

NJ Office of Planning Advocacy

State Plan Endorsement

Opportunities & Constraints Assessment Report:

TRENDS Analysis

For:

Township of Barnegat, Ocean County

April 4, 2023

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Introduction

On February 8, 2023, The Township of Barnegat (Township) submitted their Municipal Self-Assessment Report (MSA) to the New Jersey Office of Planning Advocacy (OPA). This document and associated components provided by the other State agencies comprise the Opportunities and Constraints Assessment (O&C) conducted as part of the Municipal Plan Endorsement (PE) process. Plan Endorsement is a voluntary review process designed to ensure the coordination of state, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act. The State Development and Redevelopment Plan (State Plan) is the blueprint for achieving these goals and provides the template for coordination. The endorsement process expands upon the requirements of the Municipal Land Use Law (MLUL) and incorporates many planning initiatives of the State Agencies. This report provides for a comparison of information with the MSA with the most up-to-date regional and statewide data to determine whether TREND growth is sustainable and viable based on the information provided. This information is intended to guide and direct the Community Visioning Process and to develop a vision with a twenty-year planning horizon. The vision shall provide for sustainable growth, recognize fiscal constraints, housing needs and protection of natural, and historic resources. Community visioning shall take into consideration the findings and conclusions of the MSA and O&C. In addition, the O&C provides specific comments that will need to be addressed through PE.

Background Relation to the State Development and Redevelopment Plan (State Plan)

The Township of Barnegat initiated the PE process by attending a pre-petition meeting with OPA and our State agencies on August 9, 2021. The Township then appointed its Plan Endorsement Advisory Committee by Resolution No. 2021-341, on December 7, 2021. The MSA was authorized by the Township via Resolution No. 2023-98, on February 7, 2023. As previously mentioned, the Township submitted their MSA on February 8, 2023.

Relation to the Pinelands Protection Act

The New Jersey Pinelands Commission (PC) was granted authority to preserve the Pinelands through the passage of the National Parks and Recreation Act of 1978 and the New Jersey Pinelands Protection Act in 1979. The Commission protects the Pinelands through its implementation of the Comprehensive Management Plan (CMP). Barnegat Township is located within the New Jersey Pinelands Region and, consequently, falls under the jurisdiction of the New Jersey Pinelands Commission. The CMP establishes land use management areas with goals, objectives, development intensities and permitted uses for each. The following management areas are located within Barnegat Township: Forest Area, Pinelands Village, Preservation Area, and Regional Growth Area. Areas to the west of the Garden State Parkway are situated in the State-regulated Pinelands Region, which requires conformance with the CMP. Conformance is not required for areas to the east of the Garden State Parkway.

Relation to the Coastal Zone and CAFRA

The United States Coastal Zone Management Act of 1972 (CZMA) provides for the management of the nation's coastal resources. Its goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." The CZMA gave states the authority to manage the development and use of coastal land and water areas. As a result, the State of New Jersey adopted the Coastal Area Facilities Review Act (CAFRA; N.J.S.A. 13:19) to manage development in the coastal zone. CAFRA is implemented by Coastal Permit Program Rules (N.J.A.C. 7:7) and Coastal Zone Management

Rules (N.J.A.C. 7:7E), which are administered by the New Jersey Department of Environmental Protection, Division of Land Resource Protection. Areas subject to these regulations are said to be within the CAFRA Zone. In Barnegat Township, the CAFRA Zone has an area of approximately 7,746.73 acres and comprises all areas to the east of the Garden State Parkway.

Relation to the State Development and Redevelopment Plan (State Plan)

On December 7, 2011, Barnegat Township received Plan Endorsement approval from the State Planning Commission. This approval designated the Barnegat Town Center and Barnegat Commercial Core. Plan Endorsement is approved for a 10 year period. Barnegat Township’s Plan Endorsement expired on December 7, 2021. This expiration includes the expiration of the Barnegat Town Center and Barnegat Commercial Core. According to the Township of Barnegat’s Municipal Self-Assessment Report, the Township is seeking to pursue Plan Endorsement again in order to establish consistency among municipal, county, regional and State agencies, and with the New Jersey State Development and Redevelopment Plan. The Township is also seeking Plan Endorsement to align its local planning goals and objectives with the State Plan. The Township seeks to renew its Barnegat Town Center and Commercial Core.

The State Plan Policy Map accompanies the State Plan and categorizes every area in the State into specific Planning Areas based on their suitability to growth, development, and preservation. The state Plan Map that was adopted in 2001 depicts 2,777.94 acres of Barnegat as Suburban Planning Area (PA2), 1,770.22 acres as Environmentally Sensitive Planning Area (PA5), 3,158.72 acres as Park, and 14,444.20 acres as Pinelands.

About the TREND Analysis

The TREND Analysis performed by OPA was conducted based on the current zoning information from the 2017 Master Plan Reexamination Report Land Use Plan. OPA considered known environmental Constraints along with identified State Plan Parkland as impediments to development. Also eliminated from development considerations were wetlands (with 25-foot buffer), presence of Category 1 (C1) Streams, existing developed land including infrastructure, and identified surface water. The net result from the TREND Analysis will determine the amount of housing and commercial space that can potentially be built given current zoning regulations. Ultimately, the information provided throughout this document shall be utilized to inform the Community Visioning Process, as well as the remaining steps in the Plan Endorsement Process. The objective of the analysis is to provide the municipality with an idea of how it might appear at time of full buildout based on current land use and zoning regulations.

Figure 1: Summary Table	
Land Consumption (Acres) Township Wide	
Developed Land	6,664.27
Constrained Land	18,548.05
Current Developable Land	552.64
Buildings	
Existing Residential Units	10,724
Potential New Residential Units	0
Potential New Commercial Units	276
People	
Current Residents	24,296
Additional Residents at Buildout	0
Total Residents at Buildout	24,296

Ultimately, the information provided throughout this document shall be utilized to inform the Community Visioning Process, as well as the remaining steps in the Plan Endorsement Process. The objective of the analysis is to provide the municipality with an idea of how it might appear at time of full buildout based on current land use and zoning regulations. The series of worksheets represents a basic methodology for the TREND Analysis. Based on mapping data and zoning regulations, OPA inserted relevant data transferred from the Township of Barnegat’s zoning language, into the Residential Buildout Method and Commercial Trend – Building Cover Method. Household size was identified as 2.52 persons per household (median).

Township of Barnegat Residential Buildout

The TREND Analysis for the Township of Barnegat Residential Buildout assumes buildout of existing residential zones at maximum density permitted by the Township’s current zoning. Based on the current zoning information and considered developed and constrained land, Barnegat Township does not have any current residential developable land. Figure 1 lists total residents at buildout as not changing from its current residential population due to

an addition of 0 residents at buildout. However, the North Jersey Regional Transportation Planning Authority (NJTPA) forecasts a population of 28,039 residents by 2050. This is an increase of 3,743 residents (15.4% change) from 2020. Figure 2 depicts Barnegat Township’s historic and future population trend.

Figure 2: Historic and Future Population

Year	Population	%±
1850	1,759	—
1860	1,918	9.00%
1870	1,923	0.30%
1880	1,024	-46.7%
1890	1,063	3.80%
1900	955	-10.2%
1910	982	2.80%
1920	803	-18.2%
1930	1,037	29.10%
1940	1,045	0.80%
1950	1,173	12.20%
1960	1,270	8.30%
1970	1,539	21.20%
1980	8,702	465.40%
1990	12,235	40.60%
2000	15,270	24.80%
2010	20,936	37.10%
2020	24,296	16.00%
NJTPA 2050	28,039	15.40%

Township of Barnegat Commercial Buildout

The below Commercial Buildout (Figure 3) was performed similar as the Residential Trend Analysis using the current zoning. Only one Zone showed available developable land.

