primitive area restroom	Recreational Need	NA	NA					$ 100,000.00
1	72	Cape Henlopen State Park	Sussex County	Cape Nature Center Expansion (design only)	Recreational Need	NA	NA					$ 50,000.00
1	71	Cape Henlopen State Park	Sussex County	Cape Herring Point composting toilets	Recreational Need	NA	NA					$ 40,000.00
1	69	Cape Henlopen State Park	Sussex County	Cape Herring Point Parking Lot	Recreational Need	NA	NA					$ 45,000.00
1	63	Cape Henlopen State Park	Sussex County	Cape Gordons Pond; restrooms/ showers	Recreational Need	NA	NA					$ 250,000.00
1	62	Cape Henlopen State Park	Sussex County	Cape Maintenance Pole Shed	Recreational Need	NA	NA					$ 40,000.00
1	58	Brandywine Creek State Park	New Castle County	Brandywine Flint Woods: bus/ drop-off location	Recreational Need	NA	NA					$ 30,000.00
1	54	Brandywine Creek State Park	New Castle County	Brandywine Thompsons Bridge: install steps and landscaping	Recreational Need	NA	NA					$ 50,000.00
1	52	Brandywine Creek State Park	New Castle County	Brandywine nature center: add lab/classroom wing, ranger office	Recreational Need	NA	NA					$ 60,000.00
1	48	Brandywine Creek State Park	New Castle County	Brandywine Nature Center: upgrade restrooms to include outside access	Recreational Need	NA	NA					$ 100,000.00
1	47	Brandywine Creek State Park	New Castle County	Brandywine maintenance shop: Security fence	Recreational Need	NA	NA					$ 15,000.00
1	46	Brandywine Creek State Park	New Castle County	Brandywine maintenance shop - Replace, include restrooms	Recreational Need	NA	NA					$ 200,000.00
1	25	Bellevue State Park	New Castle County	Bellevue Carriage House Restrooms	Recreational Need	NA	NA					$ 25,000.00
1	23	Bellevue State Park	New Castle County	Bellevue Cabana Restroom renovation	Recreational Need	NA	NA					$ 35,000.00
1	21	Bellevue State Park	New Castle County	Bellevue Arts Building: Install restrooms	Recreational Need	NA	NA					$ 40,500.00
								$20,925,000.00	**$21,622,000.00**	**$20,853,000.00**	**$20,672,350.00**	**$15,780,000.00**

DNREC - Div. of Fish and Wildlife Wildlife/Fisheries Capital Plan FY 2015 - FY 2018					
Project Name **($ in thousands)**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**NOTE:**
Delaware Bayshore - AREC/Visitor Center	825.0				BOND and Bayshore/Byways
Delaware Bayshore - Bayshore Visitor Center (Little Creek) Wildlife Facility	500.0	2,000.0			BOND/USFWS Grant (PR)/Bayshore Byways
Bayshore Initiative	500.0	500.0	500.0	500.0	BOND
Storage at Little Creek (Construction staff)	50.0				BOND
Storage at Little Creek (Wildlife and Construction staff)	50.0				BOND
Little Creek -road repairs			100.0		BOND/ASF/NSF
Repair and Rehabilitate Historical Houses on Wildlife Management Areas	200.0	350.0	250.0	250.0	BOND
Road repairs F&W areas and parking lots (gravel)		200.0	200.0	200.0	BOND/NSF/ASF
Energy upgrades to F&W owned buildings		100.0	200.0		BOND
Woodland Beach Observation Tower Trail		75.0			NSF
Demolition of unsafe strcutures on F&W areas open for public use	25.0	50.0	50.0		BOND
Region 1 - upgrades to shop (uitlities, mold remediation, structural)	50.0				BOND
Region 1 Pole shed repairs - Augustine and Cedar Swamp		15.0			BOND
Little Creek Fisheries Office - new floors in wet and dry labs	25.0				BOND
Little Creek Fisheries Office - Interior Painting	20.0				BOND
Glasgow Mosquito Control - climate Control for Pesticide Storage Unit	10.4				BOND
Poplar Thicket Erosion Project			2,750.0		BOND
Ommelanden Range Upgrade (Wildlife)				100.0	BOND
Yardley Dale Building upgrades, site development, signage, observation tower	267.5				NSF
Ted Harvey WMA - observation towers	150.0				NSF

DNREC - Div. of Fish and Wildlife Wildlife/Fisheries Capital Plan FY 2015 - FY 2018					
Project Name **($ in thousands)**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**NOTE:**
Mispillion Harbor Reserve - harbor restoration	500.0	5,520.0			BOND/NSF
Little Creek & Ted Harvey Impoundments, Port Mahon - dike repairs & water control structure	500.0	2,670.0			BOND/NSF
Statewide Impoundment Restoration Design and Engineering	500.0	3,500.0			BOND/NSF
AREC storage shed		7.5			BOND
Mallard Lodge - roof	22.5				NSF/STEWARDSHIP
Mallard Lodge - repainting		16.0			BOND
Mallard Lodge - fire escape		4.5			BOND
Mallard Lodge - ADA improvements phone, deck, door thresholds, cabinent hardware		2.5			BOND
AREC canoe/kayak Launch		12.0			BOND/BYWAYS
DuPont Nature Center - exterior painting	12.5				BOND
Little Creek Hunter Education - storage shed		7.5			BOND
Port Mahon Water Control Structure	30.0				ASF/NSF
Fishing Piers - Design/Engineering and Construction C&D Canal ADA accessible	40.0		1,000.0		BOND
Parking lot repairs for boat ramps	500.0	500.0	500.0	500.0	BOND/NSF/ASF
Milford Mosquito Control - Shop Roof	100.0				BOND
Milford Mosquito Control - Site Plan/Design + Engineering for office and Pole Barn	150.0				BOND
Milford Mosquito Control - Construction of office space - reception area, small conference room, small lab & insectory, staff break room, 2 bathrooms and storage closets		400.0			BOND
Milford Mosquito Control - Sitework for new office and storm water management facility		125.0			BOND

DNREC - Div. of Fish and Wildlife Wildlife/Fisheries Capital Plan FY 2015 - FY 2018					
Project Name **($ in thousands)**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**NOTE:**
Milford Mosquito Control - Increase Size of Climate Control of Pesticide Storage Area			4.0		BOND
Milford Mosquito Control - Office furniture and lab equipment		30.0			BOND
Milford Mosquito Control - Replace old Windows			1.5		BOND
Milford Mosquito Control - Hook-up Entire Facility to Milford City Sewer Service		15.0			BOND
Milford Mosquito Control - Remove Old Office Buildling		25.0			BOND
Milford Mosquito Control - Construct Vehicle Wash down pad with Containment System for Pesticide/oil/grease rinsates			50.0		BOND
Milford Mosquito Control - Further Remediate old DDT/DDE Residues Found in Garage Flooring and Associated Soils and on Numerous Garage/Shop Surfaces.			35.5		BOND
Boat Storage Sussex County Enforcement			50.0		BOND
Bowers Enforcment Dock		130.0			BOND
Critical Equipment	606.0	672.4	500.0	500.0	BOND
Scotton Landing Boat Access Rehabilitation and Fish Pier (Fisheries)	475.0				ASF/NSF
Augustine Beach Fishing Access Area Reconstruction/Maintenance Dredging	250.0		2,000.0		ASF/NSF/BOND
Churchman's Marsh Boat Ramp Rehabilitation (Fisheries)				250.0	ASF/NSF
Woodland Beach Inland Ramp Rehabilitation (Fisheries)				75.0	ASF/NSF
Massey's Mill Pond Ramp Improvement (Fisheries)				75.0	ASF/NSF
Port Mahon Fishing Piers (Fisheries)				300.0	ASF/NSF
Coursey Pond Bulkhead Repair (Fisheries)				275.0	ASF/NSF
Broad Creek Fishing Pier Improvements (Fisheries)				75.0	ASF/NSF
Becks Pond Launch Area Dredging (Fisheries)			250.0		Bond
Phillips Landing Boat Ramp Rehabilitaiton (Fisheries)	1,500.0				ASF/NSF

DNREC - Div. of Fish and Wildlife Wildlife/Fisheries Capital Plan FY 2015 - FY 2018					
Project Name **($ in thousands)**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**NOTE:**
Rosedale Beach Courtesy Dock Replacement	50.0				
Rosedale Beach Ramp Area Dredging (Fisheries)			500.0		ASF/NSF
Records Pond Launch Area Dredging (Fisheries)			150.0		ASF/NSF
Repaving Fishing Access Area Parking Lots (Fisheries)	600.0	600.0	300.0		ASF/NSF/BOND
Rosedale Fishing Area Upgrades (Fisheries)		200.0			ASF/NSF
Collins Beach Hydrographic (Fisheries)			25.0		ASF/NSF
Collins Beach Dredging (Fisheries)			100.0		ASF/NSF
Abbotts Barrier-free Fishing Pier Installation (Fisheries)				150.0	ASF/NSF
Blair's Pond Barrier-Fishing Pier Installation (Fisheries)				150.0	ASF/NSF
Woodland Beach Bayfront Ramp (Fisheries)				100.0	ASF/NSF
Seaford Boating Access Docks Lighting (Fisheries)					ASF/NSF
Becks Pond Barrier - Fishing Pier Installations (Fisheries)			150.0		ASF/NSF
Cedar Creek Prominade Repair					ASF/NSF
Wagamonds Pond Fish Pier Repairs					ASF/NSF
Fleetwood Pond Launching Area	400.0				ASF/NSF
Soil and Water/Lewes FD/Enforcement Dock Extension	250.0				NSF
Cedar Creek Enforcement Dock Roof Extension	250.0				ASF/NSF
Little Creek Enforcement Shop Dry Stack Storage	250.0				BOND/ASF/NSF
Old Furnace Enforcement Dry Stack Storage	250.0				BOND/ASF/NSF
Little Creek Enforcement Shop Painting and Exterior Repairs	50.0				BOND/ASF/NSF
Artificial Reef Program (Fisheries)	600.0	600.0	600.0	600.0	NSF - annual reef deployments ongoing
Dobbinsville (New Castle) Fishing Pier		100.0	2,000.0		ASF/NSF/BOND
Courtesy Docks in all F&W Ponds			1,000.0		BOND
Owens Station	950.0	750.0			

DNREC - Div. of Fish and Wildlife Wildlife/Fisheries Capital Plan FY 2015 - FY 2018					
Project Name **($ in thousands)**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**NOTE:**
Mainteance of F&W state-owned dams and dikes					Bond - High Hazard Dame and Dike Repair or Replacement. Project priorities assigned through the Division of Watershed Stewardship
TOTAL	**11,508.9**	**19,177.4**	**13,266.0**	**4,100.0**	

Revised February 13, 2015 based on new federal funding opprotunities and match.

Support Healthy Families

Statewide Trails and Pathways

The First State Trails and Pathways Initiative is a statewide network of new and enhanced trails and pathways for residents and visitors for walking, biking, hiking and active living. The Initiative has far-reaching advantages – boosting Delaware's economy, benefiting local businesses, and promoting the continued growth of the state's recreation and tourism industries. By offering people places to walk, run or ride, trails and pathways allow them to connect with the outdoors and live healthier, more active lifestyles.

Governor Markell's Initiative is a partnership led by DNREC and DelDOT with regional and local organizations and government partners.

At 3.2 miles long, the Gordons Pond Trail in Cape Henlopen State Park is part of a 15-mile regional trail network connecting Lewes and Rehoboth.

Accomplishments: 2014

- **Cape Henlopen State Park** – 3.2-mile Gordons Pond Trail; links northern and southern areas of the park and is part of a 15-mile loop connecting Lewes and Rehoboth
- **Delaware Seashore State Park –** 2 miles of pathways connecting beach, campgrounds, and fishing areas; project is part of the Inlet Bridge redevelopment
- **Brandywine Creek State Park –** Accessibility and safety repairs made to the historic Swinging Bridge; temporary Rocky Run Bridge installed
- **Michael Castle Trail** – Phase II construction (0.9 miles) completed by DelDOT in partnership with DNREC; segment connects to a 0.4-mile section under construction by Delaware City
- **Lums Pond State Park** – 0.7 miles of new and reconstructed trail completed
- **Trail Markers & Information** – New trail markers installed in Alapocas, Brandywine Creek, Delaware Seashore, and Trap Pond State Parks; trailhead information boards installed in Cape Henlopen and Delaware Seashore State Parks and at the Michael Castle Trail

- Trail-related activities are the number one outdoor recreation activity in Delaware; more than half of our residents want more trail-related opportunities. (source: State Comprehensive Outdoor Recreation Plan)
- Delaware's 571 miles of trails serve both recreational trail users and the active transportation community. Trail networks serve hikers, walkers, runners, mountain bikers, bicyclists, equestrians and nature enthusiasts.
- In greater Newark, 52,538 people live within a ten minute bike ride of the area's 18 miles of shared use trail.
- State Park trail projects focus on completing trail network gaps and making connections to communities and local parks. State Wildlife area projects expand Bayshore nature-based recreation.

