

Environmental Resource Inventory for West Cape May Borough

Presentation for West Cape May Planning/Zoning Board



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October 23, 2018

An ERI is...

- baseline documentation of natural resources
- an objective listing, rather than an interpretation or recommendation



Goals of the ERI are...



- to provide objective, reliable environmental data in one document to enable borough officials to make more informed decisions
- to better protect the Borough's natural resources and the overall health and welfare of the community.

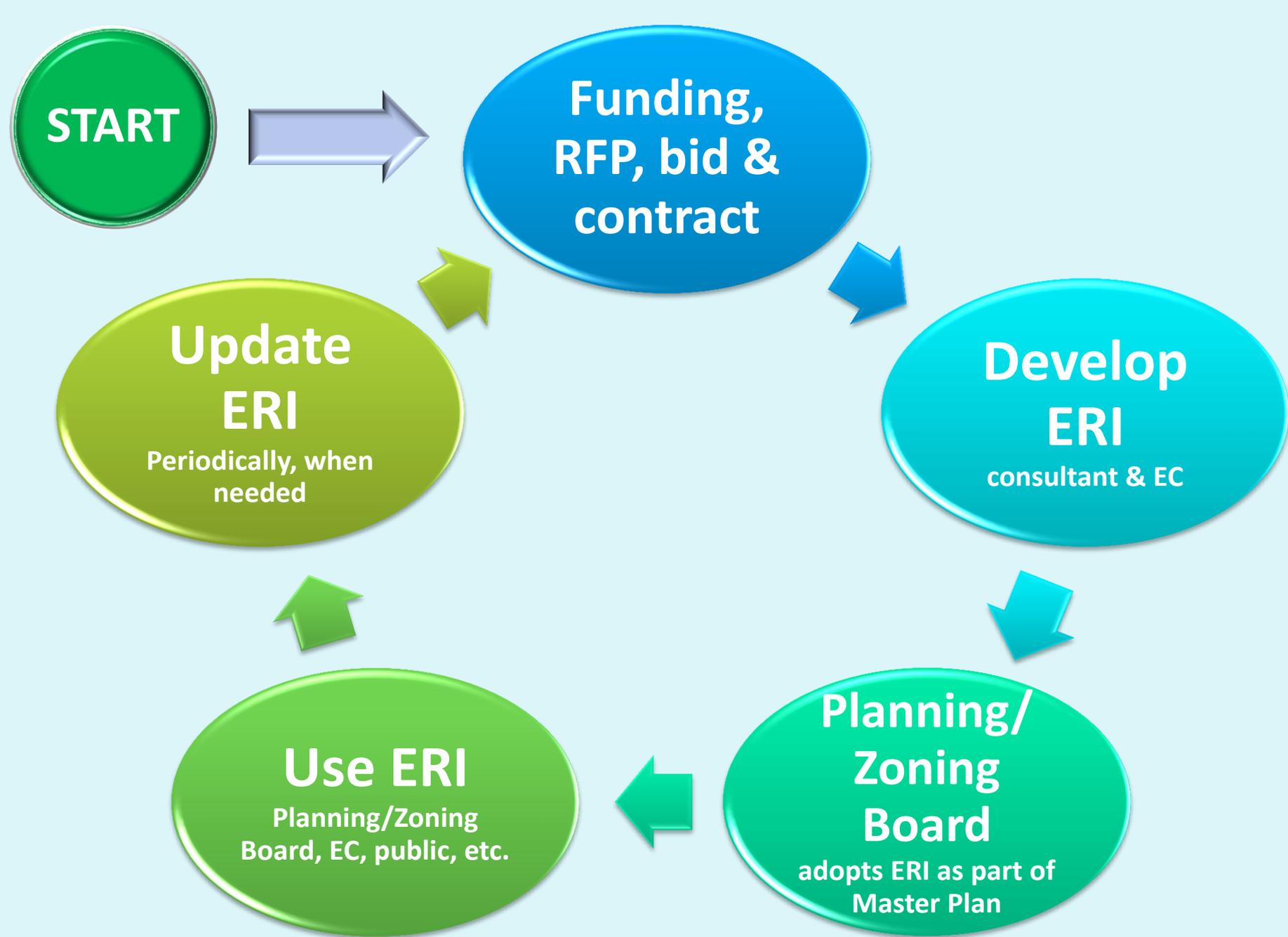
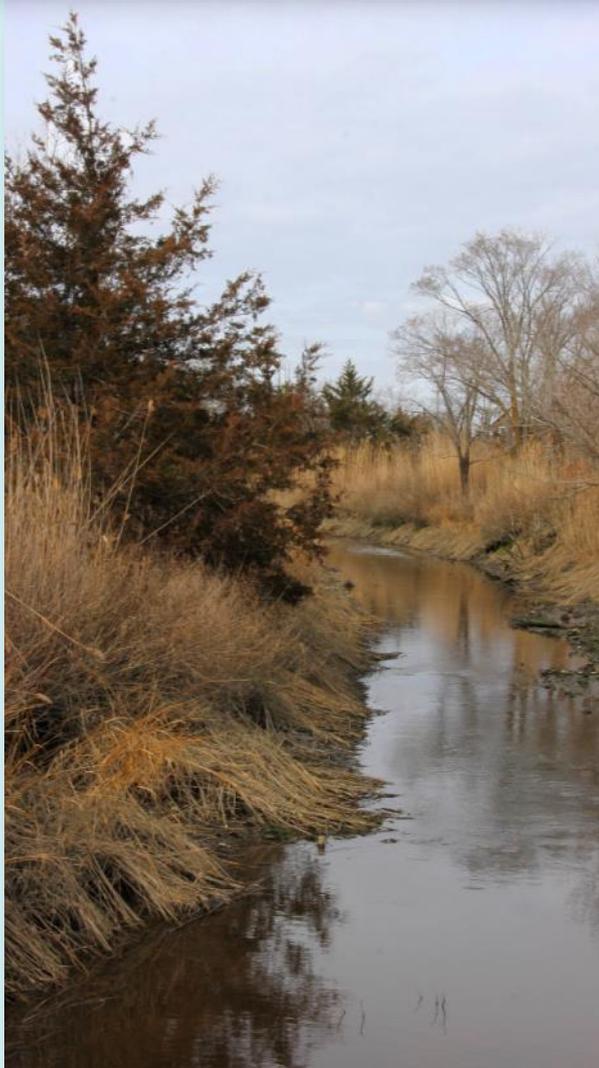