Figure 3: Pinelands Commercial Trend Land Consumption (acres)

Pinelands Zone	Total Land (acres)	Total Constrained Land (acres)	Total Developed Land (acres)	Total Available Land (acres)	Approx. Min Lot Size (area per Sq. Ft.)	Potential Number of Units
	A	B	C	D = A-B-C	E	F = E/D
PI	556.14	0.60	2.91	552.64	87,120.00	276

Conclusion

The Township of Barnegat actively plans for its future by engaging the public and seeks to realize the vision articulated in the 2017 Master Plan. Given that the vision of the Barnegat Town Center was affirmed by

the 2021 Master Plan Reexamination Report, and that no changes are proposed at this time, the Township seeks a waiver for additional community visioning with regard to the Barnegat Town Center. The Township intends to hold supplemental community visioning meetings as part of the Plan Endorsement process if the waiver is not granted. According to the MSA, "In the years since the State Planning Commission's 2011 grant of Plan Endorsement and the designation of the Barnegat Town Center and Barnegat Commercial Core, the Township has made strides to implement the terms of its Plan Endorsement. This is embodied in such actions as the adoptions of: overlay zoning to facilitate the development of the Barnegat Town Center and Barnegat Commercial Core in 2012; a Green Building and Environmental Sustainability Plan Element in 2013; a Housing Element and Fair Share Plan in 2018; and requirements for solar energy facilities in 2019. Barnegat Township wishes to continue its efforts to become a more sustainable and resilient community, which includes developing the Barnegat Town Center and Barnegat Commercial Core to their full potential as compact, mixed-use developments that provide more efficient traffic and pedestrian circulation and reduce auto dependency. To achieve this, it is imperative that the existing Plan Endorsement and designation of said center and core be continued."

NJ Department of Environmental Protection
State Plan Endorsement
Opportunities & Constraints Assessment Report
Barnegat Township, Ocean County

March 30, 2023

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Introduction

Municipal Plan Endorsement is a voluntary review process designed to ensure the coordination of state, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act (Act). The State Development and Redevelopment Plan (State Plan) is the blueprint for achieving these goals and provides the template for coordination. The endorsement process expands upon the requirements of the Municipal Land Use Law (MLUL) and incorporates many planning initiatives of the State agencies.

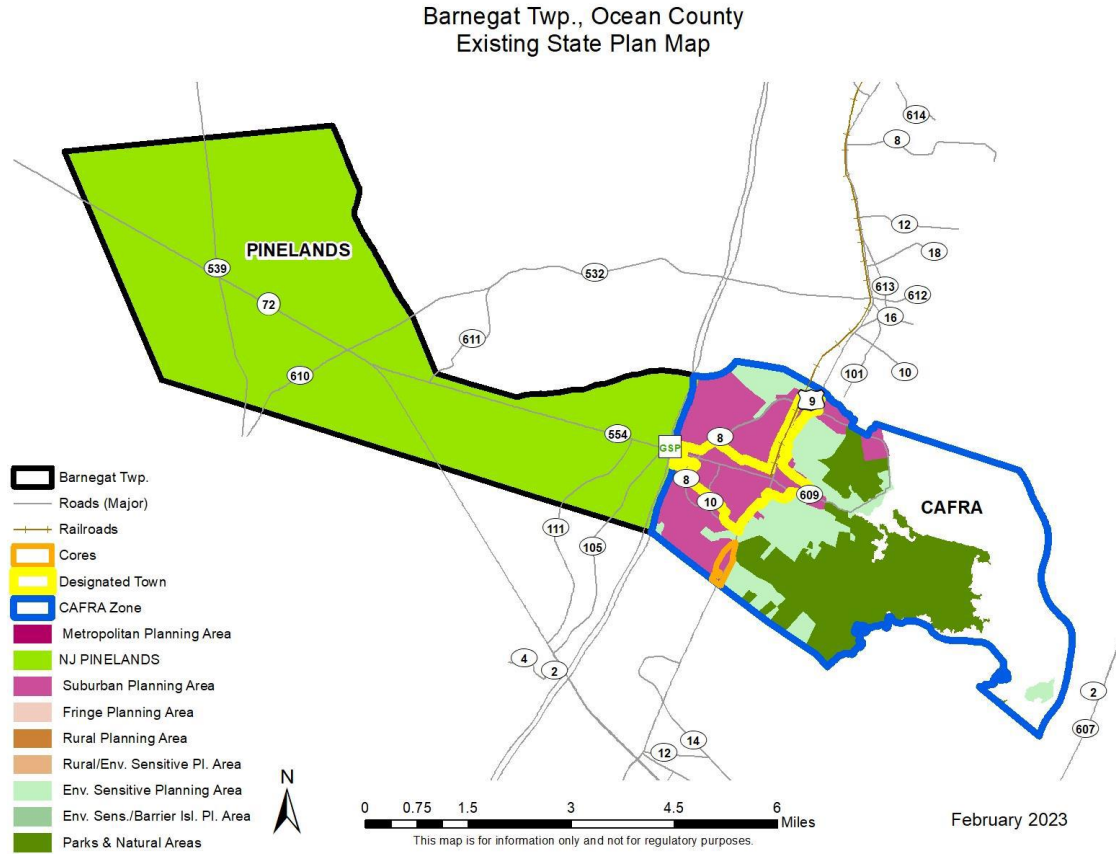
This document constitutes the Department of Environmental Protection's (DEP) component of the State Opportunity and Constraints Assessment (OCA) conducted as part of the Plan Endorsement process. This document provides an overview of the Department's regulatory and policy concerns within Barnegat Township, Ocean County. The information provided herein is intended to reflect the Department's current information concerning the Town. Recommendations may be found throughout the document **in bold** and are listed for easy reference in the Summary of and Recommendations section at the end of this report.

Overview

Barnegat Township, Ocean County submitted a Municipal Self-Assessment (MSA) which was deemed complete by the Department of State's Office of Planning Advocacy (OPA) on February 9, 2023. Barnegat Twp. encompasses a land area of 34.05 sq miles (39.87 sq miles including jurisdictional tidal waterways). The portion of Barnegat Twp to the west of the Garden State Parkway is within the jurisdiction of the New Jersey Pinelands Commission. To the east of the Garden State Parkway, the remainder of Barnegat Twp is located in marsh, barrier island coastal waterways and environmentally sensitive land to the east and within the jurisdiction of the New Jersey State Coastal Area Facilities Review Act (CAFRA) administered by the NJDEP and the Federal New Jersey Pinelands National Reserve (rural dev area) jurisdictional areas. Any changes to existing planning areas must be consistent with not only the State Plan but also with the most recent CAFRA rules and the Pinelands Comprehensive Management Plan.

Barnegat Twp is concentrating their future growth and planning within the existing town center and core located in the area to the east of the Garden State Parkway. Barnegat Twp received their current State Plan endorsement for a town center and a commercial core from the N.J. State Plan Commission on December 08, 2011. The endorsed center replaced an earlier Barnegat Coastal Town Center that expired on February 7, 2005. Barnegat Twp is proposing to renew their existing center and core without changes as well as to continue to restore and preserve the township's natural and historic resources, preserve open space, and to address sustainable economic development, stormwater management, affordable housing and congestion concerns consistent with the planning goals and objectives within the State Plan.

Existing Center and Core:



The proposed center and core are located entirely in Planning Area-2. The commercial core is located entirely in the existing sewer service area (SSA) and the Town center is located partially in the SSA.

Barnegat Twp Total Area = 25,776.14 Acres

State Plan Existing Planning Areas	Acres	% of Total Existing PLA Area *
PA 5 - Environmental Sensitive	1,770.36	8.0
PA 2 - Suburban	2,777.94	12.5
Park	3,160.44	14.3
Pinelands	14,444.16	65.2
Total	22,152.90	

* Note % calculated on planning area total = 22,152.90 Acres

Surface water (LULC 2015) area is approximately 4,457.2 Acres.