FY 2016 Funding Request: $3 Million

- **White Clay Creek State Park** – Design of a 0.5-mile Pomeroy Trail extension to the Park Office
- **Brandywine Creek State Park** – Resurface a 1.5-mile trail to improve accessibility and safety; connection to the First State National Historical Park
- **Cape Henlopen State Park** – Construct a 1.25-mile trail from the park entrance to the Lewes-Rehoboth Canal
- **Lums Pond State Park** – Construct a 0.5-mile link to the Michael Castle Trail at C&D Canal; design a 2.75-mile pathway through the park
- **Bayshore sites** – Construct a 0.2-mile trail and platform for wildlife observation

The historic Swinging Bridge in Brandywine Park was reconstructed to improve safety and accessibility. It is a key connection in the regional network of trails and pathways in Wilmington.

Trail Benefits

- **Economic** – A trail can bring at least $1 million annually to a community, depending on how the area embraces a trail.
- **Health** – In Delaware, one-third of adults and 40% of children ages 2 to 17 are overweight or obese. Trails and parks provide a means for children and families to be physically active and live healthy lifestyles.
- **Jobs and Tourism** – Trails generate revenue for small businesses, restaurants, gear/bike shops, and lodging, supporting local economies.
- **Environment** – Bicycling and walking for recreation, work, and everyday activities save on fuel costs and improve air quality. By biking or walking one mile, nearly one pound of carbon dioxide auto emissions is eliminated.

Current Trail Projects: FY 2015

Auburn Heights Preserve – 2.3 miles of trails will be built in winter 2014-2015 (Phase II)

Northern Delaware Greenway Trail

- **Alapocas Run State Park** – Resurface 0.6 miles to improve accessibility in 2015
- **Brandywine Creek State Park** – Design and construct Rocky Run Bridge replacement; open in spring 2015; existing bridge damaged by repeated storms

White Clay Creek State Park

- **Tri-Valley Trail** – Design resumes January 2015 on a 2.8-mile segment with new access and parking areas; construction in fall 2015; FY 2015 funds obligated to design/construction
- **Pomeroy Trail** – Resurface 1 mile to improve accessibility
- **Lums Pond State Park** – A 0.75-mile trail segment is under reconstruction, part of the 6.4-mile Swamp Forest Trail that loops the park; 5.5 miles have been reconstructed

C&D Canal Conservation Area

- **Michael Castle Trail** – In partnership with DelDOT and DNREC Division of Fish and Wildlife, designing Phase III (4.75 miles) linking the DE/MD state line

Other State Trails

- **Fort DuPont State Park, Bayshore site** – Design 1.5 miles of trail linking Delaware City, Fort DuPont, and C&D Canal
- **Augustine Wildlife Area, Bayshore site** – 0.45 miles of trail and viewing platforms are in design; construction in 2015
- **Cape Henlopen State Park –** Collect survey and baseline data for a 1.8-mile trail between the park entrance and city of Lewes; segment is part of the Georgetown-Lewes-Cape Trail and fronts the Cape May-Lewes Ferry
- **Assawoman Canal Trail –** Construct 1.1-mile trail that connects Ocean View and Bethany area communities

FY 2017-2018 Funding Request for New Trails: $3 Million/Year

- White Clay Creek State Park - 3.5 miles
- Lums Pond State Park - 2.75 miles
- Assawoman Canal Trail - Rt. 26 trail underpass
- Augustine Wildlife Area - 1 mile
- Little Creek Wildlife Area - 0.5 mile
- Woodland Beach Wildlife Area, Aquatic Resources Education Center (AREC) - observation platform
- Ted Harvey Wildlife Area - 0.5 mile

DNREC Trails Project Development Projections - Parks/ F&W (Updated Feb-2015)	Project Stage	Actual or Projected BB $ (thousands)	Other Funds	Match Source or Other Funds	Calendar Year Schedule	Notes
FY13 ($3M BB) 7/1/13 to 6/30/13						
Assawoman Canal Trail	Design		$244.5	DTF	Fall 2014	design 90% complete
Cape - Gordons Pond Trail - with new trailhead at Herring point (3.9 mi)	construction	2,688.0			Spring 2014	complete
FY13 Total		**$2,688.0**	**$244.5**			
FY14 ($2.925M BB) 7/1/13 to 6/3014						
Auburn Heights Preserve - Phase 2 trail (2.3mi)	Construction	960.0			Fall 2014	Under contract; complete fall 2014
Assawoman Canal Trail - Phase 1 (1.0 m)	construction	136.6	546.6	RTP	Fall 2014/winter 2015	Earmarked BB funds for construction: RTP grant submission in August for FHWA approval
Brandywine Park - Swinging Bridge deck replacement for accessibility, paint bridge	complete	517.5			Summer -Fall 2014	Complete
Brandywine Park & Alapocas Run - N.Del Greenway Trail surface upgrade for accessibility/sustainability at Condos and Alapocas Run (former easement area)	Design/construction	138.9			TBD	Resurfacing must be completed by 10/1/2015 as per landowner donation requirements.
Brandywine Park - NDGW trail additional engineering near condos	Engineering	11.1				
Brandywine Creek SP - Rocky Run replacement bridge	Design	958.5			Summer-Fall 2014	
Brandywine Creek SP - Rocky Run temporary bridge	Installed	41.3			Winter-Spring 2015	
DSSP Inlet Pathways (2.0 mi)	Construction		230.0	FHWA/DelDOT	Spring 2014-Summer 2015	
Trap Pond SP - Loblolly Trail (Bethesda) trailhead	construction	62.7				
Augustine Wildlife Area - Wildlife Viewing Trail Port Penn office (1.0 mi)	In house design				Winter 2014	
New Castle Dike Trails	Complete	69.0				complete
FY14 Total		**$2,895.6**	**$776.6**			
FY15 ($2.55M BB) 7/1/14 to 6/30/15						
White Clay - Tri-Valley Trail (2.8mi) Possum Hill Area to Corner Ketch community connector trail	resume design; complete construction	2,400.0	600.0	RTP	Summer-Fall 2015	
Cape Henlopen - easternmost segment of Georgetown-Lewes-Cape Trail, Freeman Hwy to park entrance (1.25mi)	Survey	50.0			TBD	
Lums Pond - Buck Jersey Road Trail (2.75mi)	Design	25.0		CIAC	Winter-spring 2015	Use remaining CIAC and new CTF to match BB
Augustine Wildlife Area - Yardly Dale Trail & viewing platform (0.2 mi)	Design		120.0	Fed Byway - Bayshore BB	Fall 2014	50/50 match
Augustine Wildlife Area - Cooper Cross Trail & viewing platform	Design concept		51.0	Fed Byway - Bayshore BB		50/50
Augustine Wildlife Area- Cooper Cross Trail & observation platform	Final Design		TBD	Fed Byway - Bayshore BB	Winter-spring 2015	6' wide stone $4/sq ft
Augustine Wildlife Area - Wildlife Viewing Trail Port Penn office (1.0 mi)	Construction		TBD	Fed Byway - Bayshore BB	Winter-spring 2015	6' wide stone $4/sq ft
Fort DuPont - Delaware City connector trail, Fort DuPont to Grassdale to C&D Canal (1.5mi)	Design	60.0	240.0	Fed Byway	Winter to Spring 2015	match for federal grant
FY15 Total		**$2,475.0**	**$771.0**			
FY 16 ($3.0M BB GRB) 7/1/15 to 6/30/16						
C&D Canal - Lums Pond SP to Castle Trail (0.5)	Contruction	20.0	80.0	RTP	Spring 2016	Coincide with Stateline trail construction

DNREC Trails Project Development Projections - Parks/ F&W (Updated Feb-2015)	Project Stage	Actual or Projected BB $ (thousands)	Other Funds	Match Source or Other Funds	Calendar Year Schedule	Notes
White Clay - Pomeroy Trail, Hopkins to Park Office (1.0 mi) & 90 ft bridge - partial design complete	Bridge design	100.0	10.0	RTP	Winter - Spring 2015/16	
Auburn Heights Preserve - Phase 3 (0.2mi) and 2 bridges	construction		2,500.0	NVF Strategic Sites BB	Summer 2016	
Lums Pond - Buck Jersey Road Trail (2.75mi)	Design	200.0	40.0	RTP	Fall 2015	
Cape Henlopen - easternmost segment of Georgetown-Lewes-Cape Trail, Freeman Hwy to park entrance (1.25mi); may include trail connection to DRBA L&R Canal bridge	Design/Construction est.	2,000.0			Fall 2015 - Spring 2016	
Brandywine Creek SP - Creek Rd Trail, Thompson Station area to Ramsey Rd. Project in conjunction with NPS, First State National Monument (2.0 mi)	Design/construction	1,000.0			Winter 2016	Coincide with FSNMonument Trail expenditures
Augustine Wildlife Area - Yardly Dale Trail & viewing platform (0.9 mi)	Construction	40.0	160.0	Fed Byway	Winter-spring 2015	4' wide stone $4/sq ft
AREC Bayshore Byway Information Center- Taylors Gut Wildlife viewing Trails and Observation Blind (0.25 mi)	Design		TBD	Fed Byway	Winter 2015-Spring15	6' wide stone $4/sq ft
Ted Harvey Wildlife Area - Morris Tract viewing trail and observation platform (1.0 mi)	Design		150.0	Bayshore BB	Summer 2015-Spring 2016	6' wide stone $4/sq ft
Little Creek Wildlife Area Bayshore Visitor Center and viewing trail (0.5 mi)	Design		56.0	Fed Byway	Fall 2015	6' wide stone $4/sq ft
FY16 Total		**$3,360.0**	**$2,996.0**			
FY17 ($3M BB projected request) 7/1/16 to 6/30/17						
Fort DuPont - Delaware City connector trail, Fort DuPont to Grassdale to C&D Canal (1.5mi)	Construction		1,010.0	TBD	TBD	
Lums Pond - Buck Jersey Pathway (2.75mi)	Construction	2,000.0		CTF	Fall 2016	6' asphalt
Assawoman Canal Trail - phase 2, Route 26 underpass	Design/Construction	1,010.0			Winter 2016	8ft asphalt
Augustine Wildlife Area - Lang Marsh Loop (1.0 mi)	Construction	120.0	126.0	Bayshore BB	Fall 2016	6' wide stone $4/sq ft contingent upon levee and water control structure repairs
AREC Bayshore Byway Information Center- Taylors Gut Wildlife viewing Trails and Observation Blind (0.25 mi)	Construction	6.3	25.3	Fed Byway	Winter 2015-Spring15	6' wide stone $4/sq ft
Ted Harvey Wildlife Area - Morris Tract viewing trail and observation platform (1.0 mi)	Construction		150.0	Bayshore BB	Summer 2015-Spring 2016	6' wide stone $4/sq ft
Little Creek Wildlife Area Bayshore Visitor Center and viewing trail (0.5 mi)	Construction	14.0	56.0	Fed Byway	Fall 2015	6' wide stone $4/sq ft
FY17 Total		**$3,150.3**	**$1,367.3**			
FY18 ($3M BB projected request) 7/1/17 to 6/30/17						
DelSeashore - Assawoman Canal Trail Phase 3 (1.5mi)	Design/construction	3,000.0				
Little Creek Wildlife Area - wildlife viewing trail loop-contingent and Town of Little Creek connector trail (0.5 mi)	Design	14.0	56.0	Fed Byway	Winter 2017	6' wide stone $4/sq ft
Ted Harvey Wildlife Area to St Jones Reserve Trail Connector enhancements and extention (0.5 mi)	Design / Construction	18.0	72.0	Fed Byway	Spring 2017	6' wide stone $4/sq ft
FY18 Total		**$3,032.0**	**$128.0**			
		$17,600.9	**$6,283.4**			

CMAQ – Congestion Mitigation Air Quality
CTF – Community Transportation Fund
DTF – Delaware Land and Water Conservation Fund
HSCA – Hazardous Substance Cleanup Act
RTP – Recreational Trail Program
TE/TAP – Transportation Enhancement / Transportation Solutions Program

Tourism and Critical Infrastructure

Shoreline and Waterway Management

Shoreline Management

Delaware's ocean and bay beaches are among the most prized in the nation. From 2012 -14 Delaware's 26 miles of ocean beaches were ranked first in the nation for beach water quality. Bay beaches are a vital component of the Delaware Bayshore Initiative, as a world-class conservation and low-impact recreation area.