Table of Contents



- 1: Introduction
- 2: Local and Regional Conditions
- 3: Physiography, Topography and Geology
- 4: Soils
- 5: Ground Water & Drinking Water
- 6: Surface Water
- 7: Biological Resources
- 8: Open Space & Recreation
- 9: Historical Resources
- 10: Regional Relationships
- 11: Environmentally Critical Areas
- Appendices

For each resource, the ERI includes

- Narrative text
- Maps
- Graphs
- Tables
- References
- Internet resources

6: SURFACE WATER

A. Introduction Surface Water

As described in Section 5A's overview of the water cycle, surface water is water that is visible above the ground surface, including creeks, rivers, ponds, lakes, and wetlands. Surface water is generally hydraulically connected to ground water, although the interactions are difficult to observe and are affected by variations in weather and human activities. Streams connect with ground water in three basic ways. Streams can gain water from ground water through the streambed, lose water to ground water through the streambed, or have both gaining and losing reaches (Winter et al., 1998).



West Cape May

Watersheds

A watershed (or basin) is the land area within the confines of a drainage divide in which all surface runoff will drain into a river, river system, or body of water. The Borough of West Cape May is within the Delaware Bay and Atlantic coastal watersheds, which covers the Cape May peninsula of New Jersey.

Watershed Management Areas

Watershed management is the process of managing and protecting all of the water resources within the area of a watershed, rather than on a site-specific basis. The NJDEP recognizes that watersheds are "nature's boundaries," and has established a watershed management approach (NJDEP, January 1997). A watershed management approach is based on three key components: 1) a geographic focus; 2) continuous improvement based on sound science; and 3) partnerships/stakeholder involvement. More information concerning watershed management is presented in Section 10D. NJDEP has divided the state's watersheds into 20 Watershed Management Areas (WMAs). West Cape May falls within WMA 16: Cape May (see top left inset in Figure 6a).

Hydrologic Unit Codes (HUC)

The classification system used by the NJDEP assigns each sub-watershed a 14-digit Hydrologic Unit Code (HUC14²⁰). The HUC14 is a hierarchical system where the first 2 digits refer to the USGS Water Resources Region and the first 4 digits (also known as a HUC4) refer to the major

"Water is vital to life and comprises an invaluable natural resource which is not to be abused by any segment of the State's population or economy." (NJDEP NIAC 7-98, April 4, 2011)

²⁰ The HUC14s have a minimum size of 3,000 acres, although some basins are defined with smaller areas. At other times, small sub-watershed units are combined. Note, however, that the current HUC12 numbers are not consistent with this system.

6: Surface Water
May 2018

West Cape May Environmental Resource Inventory
Kratzer Environmental Services

82

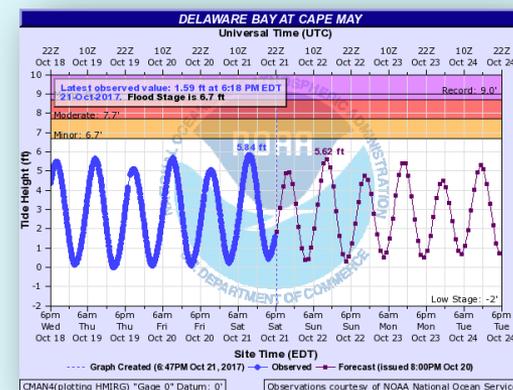
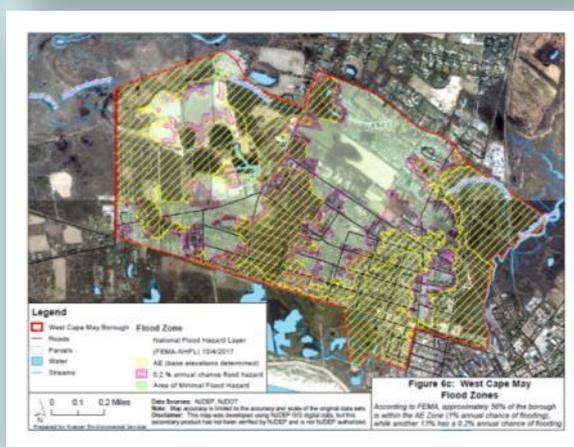


Table 6.5: Integrated Water Quality Assessment (Details)

Use	Attainment	Cause	First on 8040 List	TMDL Priority*	Source
02040302080090 Cape May Harbor & Bays (below Rt 47)					
Aquatic Life	N	Oxygen Depleted	2010	Medium	Urban Runoff Storm Sewers
Shellfish	N	Total Coliform	2006	Completed Sublist 4	
02040206230070 Pond Creek / Cape May Canal West					
Fish Consumption	N	PCB in Fish Tissue	2006	Low Sublist L	Contaminated Sediments
Aquatic Life	N	Phosphorus	2004	Completed Sublist 4	Urban Runoff Storm Sewers
Shellfish	N	Total Coliform	2014	Completed Sublist 4	Urban Runoff Storm Sewers