Major Water removed (3,623.24 Ac), other water not recognized in planning area totals.

Existing Centers	814.62
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Existing Center overlay existing planning areas

Existing Core	57.36
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Existing Core overlays proposed planning areas.

The Township has also identified areas of redevelopment within the Township including: 1) the current Barnegat Town Center concentrated along West Bay Avenue (CR554), East Bay Avenue and Rt 9 and south to Gunning River Road and north to Union Boulevard; 2) the Commercial Core located along the southern portion of Rt 9 in Barnegat Twp; 3) the 5,882 acres (22.6%) of Barnegat Twp to the east and west of Garden State Parkway that are located within the Pinelands Regional Growth Area; 4) Sweet Jenny Redevelopment Area – 6.2 acres (Block 105, Lots 5 and 6.01) designated April 2018 for residential with a plan; 6) Shoreline Sand and Gravel and Compass Point Redevelopment Area – 212 unit and clubhouse phase 1 plan approved and first phase 12 units to be completed in Spring 2023.

Recommendation Summary: Based on the identification of additional parcels in environmentally sensitive areas and to accurately reflect undeveloped parcels with threatened and endangered species habitat or within the 100 year flood zone, the **DEP recommends continuing to work with the Municipality and the OPA to refine the proposed center and core for endorsement that is fully protective of environmental and cultural constraints including ranked habitat, CHANJ corridor, and wetlands.** The current Town Center and Commercial Core are in Planning Area PA 2 and predominantly in the sewer service area and public potable water area. However, the Department wishes to avoid including in a center low density residential neighborhoods and long linear arterial corridor development expansion outside of sewer service area although sewer extensions may be pursued for public health reasons without a planning area change. Barnegat does not propose any planning areas changes to promote development. The Department does not support utilizing planning area changes to expand new construction retail and residential development on major roadways, in undeveloped areas of significant habitat or in areas susceptible to flooding which is not consistent with state plan smart growth and natural resource protection goals.

NJDEP MSA Comments: The following represents the DEP’s Opportunities and Constraints comments with a focus on the proposed Town Center and Commercial Core.

Barnegat Township is a mature community that encompasses a total of **25,472.58 acres in Ocean County including 21,318.94 acres (31.31 sq mi) without surface water and 4,153.64 acres of open water.** While Township development is concentrated outside the NJ regulated Pinelands Area, land use throughout the municipality is divided between residential (2780.20 acres based on NJDEP LULC 2015

dataset), public property/parks/preserved open space based on OPA State Plan dataset, roadways schools, critical infrastructure, emergency services, municipal facilities, commercial and residential development, houses of worship, privately owned vacant land, and farmland. Within Barnegat’s total municipal boundary, 6236.56 acres is in the current sewer service area while 2,733.93 acres of Barnegat Twp in the CAFRA region excluding surface water area to the east of the Parkway is in the SSA. A majority of the Town Center is in the SSA and 100% of the commercial core is in the SSA. 100% of Barnegat Twp in the CAFRA region including the Center and Core is in the public water service area. The historic district is concentrated around the intersection of Route 9 and Bay Avenue.

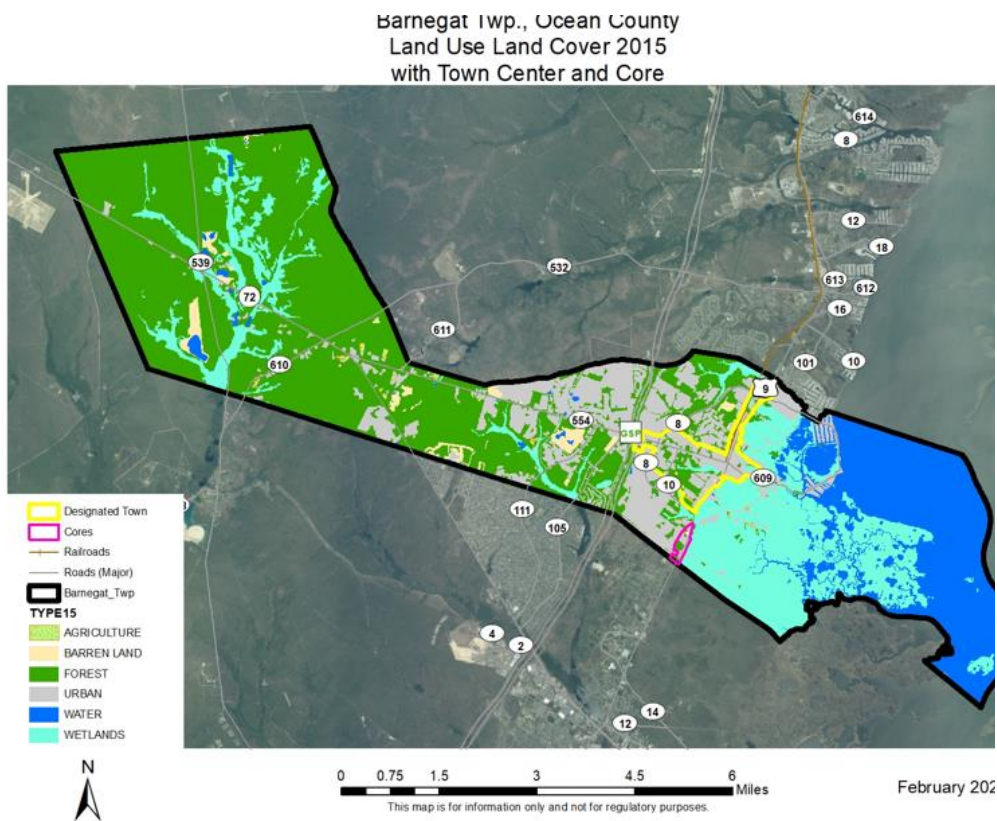
Land Use Cover

Barnegat Township is composed of many different planning areas and significant areas of historic and natural resources designated for protection and preservation. The current endorsed plan (12/08/2011) includes the Barnegat Town Center and the Commercial Core.

Land Use Cover

Barnegat Twp., Ocean

Barnegat Twp. Total Area = 25,776.14 Acres



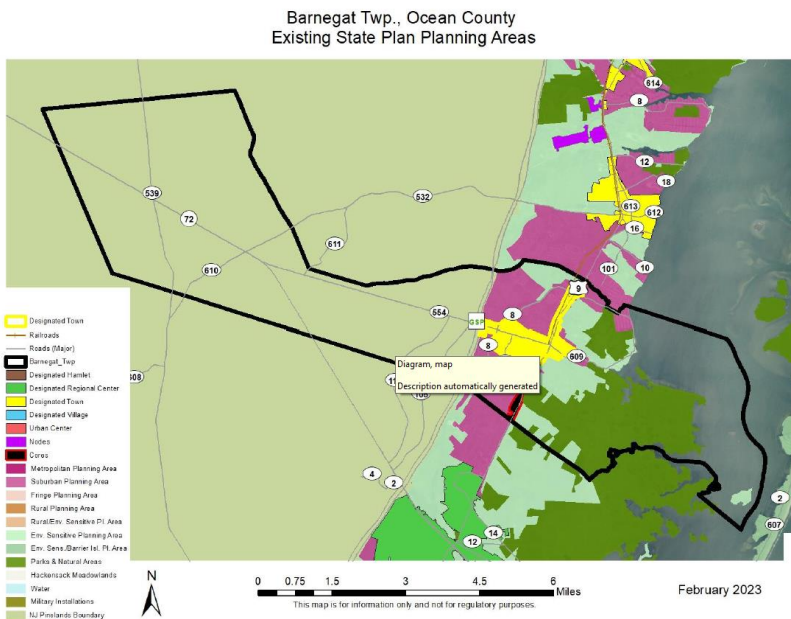
LULC 2015

Barnegat Twp. includes CAFRA & PINELANDS

LULC 2015 Type	Acres	Percent
AGRICULTURE	64.61	0.3
BARREN LAND	399.26	1.5
FOREST	11,735.78	45.5
URBAN	3,884.05	15.1
WATER	4,457.20	17.3
WETLANDS	5,235.24	20.3
TOTAL	25,776.14	100.0