Beach nourishment protects our infrastructure and property from flooding and storms and ensures that Delaware is prepared for the impacts of future storms. Nourished beaches are vital to tourism, job growth and the state's economy.

Shoreline management work is done only on publicly accessible beaches and may involve cost sharing with the federal government.

With our beach water quality and nationally-recognized beach nourishment projects, Delaware has emerged as one of the nation's most pristine beach destinations.

Beach nourishment at Dewey Beach

Economics:

- Delaware's coastal economy has a significant impact on our overall economy, generating almost $7 billion annually.
- Our coastal economy generates $711 million in tax revenue and supports almost 60,000 jobs.
- Beach tourism provides more than 10% of the state's total employment taxes and business production.

FY 2016 Funding Request: $6.5 Million

- $1.5 million to support the State's minimum commitment for shoreline protection for state and federal cost share projects.
- Federal beach nourishment projects are undertaken with the federal and state governments sharing the costs on a 3-5 year cycle for 50 years (federal 65%; state 35%).
- Adequate funding must be maintained to provide the non-federal share of this work.
- The funds requested will also support the implementation of Phase I of the Delaware Bay Beach Management Plan.

Hurricane Sandy damage near Indian River Inlet

Walking on Bowers Beach

The Beach Preservation Program includes:

- Regulations in support of the Beach Preservation Act to protect dunes and beaches
- Beach nourishment
- Structural erosion control measures
- Public dune maintenance
- Emergency storm repair and cleanup

Delaware was awarded $30 million in federal Hurricane Sandy relief funding to restore ocean beaches to pre-Sandy conditions.

Current Projects: FY 2014 - 2015

- Beach nourishment (ocean and bay beaches): During FY 2014, beach nourishment funding was obligated to bay and ocean beach projects as federal nourishment projects were needed.
- Indian River sand bypass and crane replacement/ rehabilitation: Protects Rt. 1 and the Indian River Inlet Bridge

Accomplishments: FY 2014 - 2015

Hurricane Sandy federal relief funding

- 2 million cubic yards of sand were pumped back on ocean beaches from Lewes to Fenwick Island.
- 500,000 cubic yards of sand were pumped onto the north shore of the Indian River Inlet to provide a greater level of protection for Rt. 1 and the Indian River Inlet Bridge.

Delaware Bay Beaches Replenishment

- With storms and erosion threatening several bay communities, reaching an agreement on investment policy for beach replenishment and road repair is vitally important.
- An economic study has been completed to inform state and local governments on short and long-term policy questions associated with making public investments in bay beach communities.
- Existing revenues from hotel accommodations will not be sufficient to meet needs for future ocean and bay projects.
- Examination of local share to support beach management is warranted.

FY 2017 - 2018 Funding Needs: $6.5 Million/Year

- Ocean beach nourishment projects: $18 million+ in state share for $51.5 million in federal projects over the next 3 to 5 years
- Bay beach projects: $28 million

Tourism and Critical Infrastructure

Shoreline and Waterway Management

Waterway Management

DNREC has been responsible for performing waterway management operations statewide since 1970. To ensure safe navigation for the boating public, the agency maintains adequate depths in waterways through dredging and sediment management, places aids to navigation to properly mark channels, and removes obstructions such as debris and derelict structures.

Mechanically harvesting nuisance build-ups of macro-algae in the Inland Bays helps to improve water quality, aesthetics and boating access. A major emphasis is being placed on using dredged material for beneficial purposes, including nourishing eroded shorelines and restoring wetlands.

Macro-algae harvester operating in South Bethany lagoon

Installing channel markers in the Inland Bays

Economics:

- With almost 60,000 boats registered in Delaware, boat owners rely on safe and navigable channels and waterways.
- Improving navigation of our waterways supports our economy, tourism and commercial and recreational boating and fishing.
- The beneficial use of clean dredged material from navigation projects is the most cost effective way to nourish eroded beaches.
- In recent years insufficient funding of federally authorized waterway management projects has resulted in many of these projects defaulting to the state.
- Since the beginning of Waterway Management Operations, there has been a need for a steady, reliable and dedicated source of funding.

FY 2016 Funding Request: $1.5 Million

- $350,000 for planning, engineering, design and permitting for maintenance dredging of the federal navigation channel in the Lewes-Rehoboth Canal, including beneficial use options
- $200,000 for maintenance dredging of the Assawoman Canal, the University of Delaware College of Marine Studies Harbor and the Delaware City Mooring Basin
- $550,000 for engineering analysis/options to reduce shoaling in Massey's Ditch and to develop a regional sediment management plan for Indian River Bay
- $400,000 for ongoing waterway management operations throughout the state, including $50,000 for the University of Delaware Citizen Monitoring Program in the Inland Bays

Accomplishments/Current Projects

FY 2014 - 2015:

Navigational Channel Improvements:

- In FY 2014, Bond Bill funds were used to dredge the Murderkill River entrance channel, a federal navigation channel. Suitable beachfill quality sand that was dredged from the channel was used to renourish South Bowers Beach.
- Bond Bill funds were used to initiate planning, engineering design including beneficial use options, and permitting for dredging of the Little River and restoration of Holt's Landing State Park.
- In FY 2015, $1.2 million has been obligated to maintenance dredge the Little River as part of DNREC's Bayshore Initiative. Channel improvements are also underway in Indian River.

Waterway Management Operations:

- Over the past 3 years microalgae has been harvested in the inland bays on a limited basis (3 - 4 weeks per year).
- $625,000 has been obligated in FY 2015 for the purchase of a new dredge, navigational channel marking, macro-algae harvesting, abandoned vessel/ derelict structure and debris removal, and the University of Delaware Citizen Monitoring Program.
- The Delaware Waterways Management and Financing Advisory Committee was established by Senate Concurrent Resolution No. 64 of the 147th General Assembly (2014). The Committee was directed to develop recommendations for sustainable and dedicated funding for Waterway Management activities statewide. The findings of the committee will be presented to the General Assembly during the current session.

Waterway crew removing downed trees and debris from a waterway

Waterway Management Operations include:

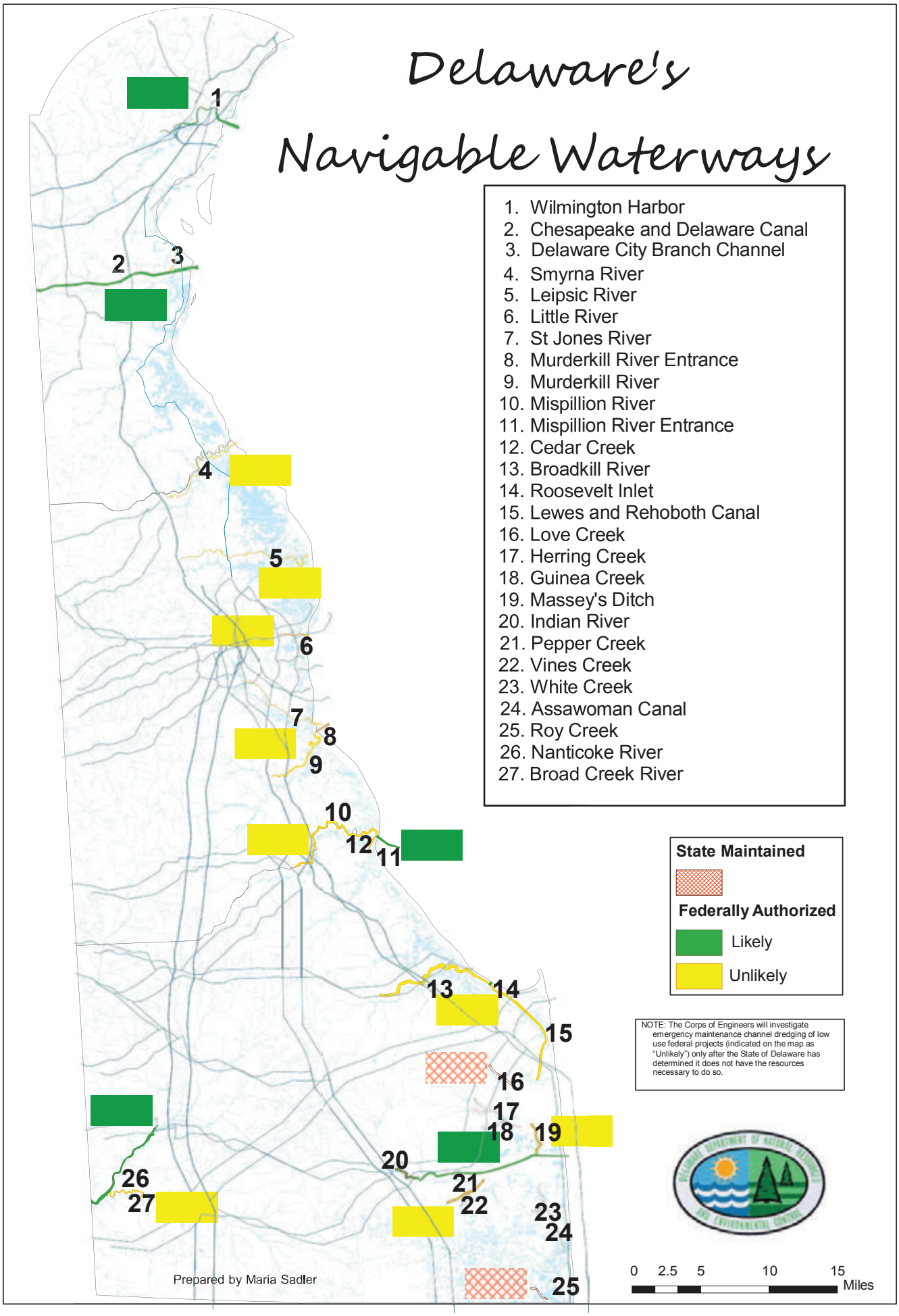
- Navigational channel dredging, including beneficial use of dredged material
- Placement of aids to navigation primarily in the Inland Bays
- Macro-algae harvesting in the Inland Bays
- Abandoned vessel/derelict structure removal

Dredge operating in Pepper Creek with beneficial use marsh restoration project in the background. Material being dredged is applied by thin-layer aerial application to the sinking marsh to raise elevation.

FY 2017 - 2018 Funding Needs: $3 - $5 Million/Year

- $3.7 million for maintenance dredging of the federal navigation channel in Massey's Ditch and restoration of island habitat at nearby Middle Island
- $2.5 million for maintenance dredging and construction of the Lewes-Rehoboth Canal, including beneficial use options, maintenance dredging at Assawoman Canal and Indian River Inlet Marina, and planning, engineering, desiging and permitting of a project in Herring Creek
- $5.75 million to construct Herring Creek and shoaling reduction structures, and planning, engineering, designing and permitting projects in Love Creek and White Creek
- $550,000 annually for operations and maintenance for channel marking, macro-algae removal, abandoned vessel/derelict structure and debris removal, and the University of Delaware Citizen Monitoring Program

Delaware's Navigable Waterways



DNREC Watershed Stewardship - Shoreline and Waterway Management

Capital Project Priorities FY2015-2019

Last Update: 03/01/2015

Funding Sources	1-Jul-2014 Balance	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
(federal share)						
Annual DCPP Sand Bypass Grant - 40633 (5-Year Average of Federal Reimbursement)		390,000	390,000	390,000	390,000	390,000
(state share)						
Bond Appropriation Beach - 10251/25338 (1)	-	-	-	6,500,000	6,500,000	6,500,000
Bond Appropriation Waterway Dredging- 10251(1)	673,238	1,140,500	1,140,500	1,140,500	1,140,500	1,140,500
Bond Appropriation Waterway - Navigation & Waterway Operations		350,000	350,000	350,000	350,000	350,000
Bond Appropriation Waterway - UD Citizens Monitoring		50,000	50,000	50,000	50,000	50,000
Annual GF Sand Bypass - 00374	-	80,000	80,000	80,000	80,000	80,000
Annual GF Shoreline & Waterway - 00150/00160	-	205,500	205,500	205,500	205,500	205,500
Hotel Accomodation Tax - 76500/30065	9,052,824	2,225,000	2,225,000	2,225,000	2,225,000	2,225,000
Schedule of Recycling Loan Repayment - 76500 (2)	-	-	-	-	-	-
Total Estimated Funding	**$9,726,062**	**$4,441,000**	**$4,441,000**	**$10,941,000**	**$10,941,000**	**$10,941,000**