*Designated Uses: N = Not Supporting
*Median priority = NJDEP expects to complete TMDL in the near future, but not within the next two years.
Low priority = NJDEP does not expect to complete TMDL in the immediate or near future.
Source: NJDEP Water Monitoring and Standards, May 2017 (final)

References: Surface Water

A. Watersheds

NJDEP Land Use Management, Water Monitoring and Standards. April 2017. Quality Standards. 115 pages. <http://www.nj.gov/dep/rules/rules/njac7.9>

NJDEP Office of Environmental Planning. January 1997. Draft Statewide Document for the State of New Jersey. <http://www.nj.gov/dep/watershed/>

NJDEP, Geological Survey (NJGS). February 25, 2011. NJDEP 14 Digit New Jersey (DEPHUC14) (Version 20110225). GIS data. <http://www.state.nj.us/dep/gis/digidownload/zips/statewide/dep/huc14.zip>

USGS. June 23, 2017. Hydrologic Unit Maps. <http://water.usgs.gov/GIS/>

Internet Resources: Surface Water

General Water Resources Protection

Natural Processes of Ground-Water and Surface-Water Interaction (USGS): https://pubs.usgs.gov/circ/circ1139/htmldocs/natural_processes_of_ground.html

SEEDS: The NJ Environmental Education Directory Website: <http://www.state.nj.us/dep/seed/>

Basic Watershed Information (Watershed Restoration Section): <http://www.nj.gov/dep/watershedrestoration/info.html>

1. Introduction

- About This Report
- General Description of West Cape May
- Land Use and Land Use Change

- This presentation provides an overview and selected details from the ERI.
- Overview of the WCM ERI
 - 83 GIS data layers from 30 sources
 - 45 maps
 - 230 pages
 - Funded by the WCM Environmental Commission



- WCM Borough
 - incorporated in 1884
 - 752 acres (1.175 square miles)
 - population of 1,024
 - 1,043 housing units (US Census, 2010)

Land Use 2012

Table 1.1: 2012 Land Use Type

Land Use Type	Acres*	Percent
AGRICULTURE	104.75	13.88
BARREN LAND	5.06	0.67
FOREST	42.47	5.63
URBAN	329.90	43.72
WATER	6.02	0.80
WETLANDS	266.43	35.31
Total Acres	754.63	100.00

*Area calculated with GIS differs from area from other sources, such as tax maps.

Source: NJDEP, 2015

Land Use change (1986-2012)

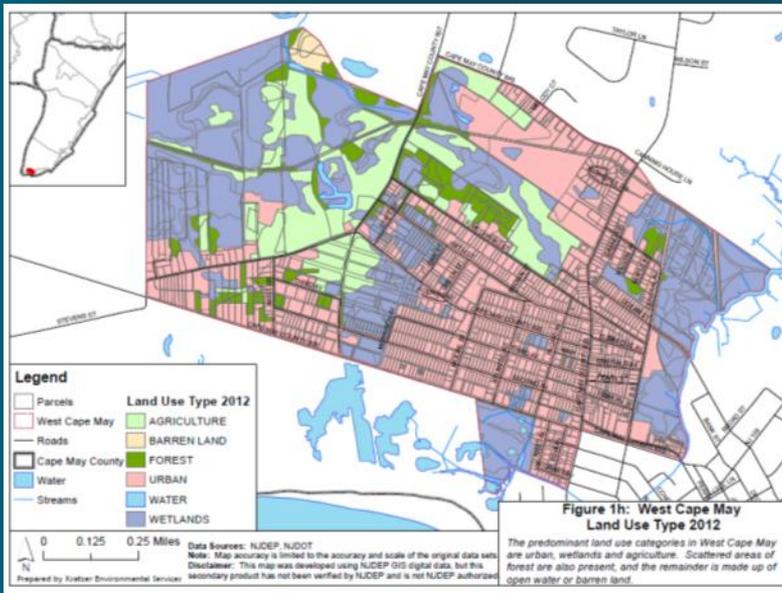
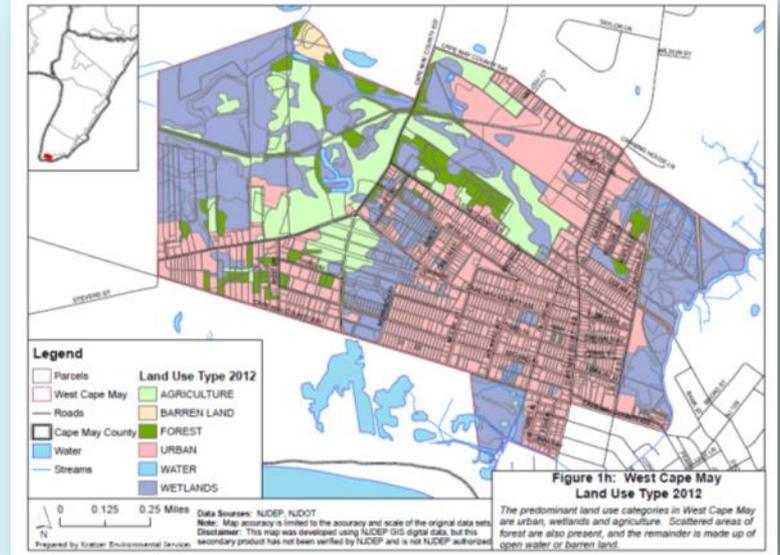
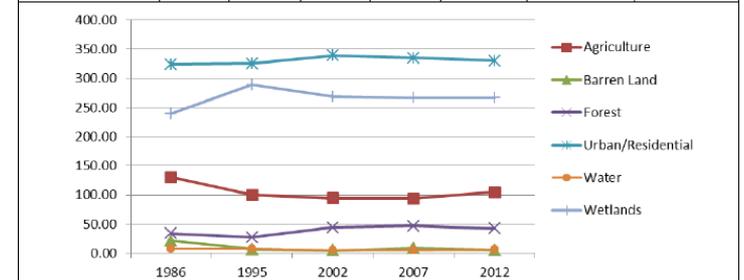