URBAN (3,884.05 Acres)	Acres	Percent
Residential	2,780.20	71.6
Commercial/Services/ Industrial	279.1	7.2
Other	824.75	21.2

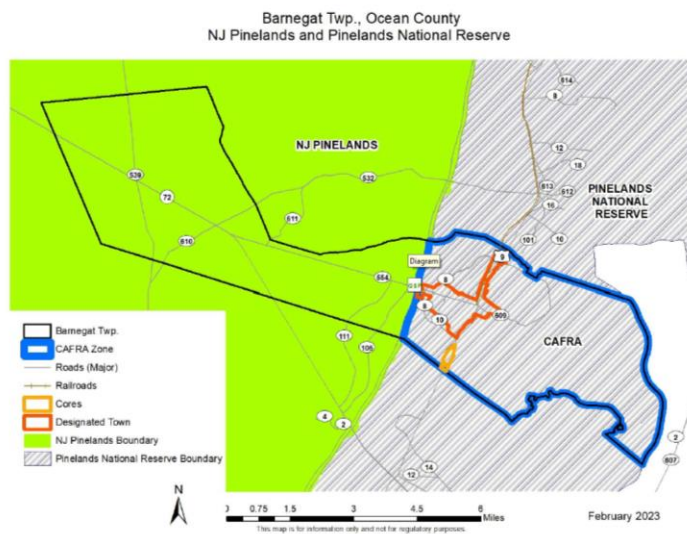
Approximately 14,444.16 acres (56.7 %) of all of Barnegat Township is within the NJ Pinelands jurisdiction to the west of the Parkway and 11,398.39 acres (53.5 %) is in CAFRA and the Pinelands National Reserve to the east of the Parkway. 12,160.31 acres of non-profit, local, state and federal land have been preserved including 8,011.79 acres preserved under the NJ State Green Acres Program.



Pinelands and CAFRA Area in Barnegat Twp.

Barnegat Twp is one of 56 municipalities that are located entirely or partially in the 1.1M acre Pinelands National Reserve. In 1989, the Pinelands Comprehensive Management Plan was adopted and is regulated by the NJ Pinelands Commission. The proposed Barnegat Town Center and Commercial Core

are outside of the NJ Pinelands jurisdiction but in CAFRA and the NJ Pinelands National Reserve. While all of Barnegat Twp to the west of the Garden State Parkway is under the jurisdiction of the Pinelands CMP, the area to the east of the Parkway, while in the Pinelands National Reserve, is not included in the Pinelands CMP and is subject to the jurisdiction of the NJDEP and the Coastal Zone Management Rules most recently amended October 5, 2021. (NJAC 7:7; N.J.S.A. 13:19-1 et seq.; 12:3-1 et seq., 12:5-3; 13:9A-1 et seq.).



Barnegat Twp CAFRA Total Area = 11,398.39 Acres

LULC 2015 Type	Acres	Percent
AGRICULTURE	9.39	0.1
BARREN LAND	27.08	0.2
FOREST	1,003.45	8.8
URBAN	2,143.38	18.8
WATER	4,310.73	37.8
WETLANDS	3,904.35	34.3
TOTAL	11,398.39	100.0

URBAN (2,143.38 Acres)	Acres	Percent
Residential	1,534.49	71.6
Commercial/Services/ Industrial	220.12	10.3
Other	388.77	18.1

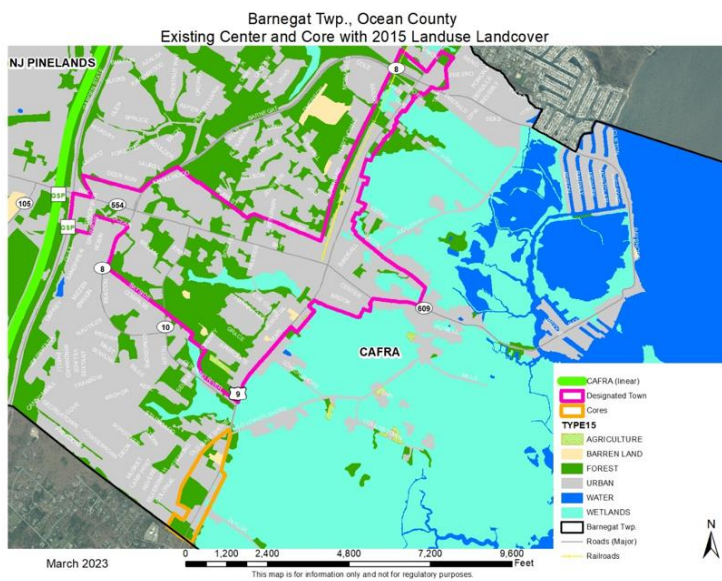
Barnegat Twp CAFRA Total Area (without surface water) = 7,087.66 Acres

Any plan adoption must also align with the NJ Coastal Area Facility Review Act (1973) Coastal Management Rules at N.J.A.C. 7:7-13.16(b). The CZM Rules state that whenever the State Planning Commission formally approves any new or changed Planning Area boundary, any new or changed community development boundary, or any new or changed core or node boundary, the Department shall evaluate the new or changed boundary to determine whether it is consistent with the purposes of CAFRA and this chapter. The Barnegat Twp. state plan map was previously endorsed on 12/7/2011

and, until 12/7/2021, the Town Center was as a mapped as a CAFRA Designated Town Center with Suburban Planning Area, Env. Sensitive Planning Area and Parks. When the state planning areas were adopted on December 8, 2022, the current Town Center designation replaced a CAFRA Town Center. While the existing center and core are entirely in State Planning Area PA-2, impervious cover permitted within the CAFRA area is 80% in a CAFRA Core, 70% in a CAFRA Town Center, 60% in a CAFRA Village Center, 30% in Coastal PA-2 Suburban Planning Area (PA-2) if in a sewer service area (SSA) area, and 5% in Suburban PA-2 Planning Areas if outside the SSA. The DEP is working with OPA and the Township to review the current boundaries of the Core and Center to avoid any adverse environmental impacts.

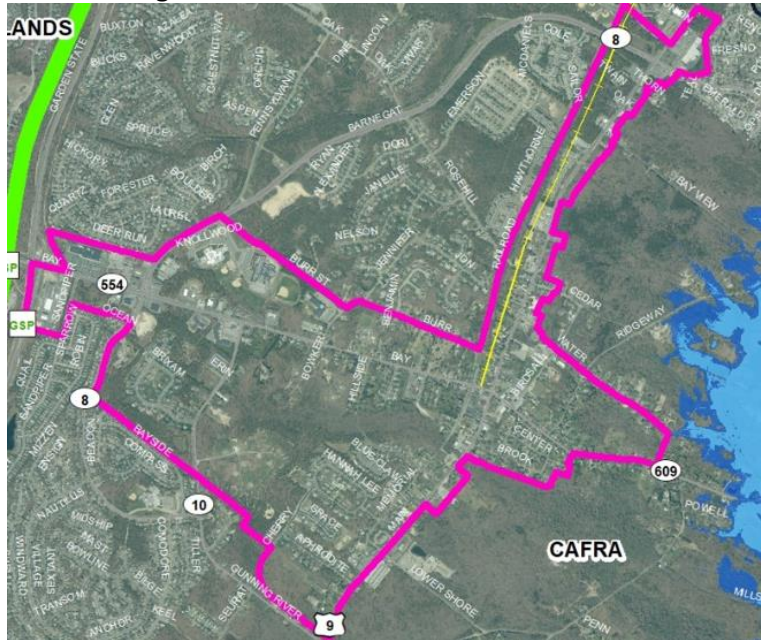
In 2020 the New Jersey Department of Environmental Protection (DEP) began a regulatory reform effort to help reduce greenhouse gas (GHG) and other climate pollutant emissions while making our natural and built environments more resilient to the impacts of climate change that are now unavoidable. These reforms represent New Jersey protecting against climate threats (NJ PACT), a partnership with New Jerseyans to help both stave off the worst impacts of climate change and adapt to unavoidable impacts already occurring across the State. **The NJDEP is currently drafting new rules** to incorporate climate change considerations, like sea level rise into the environmental land use rules including the Coastal Zone Management Rules, the Freshwater Wetlands Rules, the Flood Hazard Area Rules, and the Stormwater Management Rules. (<https://dep.nj.gov/njpact/>). When these draft rules are issued for public comment, they will have an immediate impact on the meaning and implications of any critical environmental site (CES) overlay within the CAFRA region of NJ.