Project Expenditures/Encumbrances		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
(state share)						
NOURISHING OCEAN BEACHES: (3)						
Rehoboth-Dewey		81,000	4,119,000	81,000	81,000	4,119,000
Lewes			45,000	45,000	45,000	1,344,800
Bethany-South Bethany			3,581,000	81,000	81,000	3,581,000
Fenwick Island			150,000	5,150,000	150,000	150,000
Broadkill			81,000	81,000	81,000	81,000
Indian River Sand Bypass Operations, Crane & Facility Improvements (5-Year Average of Federal-40.75 and State-59.25 Shares)		950,000	950,000	950,000	950,000	950,000
Annual Shoreline Operations Contractual Maintenance, Equipment, Supply, and Personnel		350,000	350,000	350,000	350,000	350,000
NOURISHING BAY BEACHES(4)						
Pickering Beach (plan./eng., truckfill/prop. access, beachfill, truckfill)				2,000,000		225,000

DNREC Watershed Stewardship - Shoreline and Waterway Management						
Capital Project Priorities FY2015-2019						
Last Update: 03/01/2015						
Funding Sources	1-Jul-2014 Balance	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Kitts Hummock (plan./eng. & truckfill, truckfill/prop. access, beachfill)			150,000	3,000,000		
Bowers (plan./eng., jetty construction, beachfill)		1,700,000	2,000,000			
South Bowers (plan./eng., jetty construction, beachfill)			3,250,000	1,500,000		
Slaughter Beach (plan./eng., beachfill)				4,620,000		
Prime Hook (plan./eng., beachfill)						
Broadkill Beach (truckfill, fed project maintenance- e.g. crossovers)		2,000,000				
Lewes (truckfill)			500,000			
Cape Shores (truckfill)					500,000	
Annual Waterway Operations Contractual Maintenance, Equipment, Supply, and Personnel		350,000	350,000	350,000	350,000	350,000
Dredge Acquisition - NCCD		260,000				
Annual Waterway - UD Citizens Monitoring		50,000	50,000	50,000	50,000	50,000
NAVIGATION / DREDGE PROJECTS[5]						
Massey's Ditch (planning/engineering, construction)		370,000	3,700,000			
Little River (planning/engineering, construction)		1,300,000				
Lewes-Rehoboth Canal (planning/engineering, construction)			350,000	2,000,000		
Herring Creek (planning/engineering, construction)				350,000	2,000,000	
Love Creek (planning/engineering, construction)					350,000	2,000,000
White Creek (planning/engineering, construction)					350,000	2,000,000
Mispillion River (planning/engineering, construction)		40,000	1,409,965			
Indian River (in-house construction)						
Holt's Landing(planning/engineering,in-house construction)		150,000				
Delaware City Mooring Basin (in-house construction)						
Indian River Inlet Marina (in-house construction)			75,000			
U of D/CMS Harbor (in-house construction)				50,000		
Total Estimated Expenditures		**7,601,000**	**21,110,965**	**20,658,000**	**5,338,000**	**15,200,800**
Balance of Funding for Planned Projects	9,726,062	6,566,062	(10,103,903)	(19,820,903)	(14,217,903)	(18,477,703)

DNREC Watershed Stewardship - Shoreline and Waterway Management						
Capital Project Priorities FY2015-2019						
Last Update: 03/01/2015						
Funding Sources	1-Jul-2014 Balance	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019

(1) Appropriation is based on actual award balance, recommended, or requested bond funding.

(2) To implement the Universal Recycling legislation and in accordance with Section 89 of the FY2011 Bond Bill (HB500), a loan of $6,500,000 was made to the Universal Recycling Grant and Low Interest Loan Program from the Beach Preservation appropriation. Revenues collected from the Bottle Fee provided for repayments beginning January 2012 and full repayment occurred prior to June 30, 2014.

(3) DNREC's investment in Ocean Beach projects is expected to leverage 2015-2019 US Corp of Engineers (US ACOE) funding of $51.5 million. US ACOE match ratios can vary depending on the beach site with an average cost share ratio of 35:65. State share on non-construction years is for monitoring of project performance.

(4) Bay Beach Projects include consulting services for planning and engineering, estimated truckfill needs, property acquistion for access, and beachfill in accordance with the PBJ&S template. Also annual Bay Beach Maintenance for Broadkill Beach to complete appurtenances for dune, crossovers, etc. as part of the USACOE Main Channel Deeping.

(5) Contractual Navigation Projects include consulting services for planning and engineering and estimated construction costs.

Project Cost Basis: (1) DNREC Annual GF Shoreline & Waterway Budget (dunes, dredge, harvest, channel marking, and facility operations/maintenance); (2) US Army Corp of Engineers 2015-2019 Delaware Ocean Beach Project Schedule; and (3) DNREC 10-Year Bay Beach Management Plan (in accordance with PBJ&S construction template).

Preserve Natural Heritage and Expand Ecotourism

The Delaware Bayshore Initiative

The Delaware Bayshore is widely recognized as an area of outstanding national, hemispheric, and global ecological significance. The Delaware Bayshore was recognized by the U.S. Department of Interior as a keystone conservation and outdoor recreation project area under the America's Great Outdoors program. The goals of the initiative are to protect and restore habitat, enhance recreation and education opportunities that foster support for conservation, and involve Bayshore residents in ways that will help strengthen their communities.

Bayshore Community Partners: Delaware City; Port Penn; Woodland Beach; Leipsic; Little Creek; Pickering Beach; Kitts Hummock; Bowers Beach; South Bowers Beach; Slaughter Beach; Prime Hook Beach; Broadkill Beach; and Lewes.

Today, more than half of the Bayshore region extending from the City of New Castle to Cape Henlopen State Park is protected as national wildlife refuges, state wildlife areas, parks and reserves, farmland preserves, and private conservation lands.

Healthy wildlife and habitats bring ecotourism dollars to Delaware.

Goals of the Bayshore Initiative:

- Conservation
- Outdoor Recreation
- Stronger Bayshore Communities

Outdoor Recreation:

- Delaware's conservation economy (fishing, hunting, and wildlife-watching) is nearly a $315 million industry.
- Wildlife watching in Delaware generates more than $131 million in retail sales and $19.5 million in state and local tax revenues.
- The State's conservation economy supports almost 2,000 Delaware jobs with $77 million in salaries, wages and business owner income.

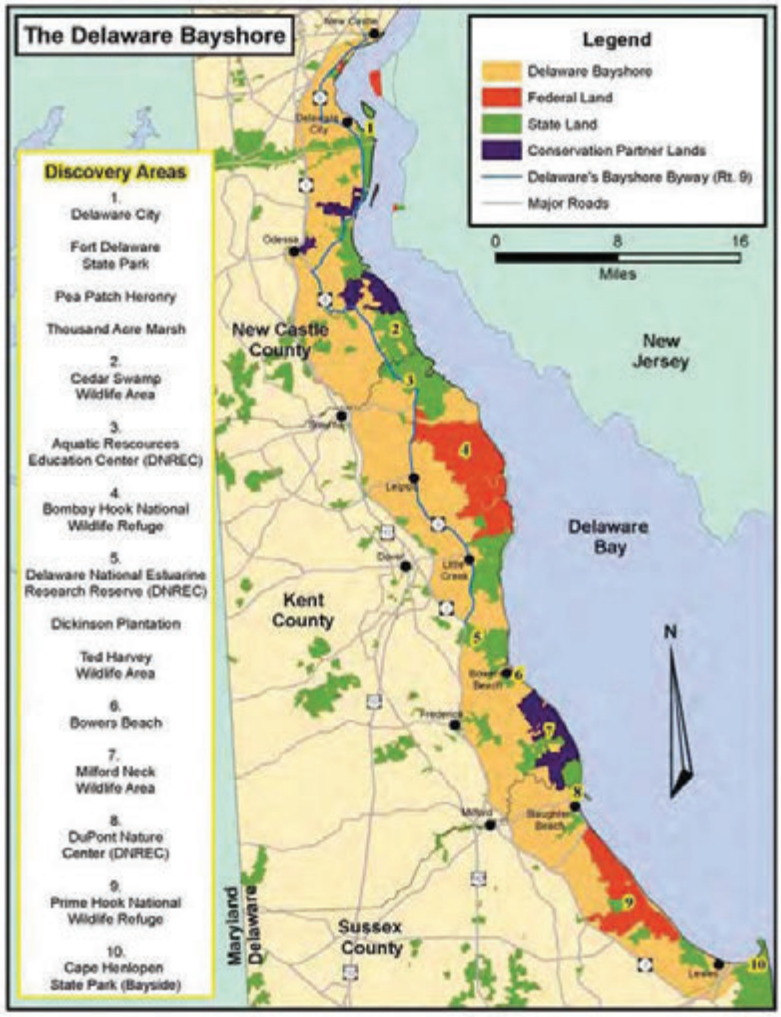
FY 2016 Funding Request: $500,000

- Restore impoundments and Mispillion Harbor
- Construct and improve wildlife-viewing areas at Cooper-Cross tract of Augustine Wildlife Area and Aquatic Resources Education Center at Woodland Beach Wildlife Area
- Design interpretive center and signage at Little Creek Wildlife Area
- Design public-access guide for sites from New Castle to Lewes
- Design interpretive signs for public access sites along Bayshore communities
- Design way-finding kiosk signs along Route 9

FY 2017 - 2018 Funding Needs: $500,000/Year

Continue to support key priorities as per the FY 2016 request

Picturesque town of Leipsic surrounding lush coastal marshes, shoreline, agricultural lands and forests of the Bayshore



Leveraging Funding:

Delaware has been awarded nearly $12.5 million in federal, state and private partner funds for Bayshore projects.

Existing and new resources from: Open Space Program; U.S. Fish and Wildlife Service's Wildlife and Sport Fish Restoration Program; North American Wetland Conservation Act; National Coastal Wetland Conservation Program; Federal Highway Byways Program; Disaster Relief Act of 2012 (Hurricane Sandy); National Fish and Wildlife Foundation; other federal grant programs; department fees and incentive programs; penalty funds and Coastal Zone Act offsets; and private investments.

Current Projects: FY 2014-2015

- **Augustine Wildlife Area - *Yardley Dale and Cooper-Cross Public Access and Wildlife Viewing Enhancements:*** Access road with security gate; parking area with Americans with Disabilities Act compliant spaces; trail; wildlife-observation platform; information kiosks; and upgrades to existing building
- **Aquatic Education Center Bayshore Visitor Center - *Woodland Beach Wildlife Area:*** Outdoor interpretive exhibit area; public restrooms; parking; Taylors Gut wildlife viewing
- **Ft. DuPont State Park/Grassdale:** Design trail connector; interpretive signs; and public restrooms
- **Little Creek Bayshore Visitor Center:** Indoor interpretive exhibit and visitor information area; public restrooms; parking; and trail/wildlife-viewing enhancements
- **Ted Harvey Wildlife Area - *Kingston Upon Hull:*** Security fencing around the structure; stabilize historic building; interpretive signs
- **Bayshore Communities:** Engage local communities to develop and place interpretive signs at key public-access sites at Delaware Bay beaches; and interpretive signs about local wildlife and habitat resources to foster support for conservation
- **Delaware Bayshore Information Resources:** Bayshore branding/marketing campaign; signage and information kiosks; "Thank You Delaware Bay" campaign website; and public-access guides

Accomplishments: FY 2014 - 2015

- Awarded $6.5 million from the federal Disaster Relief Act of 2012
- Installing new canoe launch at the Mallard Lodge
- Constructing wildlife-viewing platform at Yardley Dale Tract of Augustine Wildlife Area
- Designing small vessel boat ramp on Little River at Little Creek Wildlife Area
- Constructing outdoor education pavilion at Blackbird Reserve
- Repairing viewing towers at Little Creek Wildlife Area
- Constructed parking access at new Morris Tract of Ted Harvey Wildlife Area
- Facilitated American Birding Association National Headquarters' move from Colorado to Delaware City

Preserve Natural Heritage and Expand Ecotourism

Redevelopment of Strategic Sites: NVF and Fort DuPont

NVF and Auburn Valley Master Plan

Yorklyn has been an active mill area since the early 18th century. A variety of mills have come and gone – with the largest products being snuff, paper and fibre.

Yorklyn now resembles a ghost town of abandoned mill buildings. The last mill, NVF or National Vulcanized Fibre Corporation, closed in 2009. A public-private partnership has mapped out the future of Yorklyn, which will transform the area into a vibrant, lively and scenic town, while still retaining its mill industry roots.

NVF abandoned mill

History:

NVF declared bankruptcy in 2009 and the contaminated and floodplain sections of the site were abandoned by the company. The state was responsible for the cleanup and demolition costs of the site. All desirable properties would have been sold to developers. During the NVF bankruptcy, a plan to purchase the NVF property was developed using federal flood mitigation grant funds, state Open Space funds and private funds. Auburn Heights Preserve was created through a generous donation of 192 acres of conservation lands from Tom and Ruth Marshall. As a result of state and community efforts, more than 500 acres of contiguous open space have been preserved.