Table 1.2: Change in Land Use Type*

Land Use Type	1986	1995	2002	2007	2012	26 year change Acres	26 year change Percent
	Percent	Percent	Percent	Percent	Percent		
Agriculture	17%	13%	12%	12%	14%	-25.4	-3%
Barren Land	3%	1%	1%	1%	1%	-15.7	-2%
Forest	4%	4%	6%	6%	6%	8.8	1%
Urban/Residential	43%	43%	45%	44%	44%	5.8	1%
Water	1%	1%	1%	1%	1%	-1.0	0%
Wetlands	32%	38%	36%	35%	35%	27.4	4%
Total:	100%	100%	100%	100%	100%		



*Some changes may be artifacts rather than actual changes, such as due to the increase in resolution in 1995 and 2002 or changes in definitions.

Source: NJDEP, 2015; NJDEP, 2010; NJDEP, 2007; NJDEP, 2000; NJDEP, 1998

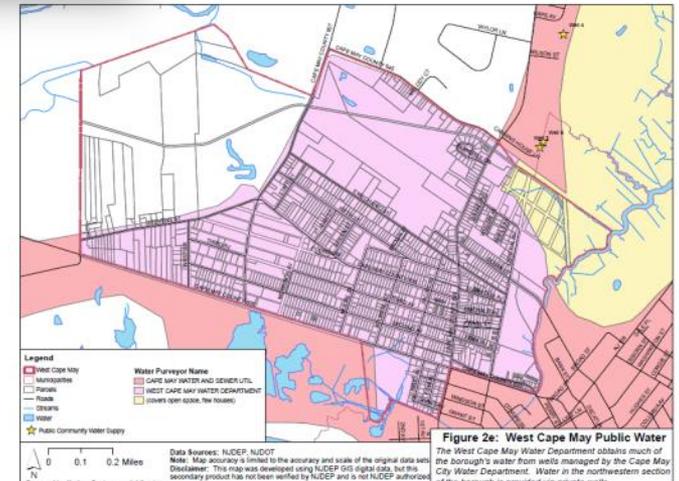
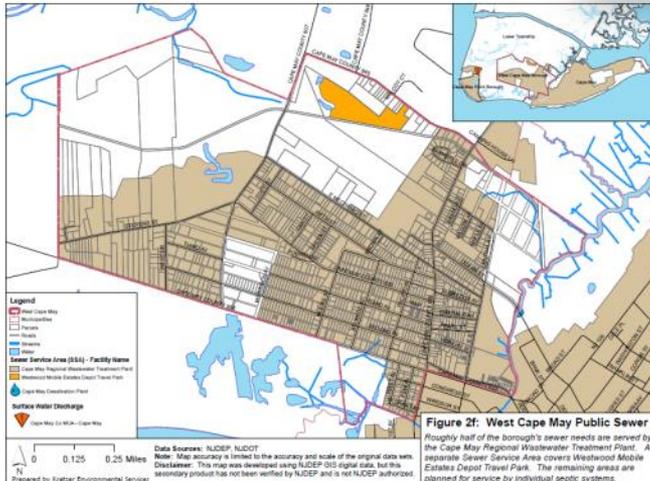
2: Local and Regional Conditions

- Climate & Meteorology
- Air Quality
- Existing Infrastructure (public water and sewer)