Proposed State Planning Town Center and Commercial Core



For State Plan endorsement, Barnegat Twp is proposing a renewal of the existing Town Center and Core. All are in Planning Area 2 (Suburban) planning area. The NJDEP is currently engaged in discussions with Barnegat Twp and the Office of Planning and Advocacy (OPA) to finalize a map for endorsement by the State Plan Commission. Based on a review of the MSA and in order to minimize the impact to flood areas and areas of known threatened and endangered species habitat, the NJDEP will work with the municipality and OPA to make any adjustments to the existing center and core.

Total Existing Town Center Area



Barnegat Existing Center = 814.62 Acres

- Sewer service area = 744.50 Acres or 91.4 %
- Open Space (Municipal and County) = 32.86 Acres or 4.0 %
- Water Purveyor Area = 807.68 Acres or 99.2 %
- Wetlands = 49.39 Acres or 6.1 %
- CHANJ Corridor (undeveloped 2015) = 29.24 Acres or 3.6 %
- FEMA 1 % Flood Hazard Area = 0
- FEMA 0.2 % FHA = 0.89 Acres or 0.1 %
- Overburdened Community (2020) = 109.81 Acres or 13.48 %

Total Existing Commercial Core Area



Barnegat Existing Core = 57.55 Acres

Sewer service area = 57.55 Acres or 100 %
 Open Space = 0 Acres or 0 %
 Water Purveyor Area = 57.55 Acres or 100 %
 Wetlands = 2.37 Acres or 4.1 %
 CHANJ Corridor (undeveloped 2015) = 4.53 Acres or 7.9 %
 FEMA 1 & 0.2 % FHA = 0 Acres or 0 %
 Overburdened Community (2020) = 38.75 Acres or 67.33 %

Areas outside Center and Core PA2: Any undeveloped areas subject to flooding or ranked 3-5 habitat and under 1 sq mile shall have a Critical environmental site (CES) overlay. The connector road to Lagoon Neighborhood to east of town center and bordering Ocean Twp is currently a PA 2 with sewer and public water subject to climate change related flooding. As this neighborhood is not included in the center, is already built out, and has public water and sewer, a CES is not necessary. However, it is recommended Barnegat Twp adjust zoning for information purposes to indicate 100 year and 500 year flooding potential of this neighborhood.



Any changes to ordinances, updates to the Master Plan, proposed changes to the State Plan designated areas, or proposed redevelopment plans must be reviewed by the NJ Pinelands Commission and also determine consistency with the State Plan and with CAFRA Coastal Zone Rules

Impervious Surfaces

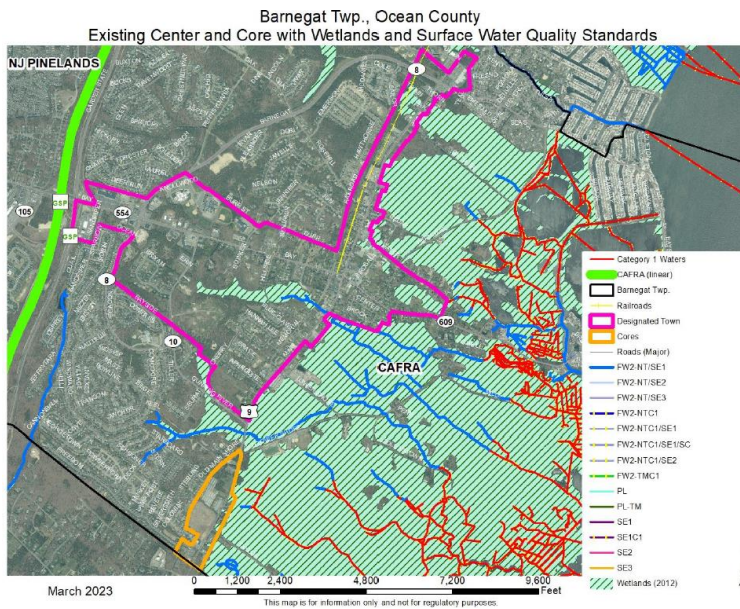
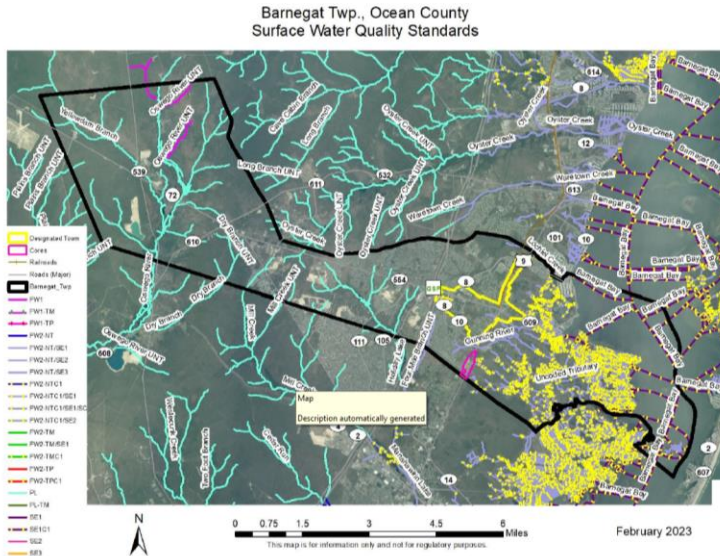
With additional development within the proposed core boundaries, Barnegat Twp must address how to manage and minimize any additional impervious surface. An increase in stormwater runoff may result in a discharge of excessive nutrient and pollutant loads to nearby surface water bodies. Additional stormwater runoff can also lead to soil and stream bank erosion and further degradation of valuable surface water bodies.

As a result of changing climate conditions, including increases in temperature and precipitation, the ability of the municipality to manage an increase in stormwater in situ will be challenged by an increase in new construction of impervious surfaces. The proposed cores include a total of 137.7 acres of impervious surfaces.

Barnegat Twp. Total Area (without surface water) = 21,318.94 Acres & CAFRA Total Area (without surface water) = 7,087.66 Acres

	Acres of Impervious 2012	Pct of Impervious 2012	Acres of Impervious 2015	Pct of Impervious 2015
Barnegat Twp. (21,318.94 ac)	1,172.41	5.5	2,775.65	13.0
Barnegat Twp. CAFRA (7,087.66 ac)	692.30	9.8	1,364.16	19.2
Existing Center (814.62 ac)	175.28	21.5	292.04	35.9
Existing Core (57.36 ac)	17.45	30.4	20.09	35

Barneget Twp. surface water bodies include Category 1 waters:



All surface waters in the town require at least a 50-foot riparian zone buffer and C-1 classified streams require up to a 300 foot buffer, which are determined and regulated in the NJDEP Flood Hazard Area Control Act Rules.

Climate Change Impacts

In past OCA reports, DEP has largely focused on assessing the impacts to the development potential of municipalities based on environmental resources and water/wastewater capacity. In addition to addressing those issues, this OCA will consider the current and future impacts of climate change on

those issues, as well as climate mitigation (e.g. greenhouse gas reduction, renewable energy) and climate resilience (e.g. vulnerability to increased flooding).