Redevelopment:

- The Auburn Valley Master Plan was created by a partnership of private developers, neighboring organizations and several divisions of DNREC – Parks and Recreation, Waste and Hazardous Substances and Water.
- The public/private partners will clean up contaminated areas, restore floodplains and expand recreational, educational, shopping and dining opportunities.
- A unique trail system will connect these new commercial sites with historic and natural areas, including existing attractions - the Marshall Steam Museum, the Delaware Nature Society, the Center for Creative Arts, and the town of Hockessin.

FY 2016 Funding Request NVF: $2.5 Million

- Continue to restore the floodplain through the former NVF property by removing impervious surfaces and regrading/replanting areas
- Revitalize historic buildings and redesign the site for mixed uses to include retail, restaurant and housing
- Connect sections of trail constructed under the current Gun Club Road contract, using historic bridges rescued from other states' projects. This historic "bridge park" will create a destination within the park itself.

NVF Project Accomplishments FY 2013 - 2014:

- Demolished the NVF Corporate Office, the zinc and water treatment facilities and several mill buildings
- Removed asbestos and hazardous materials
- Completed historic documentation of the Marshall Brothers Paper Mill and stabilized the office for reuse as the new park office
- Opened the first phase of the Auburn Heights Trail

NVF Projects Underway: FY 2015

- Sampling for soil contaminants
- Construction of the new Gun Club Road with completion in spring 2015; the second phase of trails under contract and ready for construction after permitting is complete
- Design and permitting of bridges connecting the property and trail segments
- Stabilize the Marshall Brothers Paper Mill roof
- Design and bidding of on-site utilities allowing for redevelopment; eliminate remaining asbestos on-site

Fort DuPont/Governor Bacon complex:

The Fort DuPont/Governor Bacon complex of 443 acres near Delaware City is designated as a National Historic District. The complex includes Fort DuPont State Park, Governor Bacon Health Center and a group of state-owned buildings and residences, many of which are vacant.

The property has enormous potential as a sustainable, mixed-use community that will produce revenue, jobs, housing choices, and recreational and other amenities while preserving its historic character. The concept will integrate well with the future growth of Delaware City and with state and federal investments that support the Bayshore Initiative.

Fort DuPont Project Accomplishments FY 2013-2014:

A Fort DuPont Master Plan was been developed by a diverse group of state and local stakeholders and community members. Project consultant, Sasaki Associates, solicited public comment and held several meetings with stakeholders and the community. A Fort DuPont Redevelopment and Preservation Corporation was created by statute to implement the Master Plan.

FY 2016 Funding Request Fort DuPont: $1.0 Million

Support the mission of the newly created Fort DuPont Redevelopment and Preservation Corporation to implement the components of the Fort DuPont Master Plan

- Major components of the Fort DuPont Master Plan are expected to be completed within 5 to 10 years.

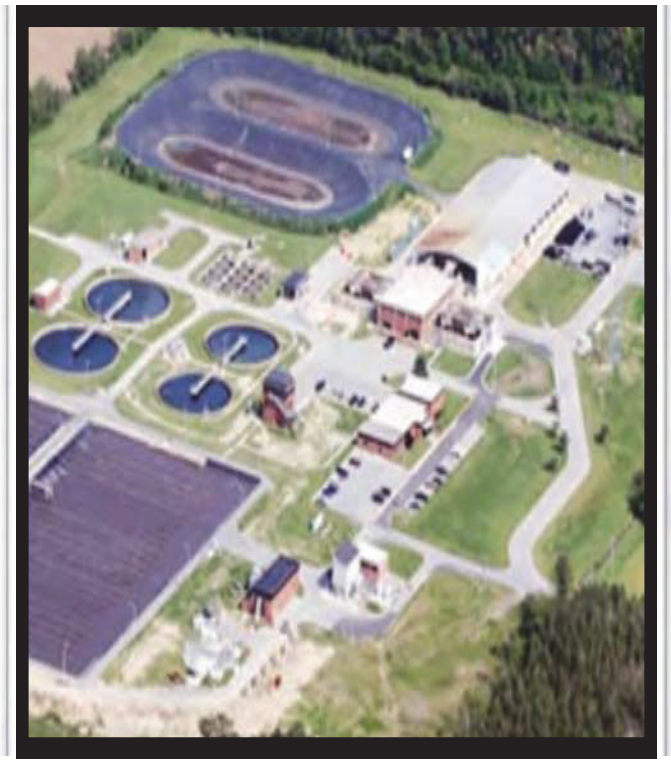
Funding Needs NVF/Fort DuPont: FY 2017-$3.5 Million; FY 2018-$2 Million NVF:

- Transform the Marshall Brothers Paper Mill into a museum that highlights how paper is made and the history of the mill site and the Yorklyn region
- Continue to expand the network of trails that will link redeveloped areas and include a six-mile loop connecting Auburn Heights, the Marshall Brothers Paper Mill, the main NVF mills, the Delaware Nature Society's Ashland Nature Center and the Center for Creative Arts in Yorklyn
- Finalize flood control measures across the Yorklyn area in the form of wetlands and retention areas

Fort DuPont:

- Continue to implement the Ft. DuPont Master Plan through public and private partnerships
- Energize the site by investing in site amenities that will attract visitors and events

Clean Water Infrastructure $865M+



CLEAN WATER

FY2016 REQUEST: $1.4M

FY2016 RECOMMENDED: $1.4M TOTAL

NEED 2016-2018: *$860M+

*$500M+: Wastewater/drinking water upgrades

*OTHER CLEAN WATER PROJECTS

$150M+: Stormwater management upgrades

$75M+: Toxics removal & stream restoration

$75M+: Industrial upgrades

$30M+: Agriculture cost share

$30M+: Conservation/restoration

FUNDING OPTIONS: Bond, Federal, 21st Century, Private, Clean Water for Delaware's Future Initiative

CONSERVATION COST SHARE

FY2016 REQUEST: $1.5M

FY2016 RECOMMENDED: $1.5M

TOTAL NEED 2016-2018: $4.5M

FUNDING OPTIONS: Bond, Federal, Clean Water, Private

CONSERVATION RESERVE ENHANCEMENT PROGRAM

FY2016 REQUEST: $500k

FY2016 RECOMMENDED: $0

TOTAL NEED 2016-2018: $1.5M

FUNDING OPTIONS: Bond, Federal, Clean Water, Private

Clean Water Infrastructure

Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) was authorized by Congress through the Clean Water Act Amendments of 1987. The program is a federal/state partnership that helps communities finance the cost of infrastructure needed to achieve compliance with the Clean Water Act.

Delaware's Clean Water State Revolving Fund program was created by the General Assembly in 1990 and is administered by DNREC's Financial Assistance Branch. The program provides low-cost financing for a wide range of projects that repair and expand wastewater facilities, help homeowners replace failing septic systems, and farmers implement non-point source best management practices. Funds also support construction projects that: control flooding and reduce stormwater runoff and erosion in communities; protect drinking water wells from pollution; protect the water quality of our bays, rivers and streams; and improve energy efficiency at wastewater facilities saving taxpayers money.

How CWSRF works:

- The CWSRF program is funded by annual EPA grants and the required 20 percent state matching funds.
- Funds are loaned out at below-market interest rates, providing a more affordable way for communities and other eligible entities to finance high-cost infrastructure.
- Loan repayments are recycled back into the program to be loaned out for other eligible projects.
- The CWSRF program serves as a revolving funding source that will last into the future.

Wilmington Wastewater Treatment Plant Renewable Energy Biosolids Facility under construction

Water Infrastructure Advisory Council
Projects are reviewed and recommended for funding by the Delaware Water Infrastructure Advisory Council (WIAC). The Council has advisory oversight for the CWSRF and the Drinking Water State Revolving Fund (DWSRF) programs. The 13-member Council, appointed by Governor Markell, advises the Governor and Secretaries of DNREC, Delaware Health and Social Services and Finance regarding the operations of the CWSRF and DWSRF programs.

Smyrna Green Meadows force main replacement

FY 2016 Funding Request: $1.4 Million

- $1.4 million to provide state matching funds for the federal CWSRF capitalization grant. EPA's grant to Delaware is anticipated to be the same or less than the FY 2015 funding level of $7 million.
- The request supports the WIAC and its long-term Wastewater Facilities Funding Plan.

Current Projects Underway

CWSRF Loan	Amount	Project
New Castle County		
City of Wilmington	$36,060,000	Convert digester gas from wastewater treatment plant and landfill gas from Cherry Island Landfill to electric and thermal energy through a cogeneration process to generate 4 MW of power.
City of Wilmington Kentmere Parkway Sewer Separation Project	$1,200,000	Construction of a separate storm drainage system in Kentmere Parkway to remove a large portion of storm water runoff from the existing combined sewer system.
City of Wilmington Wastewater Treatment Plant Influent Flow Metering Project	$1,500,000	Installation of flow meters on three influent force mains discharging to the Screen Building at the Wilmington Wastewater Treatment Plant.
City of Wilmington South Wilmington Wetlands Restoration & Conservation Land Conservation Loan Program	$4,369,740	Acquisition of Properties (21 acres) in the Wilmington Southbridge Area.
New Castle County Municipal Stormwater Projects	$100,000	Supplemental funding for the construction costs associated with the Hills of Hockessin and Airport Industrial Park stormwater projects.
Kent County		
Kent County Levy Court Wetlands Creation Project near Milford	$633,000	Re-establish more than one acre of wetlands within an adjacent floodplain of Double Run, a tributary to the Murderkill River.
Kent County Levy Court East Dover Septic Elimination Project	Funding increased to $1,423,107 *Principal Loan Forgiveness* increased to $1,000,900	Construct a new gravity wastewater collection system to serve three mobile home park communities and nearby isolated occupied lot parcels.
Kent County Levy Court Hilltop Mobile Home Wastewater Construction	$725,000 *Principal Loan Forgiveness* $590,000	Extending gravity sewer to the Hilltop Mobile Home Park.
Sussex County		
Town of Millsboro Kentmere Parkway Sewer Separation Project	$6,336,800 Principal Loan Forgiveness $676,750 USDA loan and grant funds: $14 million	Extend a beneficial reuse main to an aquifer recharge site. The reclaimed water is used to recharge an aquifer in seven rapid infiltration basins. The farm will use a spray irrigation pivot to irrigate crops with groundwater.
City of Rehoboth Beach Sanitary Sewer Line Replacement	$450,000	Replace a sanitary sewer line.

Delaware's CWSRF By the Numbers:

- Since the program's inception, Delaware has received $251.2 million in seed capital; $212.5 million in EPA funds and $38.7 million in state funds.
- 72 municipal loans totaling almost $300 million have been closed.
- The program has created and sustained thousands of jobs, supporting local economies.
- Communities statewide that depend on wastewater systems have benefitted from the CWSRF.

Wilmington Wastewater Treatment Plant under construction

Benefits of the CWSRF Projects:

- Reduce the cost of financing infrastructure projects
- Provide long-term water quality benefits
- Create and support jobs and the economy
- Repair and improve aging water infrastructure
- Protect public health and the environment

FY 2015 CWSRF loan approvals: *$54 million*

Wastewater Projects:

Sussex County

- Angola North Region

City of Rehoboth Beach

- Wastewater Treatment Plant upgrade 1
- Ocean outfall project

City of Lewes

- Highland Acres wastewater collection system
- Savanah Place wastewater collection aystem

DNREC – Division of Parks and Recreation

- Lums Pond utility improvements phase II
- Auburn Heights Preserve master plan sewer upgrade

Green Project Reserve Projects:

DNREC – Division of Parks and Recreation

- Auburn Heights Preserve master plan stormwater management

City of Seaford

- Renewable energy solar generating system for wastewater treatment plant

Wastewater Facilities Assessment Report

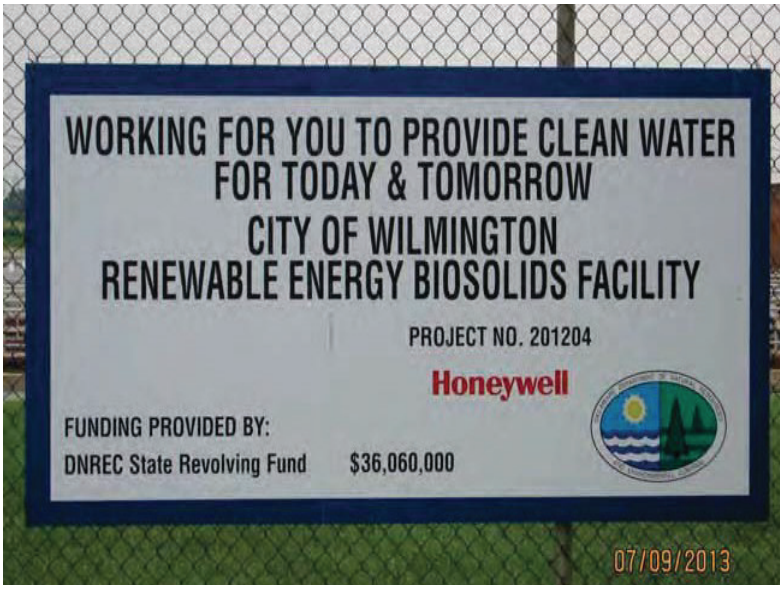
The Council completed a statewide Wastewater Facilities Assessment Report. The study examined the adequacy of existing facilities, the need for improvements and upgrades, estimated costs of capital improvements, system revenues, and user rates from 2011 through 2016.