- Areas covered by Sewer Service Areas



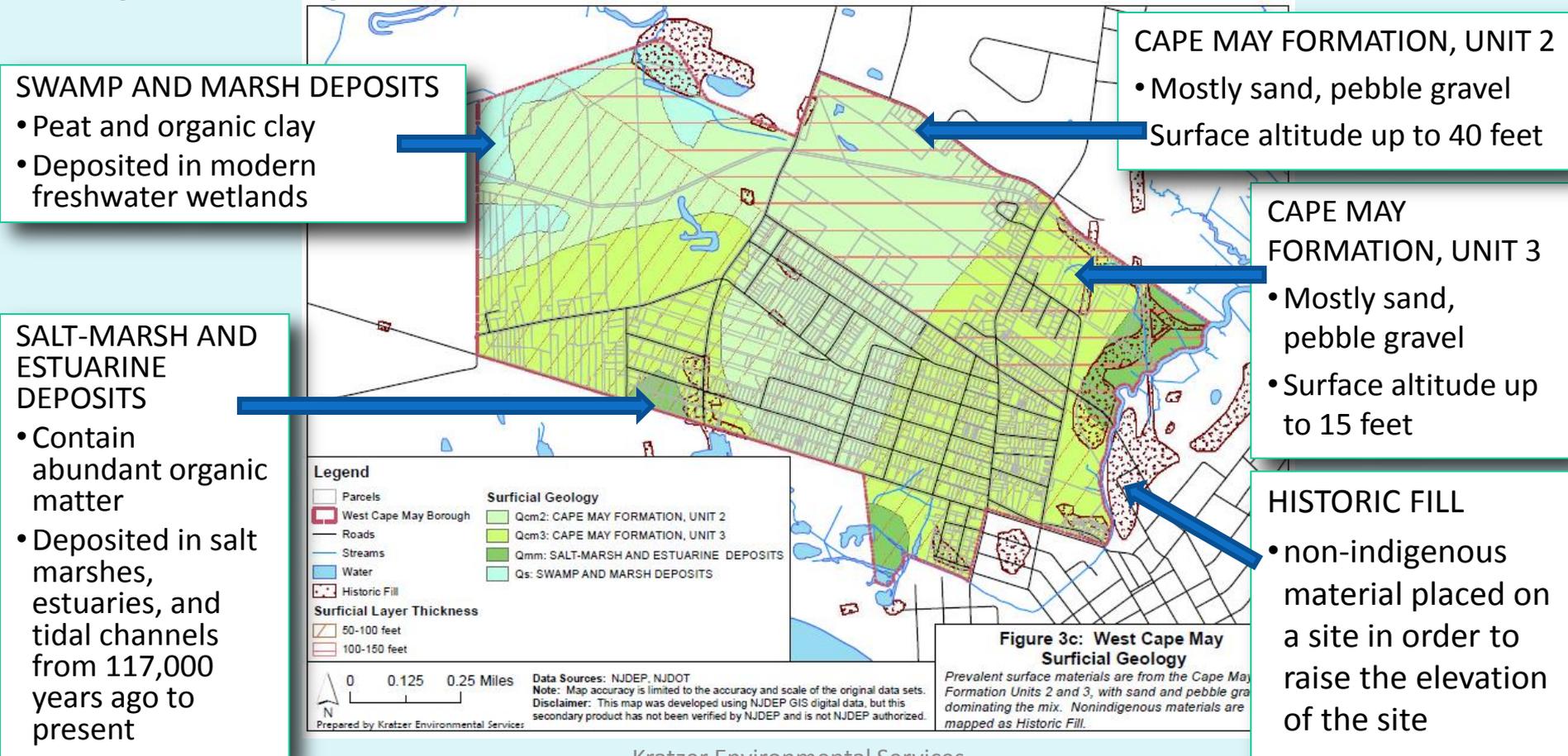
- Areas covered by public water



3: Physiography, Topography and Geology

- Physiography
- Topography
- Geology of West Cape May
- The Surficial Geology of West Cape May

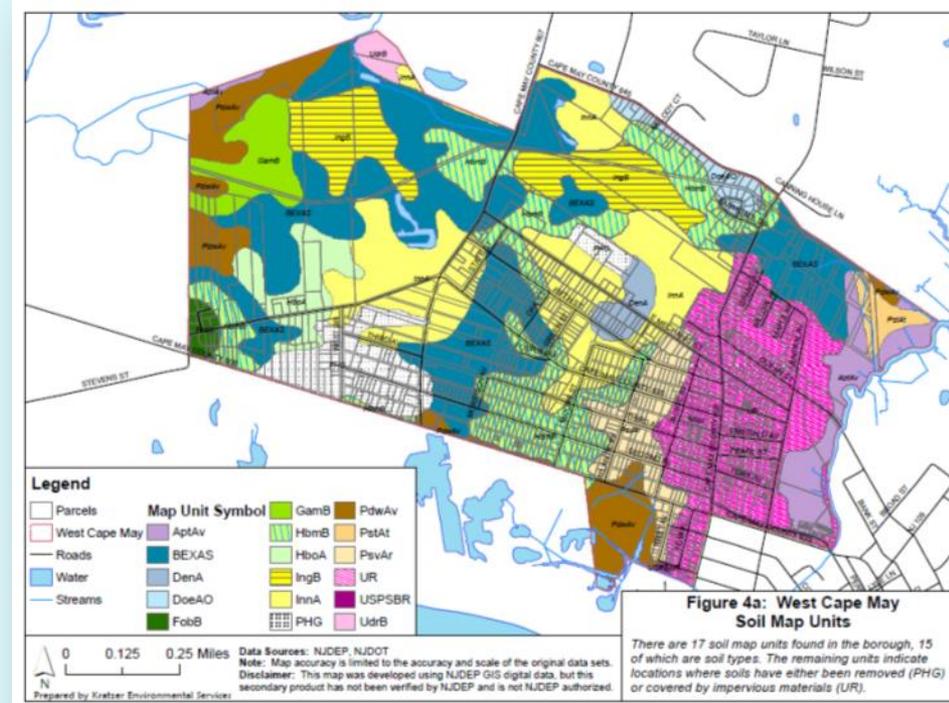
Surficial geology deposits in West Cape May consist of materials deposited by oceans over many millions of years



4: Soils

- Soil Descriptions and Acreage
- Soil Quality
- Characteristics of West Cape May Soils

- 15 soil types (80% of WCM)
- 2 non-soil units (20% of WCM)
 - soils have been removed (*Pits, sand & gravel, 37 acres*)
 - land covered by impervious materials (*Urban land, 110 acres*)
- *ERI includes maps showing soil characteristics*
 - Depth to Bedrock
 - Depth to Seasonal High Water Table
 - Hydrologic Soil Group
 - Soil Drainage Class
 - Hydric and Flooded Soils
 - Potential Frost Action
 - Farmland Suitability
 - Septic Suitability