New Jersey issued its first *Scientific Report on Climate Change*(1) on June 26, 2020. The report details the latest science and describing the current and projected impacts of climate change, specific to New Jersey. As atmospheric levels of carbon dioxide and other greenhouse gases increase, Barnegat can expect to see increases in average temperature, precipitation, flooding, and impacts to its extensive natural resources. Following, are key findings of the Scientific Report that may be germane to Barnegat Township.

Temperature

- New Jersey is warming faster than the rest of the Northeast region and the world.
- Since 1895, New Jersey's annual temperature has increased by 3.5° F.
- Historically unprecedented warming is projected for the 21st century with average annual temperatures in New Jersey increasing by 4.1° F to 5.7° F by 2050.
- Heatwaves are expected to impact larger areas, with more frequency and longer duration by 2050.
- Climate change could result in a 55% increase in summer heat-related mortalities.

Precipitation

- Annual precipitation in New Jersey is expected to increase by 4% to 11% by 2050.
- The intensity and frequency of precipitation events is anticipated to increase due to climate change.
- Droughts may occur more frequently due to the expected changes in precipitation patterns.
- The size and frequency of floods will increase as annual precipitation increases.

Air Quality

- The effects of climate change are likely to contribute to an increase in air pollution, lead to increased respiratory and cardiovascular health problems, like asthma and hay fever, and a greater number of premature deaths.
- Environmental degradation from climate induced increases in air pollution will reduce visibility and cause damage to crops and forests.

Water Resources

- Water supplies will be stressed from the increase in the growing season and extreme temperatures expected due to climate change.
- Surface and groundwater quality will be impaired as increased nutrients and contaminants enter waters due to runoff from more intense rain events.

1 <https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf>

Agriculture

- The productivity of crops and livestock are expected to change due to the climate-induced changes in temperature and precipitation patterns.
- New Jersey may become unsuitable for specialty crops like blueberries and cranberries in the future as higher temperatures reduce necessary winter chills.

Forests

- The persistence of Southern pine beetle in New Jersey represents an early example of the destruction of invasive pests that can occur due to climate change impacts.
- Wildfire seasons could be lengthened, and the frequency of large fires increased due to the hot, dry periods that will result from increased temperatures.

Terrestrial Carbon Sequestration

- The loss of forest habitats to climate change will result in carbon losses and increase New Jersey's net greenhouse gas emissions.

Terrestrial Systems

- Climate change is likely to facilitate expansion of invasive plant species.
- 29% of New Jersey's bird species are vulnerable to climate change, including the American Goldfinch which is the state bird of New Jersey.

Freshwater Systems

- Freshwater fish, like brook trout, that need cold-water habitats are expected to lose habitat as water temperatures increase due to climate change.
- Reptiles with temperature-dependent sex determination could experience changes in sex ratios as New Jersey temperatures increase.

Climate Change Mitigation

As climate change, energy use, and environmental sustainability take on a larger role in New Jersey's policies, land use planning should promote energy efficiency, and specifically, integrate green building design and Greenhouse Gas (GHG) reduction into its planning and regulatory structures.

New Jersey’s Global Warming Response Act calls for an 80% reduction of GHG emissions from 2006 levels by the year 2050. Released in October of 2020, the GWRA 80x50 Report² was written in response to that mandate and builds on the State’s previous efforts to address and reduce greenhouse gas emissions. The report analyzes New Jersey’s emissions reductions to date, evaluates plans presently in place for further reducing emissions, and presents a set of strategies across seven emission sectors for policymakers to consider in formulating legislation, regulations, policy and programs.

The 80x50 Report concludes that, “New Jersey can meet its goal of reducing GHG emissions to 80% below 2006 levels by 2050 – protecting our people, economy, and environment from the worsening impacts of climate change to which our state is uniquely vulnerable. Reaching our 80x50 goal requires planning and collaboration across all economic sectors, levels of government, political boundaries, and administrations, all fixed on a carbon neutral future. Achieving this goal depends upon a swift and decisive transition away from our reliance on fossil fuels, accomplished through adaptive policies that also ensure reliability and remain responsive to the scope and pace of efforts to electrify the transportation and building sectors while expanding renewable energy sources. However, only by working in concert across time and economic sectors can we implement the long-term, structural changes to how we generate and use energy, build our homes and businesses, operate our industries, develop and preserve our land, grow our food, manage our waste, and transport our people and products.”

While the 80x50 Report focuses on state-level actions, action at the municipal level will be crucial to meet the state’s GHG reduction goals. The Municipal Plan Endorsement Guidelines identify a series of mandatory requirements that will make substantial progress. Additionally, New Jersey’s climate change website identifies similar and additional actions for local governments at <https://www.nj.gov/dep/climatechange/action.html>.

Climate Resilience

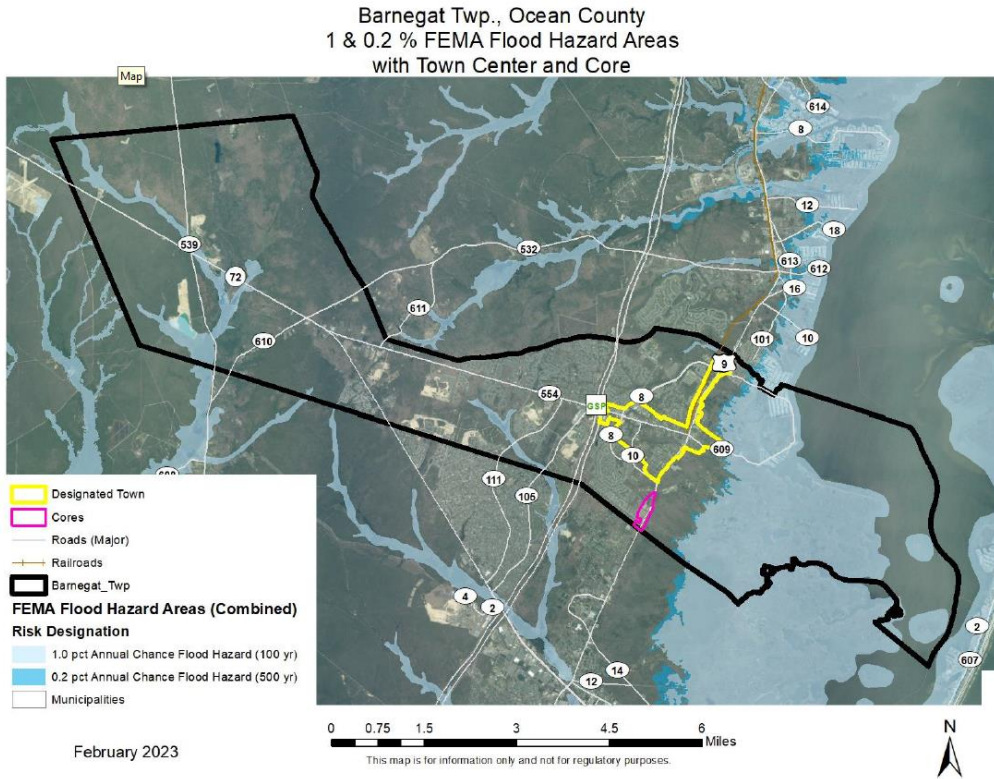
Pursuant to Governor Murphy’s Executive Order 89, the state has released for public comment a Draft Climate Change Resilience Strategy (CCRS) to promote the long-term mitigation, adaptation, and resilience of New Jersey’s economy, communities, infrastructure, and natural resources throughout the State in a manner consistent with the Scientific Report on Climate Change. Much like the 80x50 Report, the CCRS will identify state-level action, including guidance and strategies for municipalities to implement resiliency measures, including through changes to plans, by-laws, regulations, policies, or land use standards. Executive Order 89 also requires the Climate & Flood Resilience Program at DEP to provide technical guidance and support to counties and municipalities in their efforts to plan for and address the current and anticipated impacts of climate change in accordance with the CCRS. Plan Endorsement is one avenue for the state to provide that assistance.