The report found that the total capital cost needed for wastewater facilities was estimated at $654 million. Municipalities are expected to request approximately $79 million from the CWSRF program.

5-Year Goals:

- Ensure the long-term viability of the Water Pollution Control Revolving Fund (WPCRF) while providing necessary project subsidies.
- Optimize the WPCRF program to address changing loan demand for non-point source concerns and other difficult to finance water quality improvement issues.
- Identify and fund eligible projects located within Delaware's National Estuary watersheds that are consistent with the State's Comprehensive Conservation Management Plans.
- Periodically evaluate additional funding opportunities to meet emerging water quality and public health needs.

Rapid Infiltration Basins (RIBs) under construction in Millsboro



Beneficial reuse pipeline under construction near Millsboro

FY 2017-2018 Funding Needs: $1.4 Million/Year

- Delaware's future capital project needs (wastewater infrastructure) are estimated at $490 million (2014 – 2017).
- This need is based upon the estimated costs for public wastewater systems in New Castle, Kent and Sussex counties.
- During the same time period, the estimated borrower needs from Delaware's CWSRF is $79 million.
- In addition, Delaware's future capital project needs include $150 million for stormwater improvements and $75 million for toxics removal.
- $2 million is needed for the Wastewater Management Account to provide revolving loans and grants that supplement public and private wastewater facility financing, particularly for low-income communities.

NEW CASTLE Feb-15				
Municipality	**Project**	**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
New Castle County	Wilmington, BRANDYWINE HUNDRED SOUTH REHAB PHASE 2		$ 27,250,000	$6,000,000
	Wilmington, SOUTH CHRISTIANA INTERCEPTOR ANALYSIS		$3,500,000	$6,000,000
	Wilmington, BRANDYWINE HUNDRED NORTH REHAB PHASE 2		$20,580,000	$6,700,000
	Wilmington, ELECTRICAL POWER DISTRIBUTION UPGRADES		$250,000	$0
	Wilmington, RICHARDSON PARK PUMP STATION UPGRADE		$ 1,000,000	
	Multiple, SOUTHERN SEWER SERVICE AREA		$9,000,000	$26,950,000
	Multiple, PUMP STATION REHABILITATION		$5,500,000	$800,000
	Wilmington, CHRISTIANA RIVER FORCE MAIN		$3,000,000	$500,000
	Wilmington, SEPTAGE RECEIVING STATION UPGRADE		$1,300,000	$0
	Multiple, COUNTYWIDE MANHOLE REHAB		$4,500,000	$1,000,000
	Multiple, ASSET MANAGEMENT		$1,750,000	$0
	Multiple, DELDOT COORDINATION PROJECT (ON-GOING MAINTENANCE)		$9,600,000	$2,000,000
	Multiple, SEWER REPAIRS & REHABILITATION (ON-GOING MAINTENANCE)		$10,800,000	$2,300,000
	Multiple, COUNTYWIDE TRENCHLESS REHAB (ON-GOING MAINTENANCE)		$5,000,000	$1,000,000
	Wilmington, GLASGOW AREA SEWER IMPROVEMENTS		$1,400,000	$0
	Multiple, BACKWATER VALVE IMPROVEMENT		$400,000	$100,000
	Wilmington, MOT AREA MAINTENANCE BASE		$500,000	$0
	Multiple, WASTEWATER TREATMENT PLANTS/DISCHARGE ELIMINATION AND CLEAN WATER ACT EVALUATIONS		$150,000	$50,000
	Wilmington, MILL CREEK INTERCEPTOR RELIEF		$4,000,000	$1,500,000
	Wilmington, BRANDYWINE HUNDRED CLEARWATER PROGRAM		$2,500,000	$0
	Wilmington, WHITE CLAY SEWER BASIN REHAB		$26,400,000	$0
	Wilmington, NORTH DELAWARE INTERCEPTOR SYSTEM		$33,740,000	$5,900,000
	Wilmington, PIKE CREEK IMPROVEMENTS		$5,250,000	$0
	Multiple, GENERAL SEWER IMPROVEMENT		$2,100,000	$450,000
	Delaware City, DEL CITY SEWER REHAB.		$3,000,000	$0
	Wilmington, KIRKWOOD TRUNK LINE		$6,600,000	
	Delaware City, DEL CITY TREATMENT PLANT REHAB.		$1,250,000	
Town of Middletown	Frog Hollow sludge removal from aeration lagoon (cost a prelim. estimate)		$200,000	$0
	Modification to existing test RIBS on Ford and VonCroy Farms for University Study		$100,000	$0
	RIBS at existing Ford and VonCroy Farms		$0	$2,405,000
	Various upgrades, rehabilitation, and new installations to laterals, force mains, pump stations, and filters		$3,000,000	$0

NEW CASTLE Feb-15				
Municipality	**Project**	**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
	PLC implementation on 3 regional lift stations that flow to headworks of Middletown Wastewater Treatment Plant		$50,000	$0
	Two filters at existing Industrial Drive filter plant location		$0	$1,500,000
	SBR plant at existing Industrial Drive location; possible alternate treatment method with baffle system		$0	$16,500,000
	Vehicle Replacements (Collection and Transport)		$60,000	$60,000
	Saint Anne's Spray Facility permitting		$20,000	$0
	Headworks capacity increase / improvements		$0	$500,000
	SCADA upgrades		$108,000	$0
City of Wilmington	GO, Annual Minor Sewer Construction (GO Bond)	$ 1,500,000	$ 1,500,000	
	GO, Major Sewer Improvements (GO Bond)		$533,700	$2,000,000
	GO, Sewer Separation & Flow Monitoring (GO Bond)	$ 3,500,000		
	GO, Stormwater Drainage Project - New (GO Bond)	$ 1,800,000	$ 1,800,000	
	SRF, 11th St Pumping Station Upgrade (Clean Water SRF)		$ 4,500,000	
	GO, Urban Forest Mgmt Program (GO Bond)	$ 500,000	$ 500,000	
	OTHER, 2018 Sewer Placeholder (Cash Financing)			$8,000,000
	GO, Stormwater Mitigation (Water Quality) - New (GO Bond)	$750,000		
City of Newark	S0904, Sanitary Sewer Study	$ 308,000	$ 900,000	$ 800,000
	TOTAL	**$ 8,358,000**	**$ 203,591,700**	**$ 93,015,000**

KENT COUNTY Feb-14				
Municipality		**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
Kent County	**Treatment Plant Upgrades**			
	TMDL Study for development of water standards	$800,000		
New	Murderkill River Wetlands Creation and Nurtient Reduction		$633,000	
New	WWTP Nutrient Removal & Capacity Expansion (SRF/USDA)		$21,198,700	
	Spray Irrigation, Land Acquisition and Permitting	$3,850,000		
	Replace Pumps and Valves Recycle PS 1 &2	$240,000		
	Bio Solids Capacity Expansion	$2,400,000	$2,000,000	
	Replace Clarifier 1 & 2 Superstructure	$500,000		
	Spring Creek Conservation Project	$1,475,000		
	Air Blower System Optimization	$215,000	$2,895,000	
	Guaranteed Energy Efficiency Project	$13,333,400	$6,666,600	
	Conveyance System Upgrades			
	Murderkill Crossing Parallel Conveyance		$1,000,000	
	DSWA Leachate Trans. Sys.	$1,550,000		
	Pump Station Upgrades	$353,300		
	Relocate Septage Screen and Build Retreatment Sys.	$1,600,000		
	Sanitary Sewer Districts			
New	East Dover Area Sewer Upgrades		$1,423,785	
City of Harrington				
	Decommission Old Wastewater Lagoons	$ 1,000,000		
	Sewer Rehabilitations	$ 1,000,000	$ 700,000	
	I&I Study and Projects	$ 1,500,000	$ 1,000,000	
Camden-Wyoming Sewer & Water Authority	Septic elimination, Existing homes, Route 10, and existing Tamarac/Burwood development	$350,000		
	Sanitary Sewer Survey, Flushing, video taping, and smoke testing of the sanitary sewer system.	$50,000		
	Replacement of Old North Road gravity sanitary sewer system, Approx. 1,400 LF sanitary sewer main and 9 manholes	$162,500		

KENT COUNTY Feb-14				
Municipality		**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
	Rehabilitation of existing manholes, Especially in flood prone areas	$150,000		
	Large-scale replacement of existing sanitary sewer collection system, Approx. 47,200 LF of vitrified clay sanitary sewer main, 130 manholes	$3,800,000		
	Replacement of Mechanic Street gravity sanitary sewer system, Approx. 3,000 LF sanitary sewer main, 12 manholes, and 75 laterals	$823,500		
CITY OF DOVER				
	Mckee Road Pump Station Communicator Replacement	$55,000		
	Inflow/Infiltration Removal/System Improvements	$5,000,000		
Milford Sewer Authority				
	Fisher Ave Pump Station Rehab	$750,000	$0	
	Misc Pump Station Rehabs	$0	$800,000	
	Shawnee Acres Pump Station Replacement	$1,000,000		
	SCADA Integration	$0	250000	
Town of Clayton	I&I - Studying now, cost unknown	$ 2,000,000		
	Minor Planned repair/Upgrades	$ 2,000,000		
Town of Smyrna				
	North Main Street Sewer Replacement, Replacement of approximately 386 linear feet of old sewer main and all service connections along N. Main.	$ 500,000		
	Greens Branch Pump Station Upgrades, Replacement of the existing failing shaft-driven dry pit pumps in Greens Branch Pump Station and upgrades of electrical controls at the pump station.	$ 750,000		

KENT COUNTY Feb-14				
Municipality		**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
	West Cummins Street Sewer Replacement, Replacement of approximately 618 linear feet of old sewer main and all service connections along W.Cummins St.	$ 500,000		
	Water and Sewer Replacement (S Main St)	$ 1,000,000		
	TOTAL	**$ 48,707,700**	**$ 38,567,085**	**$ -**

SUSSEX COUNTY
Feb-14

Municipality	Project	Updated Capital Project Costs Needed 2014-2015	2016	2017
Sussex County				
	JOY BEACH SEWER		$3,904,000	
	HOLT'S LANDING EXPANSION - MALLARD CREEK			$ 1,249,083
	MAGNOLIA SHORES		$700,000	
	HERRING CREEK SEWER DISTRICT		$11,634,000	
	CLAYTON AVENUE PUMP STATION AND FORCEMAIN			$ 4,275,000
	MILLER CREEK EXPANSION - TANGLEWOOD & Oak Acres		$2,783,000	
	PUMPING EQUIPMENT		$2,720,000	
	IBRWF -Class A Sludge		$3,000,000	
	MILLVILLE EXPANSION - BEAVER DAM		$2,095,984	
	CONCORD SEWER EXPANSION		$1,800,000	
	HOLT'S LANDING SEWER EXPANSION			$ 6,000,000
	GENERAL PLANT CAPITAL		$1,898,962	
	PINEY NECK RD - SEWER EXPANSION		$2,684,000	
	Goslee Creek Expansion of West Rehoboth		$10,000,000	
	DEWEY/HENLOPEN TREATMENT CONTRIBUTION		$13,500,000	
	VINES CREEK SEWER DISTRICT			$ 6,000,000
New	Branch, Autumn and Tucks Road (Long Neck)(NOI)	$736,000		
New	Love Creek Woods (NOI)	$1,890,000		
City of Lewes	Donovan Smith 4” & 6" lines		$309,500	
	New WWTP Outfall Pipe Renewal		$350,000	
	Manhole Replacement/Rehab		$221,025	
	Sewer Lift Station Renewal		$202,000	
New	George HP Smith Park Walking Path Replacement (NOI)	$190,000		
New	Little League Pervious Parking (NOI)	$31,000		
City of Rehoboth Beach				
	Ocean Outfall, Construct ocean outfall from beach to diffuser located approximately 6,000 ft offshore			$ 25,000,000