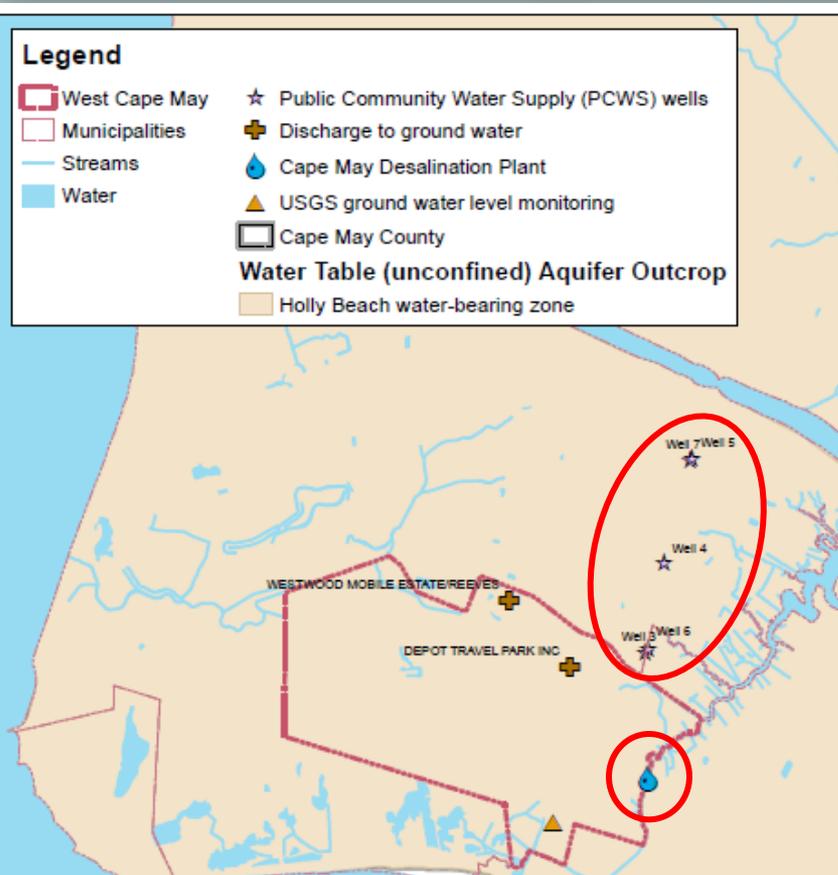
5: Ground Water & Drinking Water

- Aquifers in West Cape May
- Recharge
- Quality (including saltwater Intrusion) & quantity
- Discharges & Contaminated Sites

WCM gets its water from the Cape May City Water Department

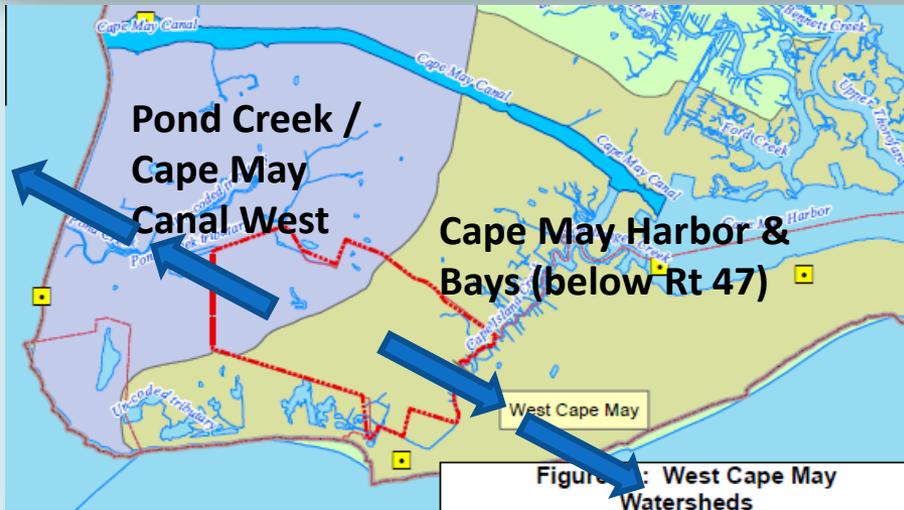
- 2 main wells are in the Atlantic City 800-foot sand aquifer
- treated by the reverse osmosis water treatment facility constructed in 1998 to remove salt
- water drawn from the 560-foot-deep Cohansey aquifer, is blended with desalinized water
- lime is used for pH adjustment
- sodium hypo-chlorite is used for disinfection

- Saltwater intrusion continues to threaten water supply



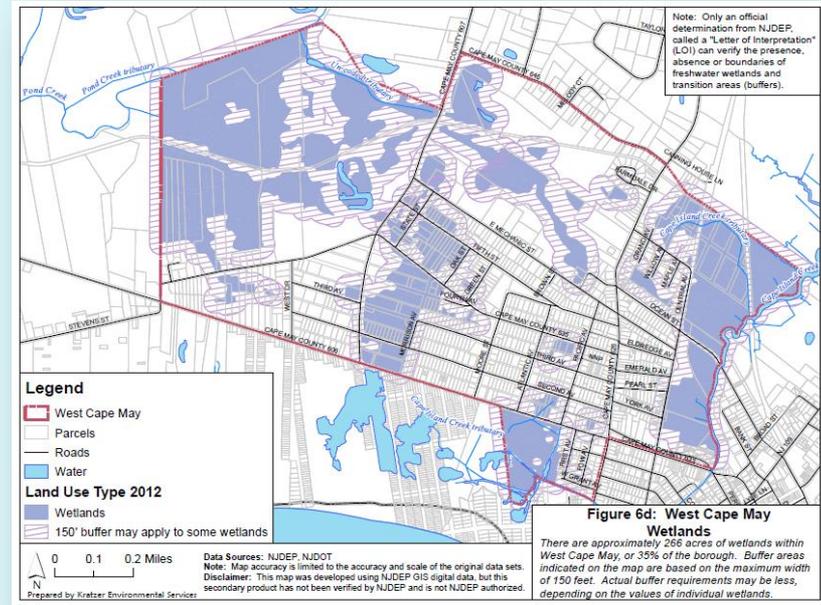
6: Surface Water

- Watersheds
- Floodplains
- Wetlands
- Water Quality
- Fish Consumption Advisories



- ~Half WCM drains to the Delaware Bay
- ~ Half WCM drains directly to the Atlantic Ocean

- 266 acres of wetlands in WCM
- 35% of WCM
- An LOI is necessary to confirm the boundaries of wetlands and wetland buffers
- types of freshwater wetlands
 - deciduous wooded wetlands, saline marsh (low and high), deciduous scrub/shrub wetlands, and agricultural wetlands



7: Biological Resources

- Vegetation (Land Cover)
- Wildlife
- Endangered, Threatened & Special Concern Species
- Invasive Nonindigenous Species



- The Landscape Project is an ecosystem-level approach to the long-term protection of rare animal species and their important habitats in NJ
- 91.6% of WCM is Rank 4 for priority species
- 4.4% of WCM is Rank 1 for potential habitat
- 3 known vernal pool habitats

Endangered, Threatened & Special Concern Species



Southern (Cope's) Gray Treefrog

Source:
<https://www.njfishandwildlife.com/ensp/pdf/frogs.pdf>



Larger Buttonweed



Image credit to Robert H. Mohlenbrock, hosted by the USDA-NRCS PLANTS Database / USDA SCS. 1989. Midwest wetland flora: Field office illustrated guide to plant species. Midwest National Technical Center, Lincoln.