Flooding

Barneget Twp. participates in the National Flood Insurance Program (NFIP). While none of the proposed cores for state plan endorsement are within the FEMA flood hazard area, Barneget Twp **should update**

² <https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf>

its municipal annex to the Ocean County Hazard Mitigation Plan on a regular interval to address changing climate conditions.



Flood Zones

The Federal Emergency Management Agency (FEMA) maps Special Flood Hazard Areas (SFHA) adjacent to streams or rivers that experience flooding during periods of high precipitation and/or stormwater discharge. FEMA has identified flood hazard areas within Barnegat. Most of Barnegat’s floodplains are in various locations within the Coastal waterways to the East of Route 9 and in the Pinelands Area to the west of the Garden State Parkway. In total, 2,976.29 acres (42%) of Barnegat’s total land cover (25,472.58 acres) falls within a FEMA SFHA.

Barnegat Twp. includes CAFRA & PINELANDS

Barnegat Twp. Total Area (without surface water) = 21,318.94 Acres

Flood Hazard Area	Acres	% of Total Municipal Area
1% (100 Year) Floodplain	3,786.81	17.8
0.2% (500 Year) Floodplain	additional 119.27 (3,906.08)	18.3

Source: FEMA Flood Hazard Areas (Combined)

NJDEP LULC 2015 Surface Water Removed from FEMA Flood Hazard Area

Flood Hazard Area in CAFRA	Acres	% of Total Municipal Area in CAFRA
1% (100 Year) Floodplain	2,976.29	42.0
0.2% (500 Year) Floodplain	additional 119.27 (3,095.56)	43.7

Source: FEMA Flood Hazard Areas (Combined)

NJDEP LULC 2015 Surface Water Removed from FEMA Flood Hazard Area



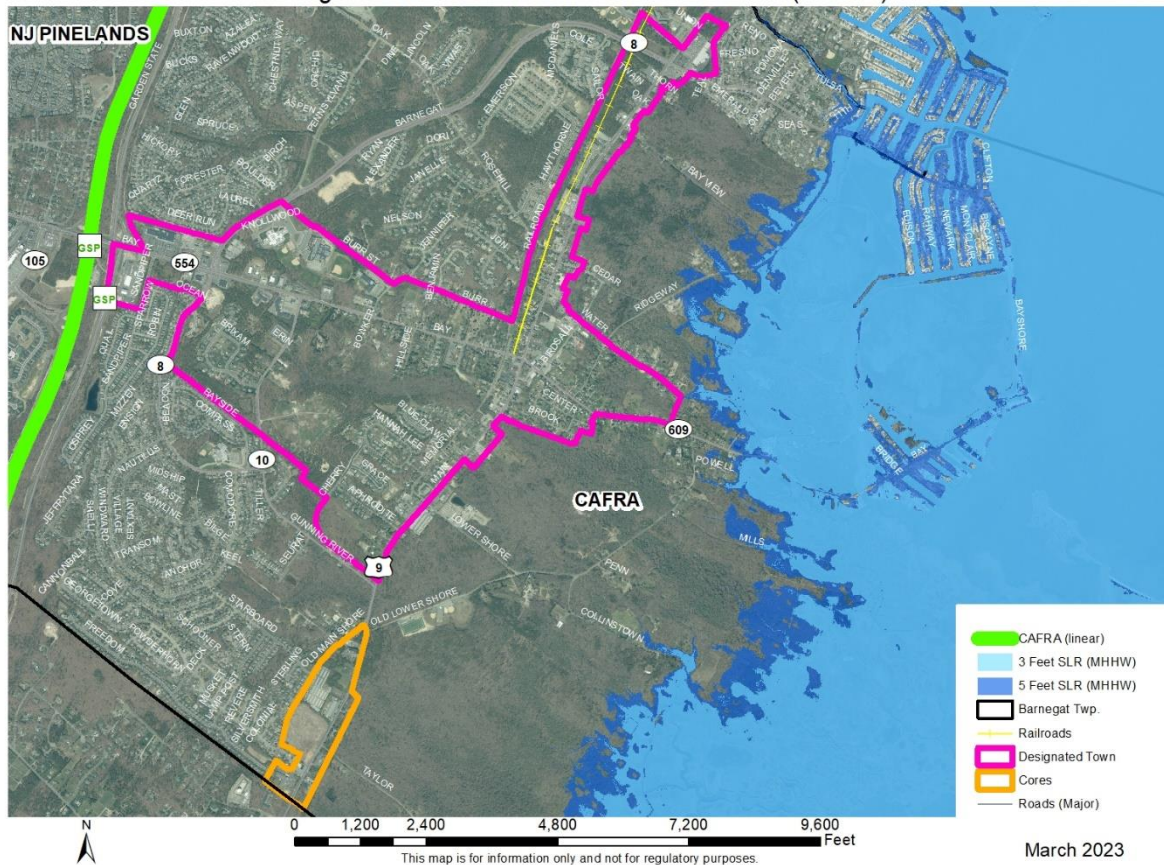
A limitation of the currently delineated SFHAs is that they do not consider projections of future precipitation due to climate change. While annual increases may not result in significant additional flooding, the increased frequency of shorter but more intense precipitation events is expected to result in additional flooding events. **As such, DEP recommends that Barnegat utilize the SFHA for the 1% (100 year) and 0.2 percent (500-year) storm for planning purposes.** This will allow the municipality to inform its current decisions in a manner that is protective of health and safety from future impacts.

Barnegat Twp should also consider flood hazard area riparian buffers of any waterway in future planning. The regulated area of the riparian zone (50, 150 or 300 feet) that may restrict future development in these areas depends on the designation of that regulated waterbody as per the Flood Hazard Area Control Act rules at N.J.A.C. 7:13-4.1 below:

(c) The width of the riparian zone is as follows:

1. The width of the riparian zone along any regulated water designated as a Category One water, and all upstream tributaries situated within the same HUC-14 watershed, is 300 feet;
2. Except for the regulated waters listed at (c)1 above, the width of the riparian zone along the following regulated waters is 150 feet:
 - i. Any trout production water and all upstream waters (including tributaries);
 - ii. Any trout maintenance water and all upstream waters (including tributaries) located within one mile of a trout maintenance water (measured along the length of the regulated water); and
 - iii. Any segment of a water flowing through an area that contains a threatened or endangered species, and/or present or documented habitat for those species, which is critically dependent on the regulated water for survival, and all upstream waters (including tributaries) located within one mile of such habitat (measured along the length of the regulated water). A list of critically dependent species is available from the Department at the website set forth at N.J.A.C. 7:13-1.3; and
3. For all other regulated waters not identified in (c)1 or 2 above, the width of the riparian zone is 50 feet.

Barneget Twp., Ocean County
Existing Center and Core with 3 and 5 Feet SLR (MHHW)



Critical Facilities and Assets in Flood Zones

These flood-prone areas are subject to state and federal regulation which limits new construction and promotes open space preservation. In addition, municipal code should minimize new construction in flood hazard areas and mitigate for any redevelopment of existing structures. Of particular concern are adverse impact to existing assets, infrastructure and buildings within the flood zones, and how a municipality will mitigate for potential increased vulnerability to flooding. Barneget Twp **should identify existing structures, critical infrastructure, emergency services, schools, etc. in or near flood zones** including any sewer service area wastewater treatment or potable water infrastructure, conveyance, utility piping, power line infrastructure, critical roadways or historic structures. For example, While 3,095 acres of the entire 25,472.58 acre township is in the flood zone, 307.55 acres of the 6,236.56 acre sewer service area are in the combined 100 year and 500 year flood zone.