SUSSEX COUNTY Feb-14				
Municipality	**Project**	**Updated Capital Project Costs Needed**		
		2014-2015	**2016**	**2017**
	Pump Station and Force Main , Construct new effluent pump station at WWTP and force main to new ocean outfall at beach		$5,250,000	
New	WWTP and Force Main Capital Improvement Program Upgrade #1			$ 10,488,000
City of Seaford				
	Oxic tank membrane replacement		$32,000	
	Lift station RTU replacement		$7,000	
Town of Delmar	Bi-State/Connelly Mill Pump Sta.		$1,719,611	
	Lab Cabinets - Restored		$4,020	
	Line Replacement / Slip Lining Pipe		$1,575,000	
	Stage Rd #2 Pump Station		$700,786	
	Winch to Raise Basket Pine St. /PS		$2,300	
Town of Georgetown				
	I&I Related Sewer Project (Not Funded)			$ 300,000
	Pump Station Upgrades and Force Main Improvements		$ 2,500,000	
Town of Selbyville	Miscellaneous WWTP Headworks Upgrades		$ 1,500,000	
Town of Bridgeville				
	HVAC- Main Building, Unkn Qnty		$100,000	
	Raw Pump Wet Well, Pump Only		$30,000	
	Effluent Pump Contact Tank, Pump Only		$30,000	
	Sludge Pump Clarifier, Pump Only		$30,000	
	Comminutor, Assume 1 unit		$50,000	
	RBC Gearbox Replacement (2), Assume $200K each		$400,000	
	Digester Mixer, Assume motor/mixer only		$100,000	
	Utility Mapping/Schedule, Unkn Qnty		$100,000	

SUSSEX COUNTY
Feb-14

Municipality	Project	Updated Capital Project Costs Needed 2014-2015	2016	2017
Town of Laurel				
	6th and Green St Combined Sewer Separation		$ 900,000	
	Miscellaneous Sewer Rehabilitation		$ 250,000	
	Miscellaneous Sewer Extensions		$ 8,800,000	
Town of Millsboro				
	Pump Station Rehabs		$ 250,000	
	Stormwater Line Replacement		$ 30,000	
	I&I Study		$ 500,000	
	Sewer Line and MH Replacement		$ 60,000	
	Forcemain Replacement			$ 150,000
	TOTAL	**$ 2,847,000**	**$ 82,723,188**	**$ 53,462,083**

Delaware Statewide Assessment of Wastewater Facilities

Current Status and Future Needs

2011 - 2016

Tetra Tech, Inc.

240 Continental Drive, Suite 200
Newark, DE

and

10306 Eaton Place, Suite 340
Fairfax, VA

May 2012

Delaware Wastewater Study – Facilities Assessment 2011-2016

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Acronyms and Abbreviations

ANSWRF	Artesian North Sussex Regional Wastewater Recharge Facility
Artesian	Artesian Wastewater Management, Inc.
BNR	Biological Nitrogen Removal
BOD	Biological Oxygen Demand
CIP	Capital Improvement Plan
CPCN	Certificates of Public Convenience and Necessity
CSO	Combined Sewer Overflows
CWA	Clean Water Act
CWAC	Clean Water Advisory Council
DNREC	Department of Natural Resources and Environmental Control
DRBC	Delaware River Basin Commission
ENR	Enhanced Nitrogen Removal
EDUs	Estimated Dwelling Units
EPA	Environmental Protection Agency
GIS	Geographical Information System
GO	General Obligation
gpd	Gallons Per Day
I/I	Infiltration and Inflow (groundwater and stormwater entering collection systems)
LA	Load Allocations
M	Million
MG	Million Gallons
MGD	Million Gallons per Day
MHPs	Mobile Home Parks
MIH	Median Household Income
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PCBs	Polychlorinated Biphenyls
PSI	Phosphorus Site Index
RBCs	Rotating Biological Contactors
RIBs	Rapid Infiltration Basins
SEFO	Septic Extended Funding Options
SRF	State Revolving Fund
STP	Sewage Treatment Plant
Tidewater	Tidewater Environmental Services, Inc.
TMDLs	Total Maximum Daily Loads
TN	Total Nitrogen
TP	Total Phosphorous
TSS	Total Suspended Solids
UD	University of Delaware
USDA-RUS	Department of Agriculture - Rural Utility Services
UD	University of Delaware
WIP	Watershed Implementation Plan
WLA	Wasteload Allocation
WRF	Water Reclamation Facility
WTP	Water Treatment Plant
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

Executive Summary

Overview

This study assessed Delaware's wastewater treatment facilities at the state and county levels to determine their current status from technical and economic perspectives. The report is intended to encourage dialogue between the Clean Water Advisory Council (CWAC), Department of Natural Resources and Environmental Control (DNREC), county governments, municipalities and utilities by identifying immediate, short-term and long-term needs, the costs associated with those needs and the funding sources available to meet the needs. The study is also intended to point out trends and emerging issues, including promoting wastewater reuse and other innovative opportunities, with the goal of cost-effectively balancing human health and environmental protection in Delaware.

Wastewater System Infrastructure

There are 32 publicly owned wastewater systems in Delaware. Twenty-two of the public wastewater systems include a treatment plant and 10 of the public wastewater systems are collection-only systems. Of these 22 treatment plants, 15 facilities have surface water discharge permits and nine facilities have groundwater permits. Also surveyed are 12 operating and two proposed privately owned systems. The 22 public and 12 private wastewater treatment plants (WWTPs) provide centralized collection and treatment to a population of nearly 800,000. About 60 percent of those with centralized collection are serviced at the Wilmington WWTP. The Wilmington WWTP provides secondary treatment to an average daily flow of 75 million gallons per day (MGD) before surface water discharge. About 32,000 individuals are serviced by the other treatment plants in New Castle County with a total average daily flow of 2 MGD. About 35 percent of those with centralized collection are serviced at public treatment plants in Kent and Sussex County with average daily flows of 23.3 MGD.

In addition to the Wilmington WWTP, there are another 15 treatment plants that discharge to surface waters, serving a population of 225,000 (28 percent). The average daily flow at these 15 facilities is 21.3 MGD. Seven of these 15 facilities provide nitrogen removal and, with the exception of one plant, provide phosphorus removal. About two-thirds of the facilities already have nitrogen and/or phosphorus limits, and two facilities are expecting phosphorus and nitrogen limits within the next five years—five facilities do not anticipate nutrient limits. Three facilities indicated problems meeting their nutrient limits but have implemented or have plans to address these issues. Bridgeville's current facility is not designed to remove nitrogen sufficiently to meet anticipated future nitrogen limits, and phosphorus removal will be difficult with the current facility. Although Bridgeville has added spray irrigation, it is likely that the community would need to upgrade its current facility with biological nitrogen removal to meet its surface water discharge requirements or switch to spray irrigation completely or in conjunction with other reuse options.

There are seven public and 11 private WWTPs that provide groundwater discharge and provide treatment for about 11.5 percent of those with centralized collection. Seventeen of these facilities have nitrogen limits, and seven facilities have, or expect to have, phosphorus limits. The Lea Eara Farms WWTP indicated problems with nitrates; and the Inland Bays Regional facility indicated problems with meeting its nitrogen limits. New Castle County indicated that it may abandon the Lea Eara facility in the future. The Inland Bays Regional facility received an amended permit in 2009 adding another spray field, and a new Biolac™ system should resolve the nitrogen and anticipated phosphorus limits.

The 2030 projections of population increases and plant enlargements are generally modest for wastewater systems in New Castle County and Kent County. On the other hand, several public facilities

in Sussex County identified substantial potential for increases in population served. While it is unclear when these projections will be realized given the current economic environment and nutrient reductions called for in the Chesapeake Bay and Inland Bay TMDLs, the CWAC and DNREC should monitor this situation as significant capital investment might be necessary.

The study found that most wastewater service providers are concerned about the costs associated with managing their long-term investments while trying to meet increasingly stringent performance standards due to the Chesapeake Bay TMDL or other effluent requirements. Wastewater system owners and operators often need to decide between plant abandonment (regionalization) versus existing plant upgrades or new plant installations; and these decisions are made more difficult with the recent economic slowdown and reduced build-out rate. Collection systems require continued maintenance and upgrades. Most combined sewer systems have been eliminated or have completed a long-term control plan. Many, but not all, older collection systems have I/I issues that can cause flow issues downstream. Some plants and critical pump stations do not have a backup power supply.

Ultimately, these challenges are solved at the community level; however, CWAC and DNREC can facilitate these solutions by working with communities to i) develop long-term projections of effluent requirements and treatment levels, ii) encourage communities to reevaluate the plant capacities and revise growth projections for overdesigned/oversized plants, iii) promote water conservation to postpone or delay some capital investments, iv) investigate the opportunity for optimizing public-private partnerships to better use existing infrastructure, v) encourage projects to reduce I/I and vi) adopt backup power supplies at all treatment plants and other critically important wastewater system components.

User Rates and Revenue Generation

The average annual household sewer rate at public systems in New Castle, Kent and Sussex counties varied from $185-$350, $303-$571, and $277-$795 per household, respectively, when averaged to the wastewater system level. The average household sewer rates for private systems generally ranged from $850 to $1,245/household, although the Milton Regional facility's average household sewer rate is $350/household. At the sewer district level, the annual household sewer rate at public facilities in Sussex County were more variable and ranged from $179-$1,453 per household. Some of these differences can be attributed to different rate structures for residents inside versus outside city limits as well as a relationship to sewer district size. Interestingly, private sewer rates appear comparable to those of similarly-sized public sewer districts in Sussex County.

The average household sewer rate, when expressed as a fraction of median household income (MHI), ranges from 0.34 percent to 1.84 percent of the MHI for public wastewater systems. Three public wastewater systems have average household sewer rates already greater than 1.5 percent of the MHI. All but two private systems have user rates greater than 1.5 percent of the MHI, with a range from 0.87 percent to 2.61 percent.

All but three public facilities indicated that they were generating sufficient annual revenue to meet the cost of their wastewater enterprise without transfer from other enterprises. Wilmington indicated that it expects to be on track by FY12. Middletown and Millsboro indicated that additional growth is needed to generate sufficient revenue. Ten of the 11 private plants indicated that they were running a deficit primarily due to lower than expected build-out rates. All but three public wastewater systems maintain a reserve account, and those three wastewater systems, Wilmington WWTP, Clayton collection system, and Georgetown water reclamation facility (WRF), are considering or moving toward establishing a reserve account.

Total annual revenue from residential customers was $40.2 million (M), $14.8M, $37.0M, and $1.6M for public facilities in New Castle County, Kent County, Sussex County, and private facilities, respectively (Table ES-1). Note that this survey did not include, at the CWAC's guidance, non-residential revenue and could give an incomplete view of a system's financial status. If all wastewater systems increased their average annual household sewer rates to 1.5 percent of the MHI, additional residential revenue of $97.8M, $14.7M, $12.0M, and $0.3M would be realized for public facilities in New Castle County, Kent County, Sussex County and private facilities, respectively.

Future Capital Improvement Plans and Financing Options

The total capital project costs from 2011-2016 for the State of Delaware are estimated at $653.7M. These estimates are based on estimated costs of $288.5M, $95.9M, and $269.3M for public wastewater systems in New Castle, Kent, and Sussex counties, respectively (Table ES-2). Private wastewater systems reported another $9.1M in capital costs. Numerous additional private wastewater system projects were identified, but no cost estimates were available. About three-fourths of these project costs are related to collection and conveyance while 20 percent are related to treatment. Two wastewater systems did not report any capital costs for 2011-2016; and numerous systems did not report information for 2015 and 2016. Extrapolating the average annual capital project costs to the un-reported years suggests a potential under reporting of approximately $45.6M (7 percent).

For New Castle County-owned systems, capital project costs from 2011-2016 are $245.4M. Projects include $101.5M for the Brandywine Hundred North and South sewer rehabilitation Phase 1 and 2 projects, $33.7M for the North Delaware interceptor system, and $26.4M for the White Clay sewer basin rehabilitation. The City of Wilmington's 2011-2016 capital project costs are $36.2M with about 60 percent ($21.4M) of these projects related to sewer rehabilitation and improvements.

In Kent County, $39.1M is planned for upgrades to the Kent County Regional WWTP from 2011-2016. An additional $13.3M is planned in upgrades to the Kent County Regional collection system, which includes conveyance from satellite collection systems. Dover, Milford, Harrington, Camden-Wyoming, Clayton and Smyrna report projects totaling $31.7M, of which $24.2M is related to sewer rehabilitation and replacement.