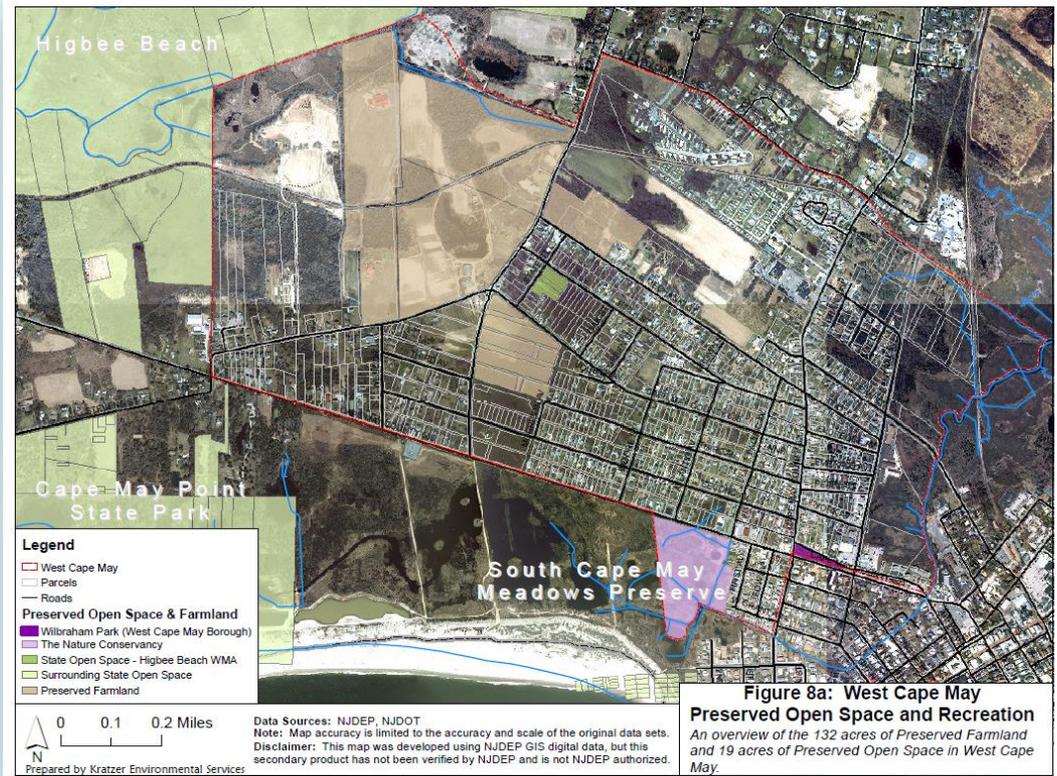
Northeastern beach tiger beetle

Source: U.S. Fish and Wildlife Service

- Animals
 - State Endangered
 - 2 amphibians
 - 4 birds
 - Migratory Raptor Concentration Site
 - State Threatened
 - 5 birds
 - Special Concern
 - 6 birds
 - Tracked but no special designation
 - 1 moth and 1 beetle
- Plants
 - 1 state critically imperiled (S1)
 - 2 imperiled (S2)
 - 1 rare (S3)

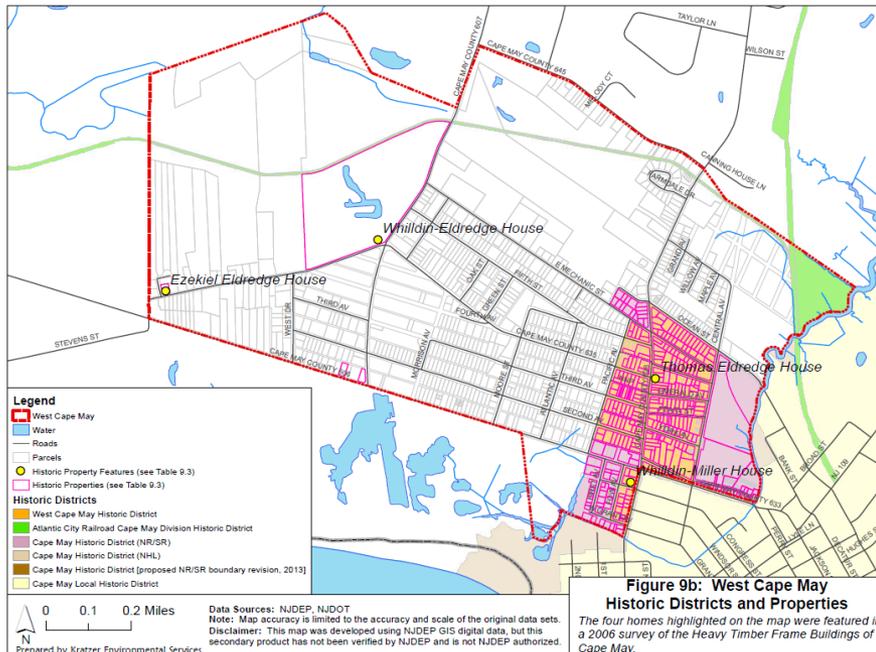
8: Open Space & Recreation

- 18.8 acres preserved open space
- 132.4 acres preserved farmland
- 151 acres total, which is 20% of WCM