Facilities owned by Sussex County report $189.8M in capital project costs from 2011-2016. Those needs include $136.9M for sewer collection and conveyance and $52.6M for treatment plant costs. Bridgeville, Laurel and Delmar include treatment plant upgrades totaling an estimated cost of $12.7M primarily dealing with TMDL/compliance issues. Millsboro includes $19.6M for reuse transmission and aquifer recharge costs. The City of Rehoboth 2011-2016 capital project costs includes $19.1M for the construction of a pump station, force main and ocean outfall 6,000 feet offshore along with $6M for various treatment plant upgrades and replacements including provisions for emergency power. Laurel and Delmar report $6.4M for pump station replacements, I/I studies and for sewer replacement and rehabilitation projects.

Wastewater systems project that about one-half (51.7 percent, $337.7M) of the capital project costs will be financed through issuance of bonds (Table ES-3). Nearly equal shares of these costs are expected to be financed through requests to the Clean Water State Revolving Fund (12.1 percent, $78.8M) and through municipal sinking funds, asset replacement costs savings and current municipal budgets (13.2 percent, $86.3M). Municipal requests to USDA are expected to account for 7.7 percent ($50.3M) of the 2011-2016 project costs. No funding sources were reported for $88.1M (13.5 percent) of the 2011-2016 project costs. Of the projects expected to be funded through the Clean Water State Revolving Fund, the yearly funding requests range from $11.3M to $21.2M from 2011-2014. Expected funding requests to

the Clean Water State Revolving Fund are $5.7M and $3.2M during 2015 and 2016, respectively. The potential under reporting of project costs in 2015-2016, the non-reported funding source for $88.1M, and drop off in expected Clean Water State Revolving Fund requests in 2015-2016 result in uncertainties in the expected funding requests to the Clean Water State Revolving Fund during the 2011-2016 time period.

Table ES-1. Wastewater System Current Residential Revenue and Potential Increased Revenue.

	Present Annual Residential Revenue ($M)	Additional Residential Revenue ($M)		
		1.5% MHI increase	2.0% MHI increase	2.5% MHI increase
New Castle County	$40.2	$97.8	$143.7	$189.7
Kent County	$14.8	$14.7	$24.5	$34.4
Sussex County	$37.0	$12.0	$28.0	$44.3
Private	$1.6	$0.3	$0.7	$1.3
State	$93.7	$124.8	$197.0	$269.7

Table ES-2. Reported Capital Project Costs ($M) at Public Wastewater Systems, 2011-2016.

	Reported Capital Project Costs ($M), 2011-2016				
County	**Collection**	**Conveyance**	**Treatment**	**Disposal**	**Total**
New Castle	$105.9	$161.4	$16.0	$5.1	$288.5
Kent	$19.9	$35.6	$39.8	$0.7	$95.9
Sussex	$62.3	$96.6	$77.0	$33.4	$269.3
State	$188.1	$293.6	$132.8	$39.2	$653.7

Table ES-3. Reported Financing Options ($M) at Public Wastewater Systems, 2011-2016.

County	Municipal Bank Financing	Municipal Bond Issue	Municipal Request to the Clean Water State Revolving Fund (SRF)	Municipal requests to USDA	Municipal Sinking Fund, other asset replacement cost savings	No funding source indicated	Other Financing Method	Total
New Castle	$0.1	$268.5	$15.9	-	$3.8	-	$0.2	$288.5
Kent	$0.5	-	$43.2	$5.9	$22.8	$18.6	$5.0	$95.9
Sussex	$3.2	$69.3	$19.7	$44.4	$59.8	$69.5	$3.4	$269.3
State	$3.7	$337.7	$78.8	$50.3	$86.3	$88.1	$8.7	$653.7

Water Reuse

The State of Delaware promotes sustainable water management by directing infrastructure funding to targeted priority development areas and facilitating water reclamation and reuse via regulations, policy, guidance and education/outreach. The State promotes reuse for a variety of excellent reasons – water conservation, reducing nutrient discharges and recycling nutrients, recharging aquifers, maintaining agricultural land and other open space, helping farmers, and so forth.

Thirty-one of the 36 WWTPs surveyed currently include some kind of reuse feature or are planning a reuse feature, including all 14 privately operated plants along with a majority of the plants in Sussex and New Castle Counties and one of the two plants in Kent County. Most of the current applications are for

reusing treated biosolids (sludge), which is either already being done or is planned (for developments being constructed) for all but one of the privately operated plants.

With respect to water reuse, agricultural irrigation is the most common reuse option in Delaware, with significant additional interest and/or planning efforts underway to expand agricultural reuses. The State has promoted agricultural reuses and in fact, is well suited for agricultural reuse given significant agricultural land uses, particularly in Kent and Sussex Counties. In a companion study, the University of Delaware has developed a preliminary map showing potential spray irrigation sites.

Commercial and industrial reuse applications (with the exception of agricultural reuse) appear limited to a few plants with water-intensive industries nearby, and residential reuse is only being planned for two plants—one in New Castle and one in Kent County. Most of the "other" reuse category involves aquifer recharge via rapid infiltration basins (RIBs) or, in a few cases, drip or subsurface irrigation. Millsboro has partially constructed a reuse project that will involve spray irrigating athletic fields. Of these 10 collection system-only utilities, none had yet implemented reuse, which is understandable, given that these systems do not currently include their own treatment plants, but rather convey wastewater to another treatment plant, which may or may not include a reuse element. Several of these 10 collection systems did indicate an interest in implementing some kind of reuse system, including smaller-scale localized (e.g., satellite) reuse systems, industrial pretreatment and source separation, and other nontraditional options to help conserve water and reduce receiving WWTP loadings.

The major barriers to increased wastewater reuse is the limitation of land in urban areas; farmer/property owner concerns; and limited guidance, policy, and incentives. University of Delaware researchers stated in their study that representatives for the Division of Fish and Wildlife, Division of Parks and Recreation, and Coastal Management were not in favor of wastewater reuse on state lands although there are no known prohibitions. To increase reuse, it may be appropriate to i) undertake studies and market analyses to ascertain the viability of various reuse alternatives, ii) establish/standardize State policies and/or regulations regarding water reuse; iii) provide applicable incentives such as tax credits or nutrient credits; and iv) alleviate potential concerns about risks and liability by enhancing education, outreach, guidance and case studies for agricultural constituencies. It might also be appropriate to evaluate the opportunity for innovative reuse options for collection system-only utilities.

Mobile Home Parks, Clustered Individual Systems, and Community Systems

Delaware has more than 80,000 septic systems. There are more than 200 "large systems" (~3,000 gpd or greater), which include shared community cluster systems, municipal systems and commercial/industrial groundwater or spray discharge systems. This study included visiting and reporting on a representative set of 14 on-site (individual) septic systems in clustered areas and cluster (shared community) systems. It was found that the technical, managerial, financial, legal, program and enforcement issues facing individual and decentralized systems in Delaware are similar to elsewhere in the mid-Atlantic Region. Some MHPs are well-operated, but a glaring issue with some systems is the lack of proper management (e.g., homeowner associations that operate systems, lack of clear ownership or legal access to on-lot system components). Appendix D includes typical recommendations for decentralized systems and provides program-level guidance and recommendations to assist in making various case-by-case decisions, such as connection of a decentralized system to central sewer, implementing community systems and advancing treatment of individual septic systems.

Clean Water Infrastructure

Conservation Cost Share

Delaware's Conservation Cost Share Program promotes conservation practices that improve soil and water quality by preventing agricultural and urban pollutants from reaching surface and ground waters. The program provides funding to landowners and producers by paying a portion of the cost to design, install and maintain conservation practices or systems. Conservation cost share programs include planting cover crops and other conservation practices – important components of a successful nutrient reduction plan.

Cover crops are one key to reducing agricultural runoff that contributes nitrogen and phosphorus to our streams, rivers and bays. Producers plant cover crops, including grains like wheat, rye and barley, in the fall after the autumn harvest. The growing cover crops absorb the underutilized nutrients in the soil and reduce erosion from rain, snow and wind. Cover crops also help producers by inhibiting noxious weeds and increasing organic matter in the soil.

Field of cover crop sequestering underutilized nutrients

Conservation Cost Share Program is a partnership among:

- DNREC Division of Watershed Stewardship
- USDA Natural Resources Conservation Service
- Sussex, Kent and New Castle Conservation Districts
- Delaware Department of Agriculture

Conservation Cost Share practices:

In addition to cover crops, conservation cost share funding is used for a number of other practices that prevent nutrient runoff. Some of these practices are:

- Manure storage sheds
- Animal waste systems
- Heavy-use area protection
- Poultry windbreaks
- Composters
- Water control structures
- Manure handling equipment
- Large animal mortality rendering
- Urban conservation practices

FY 2016 Funding Request: $1.5 Million

- $1.5 million in state cost share funds will leverage additional federal funds, contributed by the USDA Natural Resources Conservation Service, U.S. Fish and Wildlife Service, EPA's Non-Point Source and Chesapeake Bay Programs, and the Delaware Department of Agriculture.
- 70% of the funding will be divided equally among the three counties to expand their programs. The remaining funds will be used for conservation work in targeted watersheds.
- For every $1 of state cost share, $5.78 in federal and private dollars are invested in best management practices (BMPs).

Concrete heavy-use pads at the end of a chicken house help prevent nutrient runoff

Cost/Benefit of Cover Crops:

Through the Conservation Cost Share Program, producers receive an average of $45 per acre for cover crops planted, depending on the species of crop, timing and application method.

Current Projects: 2014

- Cover Crops Planted**:** 52,856 acres - Cost approximately $2.1 million (cost shared)
- Cover Crops Requested**:** 134,092 acres - Cost approximately $6.0 million.
- Requests for cover crop funding were more than 2.5 times the amount of funding that was available in 2014.

Meeting Pollution Reduction Goals and Cover Crops:

- The Chesapeake Bay Watershed Implementation Plan (WIP) and the Pollution Control Strategy for the Inland Bays Watershed call for significant increases in cover crop acreage.
- 149,500 acres of cover crops is the minimum acres recommended annually to meet water quality goals in watersheds across the state; 92,765 of those acres are needed in the Chesapeake Bay Watershed.
- In 2014, Delaware producers planted cover crops that reduced nitrogen by about 498,236 lbs. per year and phosphorus by about 1,036 lbs.per year, significantly reducing nutrients from entering our waterways.
- Without the support of the Conservation Cost Share Program, Delaware will not be able to fully implement the WIP or Pollution Control Strategy goals for most of its impaired watersheds.

This poultry waste storage structure provides a dry area to store poultry litter, eliminating the potential for nutrient runoff.

FY 2017 - 2018 Funding Needs: $1.5 Million/Year

- Cost share funding for cover crops and other practices that prevent nutrient runoff
- The demand for cost share funding is increasing, and Delaware producers are supporting the cover crop program as a best management practice.

Clean Water Infrastructure

Conservation Reserve and Enhancement Program (CREP)

CREP, a state and federal partnership, provides landowners with payments to remove environmentally-sensitive areas from agricultural production, with the goal of reducing pollution of surface and subsurface waters from sediment and nutrients associated with cropland tillage. In addition, the program creates wildlife habitat and upland wildlife corridors.

Restored wetland project in Kent County

CREP is a partnership among:

- DNREC Division of Watershed Stewardship
- USDA Natural Resources Conservation Service
- USDA Farm Service Agency

Current Program:

- 6,126 acres are in CREP practices in Delaware, with the goal of 10,000 acres statewide.
- The State pays up to 37.5% of project installation costs.
- Landowners receive incentive payments that range from $165 to $225 per acre per year.
- Delaware's current CREP acreage reduces more than 193,000 lbs. of nitrogen per year and 4,600 lbs. of phosphorus per year from entering the state's waterways.
- CREP provides environmental protection to Delaware's waterways and is key to helping meet the water quality goals of the Chesapeake Bay Watershed Implementation Plan and the Pollution Control Strategy for the Inland Bays.

CREP Practices:

- Reduce nutrient and sediment loads to impaired waterbodies in Delaware
- Improve aquatic temperature and dissolved oxygen necessary to support biology and wildlife
- Increase upland wildlife habitat and create wildlife corridors

List of eligible practices:

- Grassed filter strips
- Riparian buffers
- Wetland restoration
- Hardwood tree planting
- Wildlife habitat
- Shallow water areas

FY 2016 Funding Request: $500,000

- Support the program to achieve the goal of 10,000 acres in CREP practices
- A $500,000 investment leverages $1.5 million in USDA funds

FY 2017 - 2018 Funding Needs: $500,000/Year

- Continue support of CREP practices
- Assure expiring 10-year CREP contracts have the ability to re-enroll. Of the 6,126 acres currently enrolled, more than half will expire within the next 3 years