9: Historical Resources

- National Register of Historic Places
 - The Cape May Historic District
 - concentration of structures built during the late Victorian Period (1870-1901)
 - The Whilldin-Miller House
 - original timber frame ~1715 and newer part in 1860
- Eligibility record for a historic milestone
 - a marker for the Cape Island Turnpike, circa 1848-1851



10: Regional Relationships

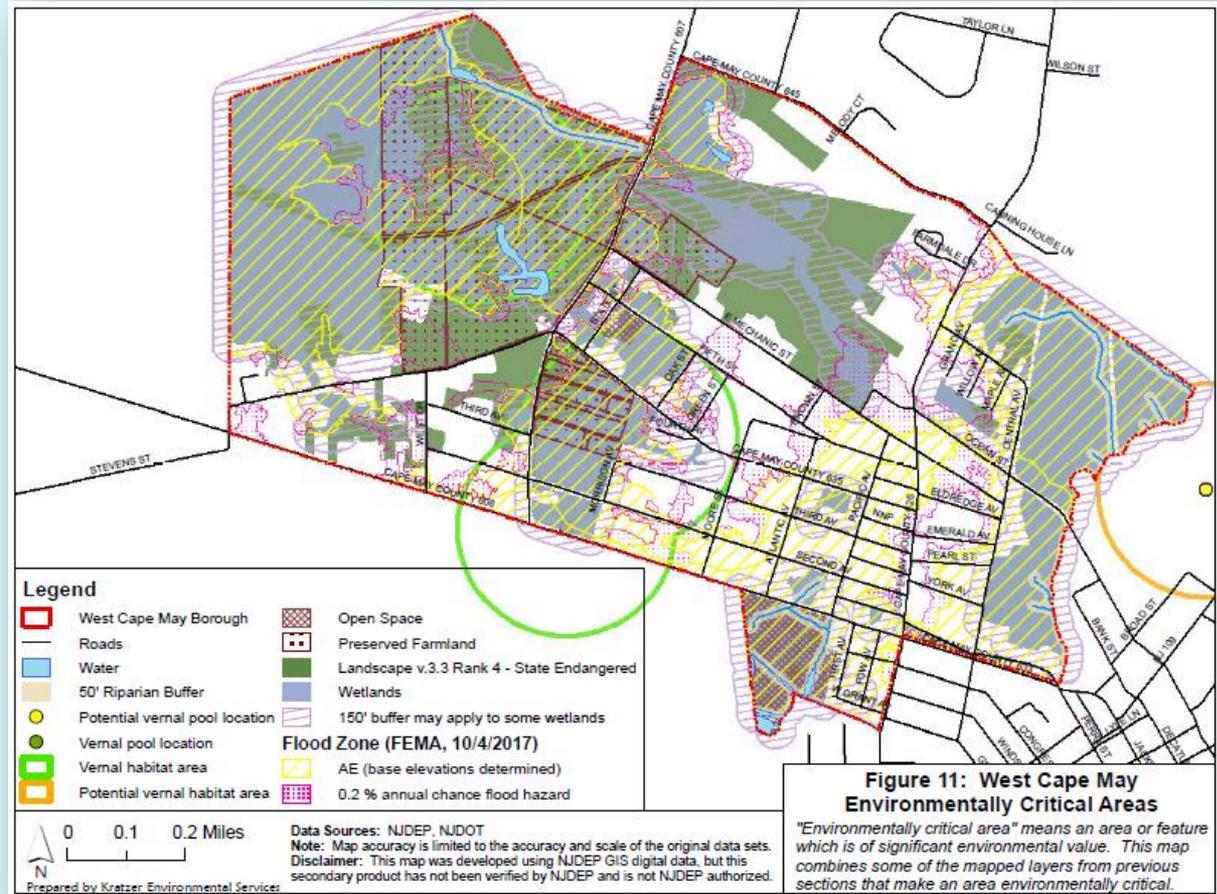
- Sustainable Jersey
 - *Bronze Certification* in 2016 with 185 points
- Water Supply Planning
 - NJDEP will continue to monitor the Cape May Tribs West watershed as they approach the planning threshold for depletive/consumptive uses
- Water Quality Management Planning
 - The Cape May County Board of Chosen Freeholders is the designated planning agency
 - update the Wastewater Management Plan at least once every 10 years



11: Environmentally Critical Areas

Figure 11 combines the following:

- Floodplains
- Wetlands*
- Wetland buffers
- Riparian buffers (50')
- Landscape Project version 3.3: Rank 4 habitats
- Open space



*based on 2012 Land Use data (an LOI is necessary to determine actual boundary of wetlands and wetland buffers)

Appendices

- **A: GIS Data Use Agreements**
 - required by NJDEP
- **B: Metadata for GIS Data Layers**
 - List of GIS layers used for each map including source, date, scale and online link
- **C: Regional Fauna**
 - Lists of birds, mammals, reptiles, amphibians and fish
- **D: Endangered Species**
 - Rare plant and animal reporting forms
 - Habitat Requirements for Rare Wildlife Species Recorded in the Vicinity of WCM
 - Cape May County lists of rare birds and plants
 - Cape May Migratory Bird Refuge Natural Heritage Priority Site
- **E: Species Tracked by the NJ Invasive Species Strike Team in Cape May County**

Adopting and Using the ERI



- Goal is for the Board to adopt ERI as part of the Master Plan
- Board holds a hearing for adoption of ERI as part of Master Plan
 - Municipal Land Use Ordinances must be consistent with the Master Plan
 - EC should be provided with copies of site plans and proposals
- Available for downloading from <http://xxxxxxxxxxxx>



[Email Environmental Commission]