Sewer Service Area Total Area (without surface water) = 6,236.56 Acres		
Sewer Service Area within Flood Hazard Area	Acres	% of Total Sewer Service Area
1% (100 Year) Floodplain	277.29	4.5
0.2% (500 Year) Floodplain	additional 30.26 (307.55)	4.9

Source: FEMA Flood Hazard Areas (Combined)
 NJDEP LULC 2015 Surface Water Removed from FEMA Flood Hazard Area

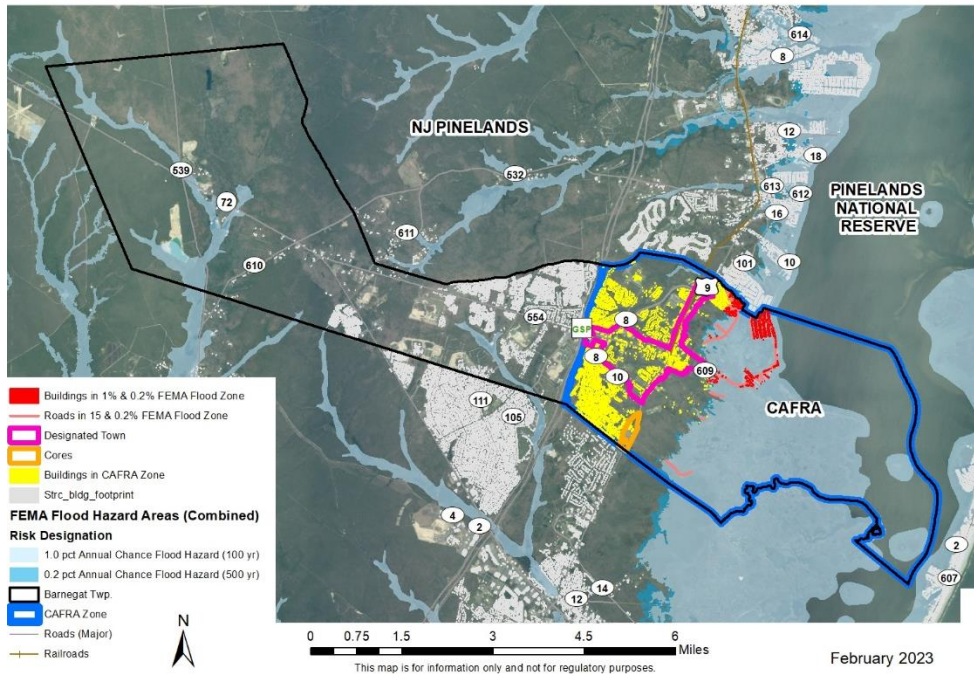
Barneget Twp CAFRA Total Area (without surface water) = 7,087.66 Acres

Sewer Service Area Total Area (without surface water) = 2,733.93 Acres		
Sewer Service Area within Flood Hazard Area	Acres	% of Total Sewer Service Area in CAFRA
1% (100 Year) Floodplain	161.68	5.9
0.2% (500 Year) Floodplain	additional 30.26 (191.94)	7.0

Source: FEMA Flood Hazard Areas (Combined)
 NJDEP LULC 2015 Surface Water Removed from FEMA Flood Hazard Area

Buildings and Structures in Flood Zone in CAFRA

Barneget Twp., Ocean County
 Buildings and Roads in 1% & 0.2 % FEMA Flood Zones



Barneget Twp., Ocean (CAFRA ZONE ONLY)

Township Approx. Total Buildings/ Structures = 5,379

Barnegat Twp CAFRA Total Area = 11,398.39 Acres

Buildings/ Structures within FEMA 1%/ 0.2% Flood Hazard Areas within Barnegat Twp. CAFRA ZONE ONLY

Buildings/ Structures in FEMA 1% (100 Year) Flood Zone = 537 or 10.0 % of Twp. Total

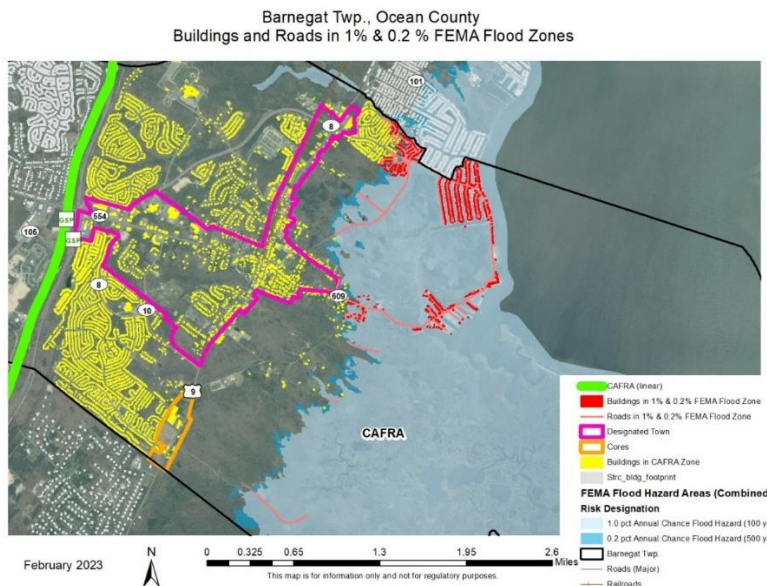
Buildings/ Structures in FEMA 0.2% (500 Year) Flood Zone = 89 or 1.7 % of Twp. Total

Approx. Total Buildings/ Structures in FEMA 1%/ 0.2% Flood Hazard Areas = 626 or 11.7 % of Twp. Total

Barnegat Twp. Approx. Total Roads = 73.78 Miles

Roads in 1% FEMA Flood Hazard Areas = 8 Miles or 10.8 % of Total Miles

Roads in 1 & 0.2 % FEMA Flood Hazard Areas = 9.4 Miles or 12.7 % of Total Miles



Barnegat Twp should regularly update map areas that flood frequently, including, but not limited to, repetitive loss (RL) and severe repetitive loss (SRL) properties. If a local Floodplain Administrator is interested in obtaining a copy of their community's RL and SRL properties list for planning purposes, a request must be made in writing on the municipality's letterhead and signed by the mayor. The municipality will be required to sign an Information Sharing Access Agreement with FEMA to protect

Personally Identifiable Information associated with this list. For more information on this, please contact the Region II Insurance Representative, [Marianne Luhrs at Marianne.luhrs@fema.dhs.gov](mailto:Marianne.Luhrs@fema.dhs.gov).

Unimpeded transportation via road are critical to safety and are also subject to flooding. Barnegat Twp should identify the linear feet of roadways including critical evacuation routes within the flood zone. It is likely that municipal and public works officials are fully aware of areas in the township that flood regularly.

Barnegat Twp should map areas that flood regularly, including roadways/intersections, with particular attention given to evacuation routes or critical access areas. The 2021 Master Plan re-examination report recommends that zoning regulations be enhanced as well as building codes to encourage building outside of the flood zone and to minimize construction in flood prone areas to reconstruction of existing buildings. When evaluating any construction within the identified floodplain of Barnegat Township, one must also consider the cost of damage and replacement in the event of flooding. Construction of any critical utility line and associated infrastructure, emergency services, or public services buildings (schools, hospitals, churches, etc.) should be avoided in the flood hazard area. By avoiding construction in floodplains, one can avoid adverse impacts also to critical roadways and provide a safe level of distance in the event of a flood. NJDEP also supports resiliency measures including elevating critical infrastructure and relocating critical infrastructure outfalls to insure uninterrupted power, sewer and potable water service.

DEP recommends that Barnegat Township adopt a floodplain development ordinance that is consistent with the most recent standards and National Flood Insurance Programs. For guidance please review the model ordinance at <https://www.nj.gov/dep/floodcontrol/modelord.htm> and FEMA guidance at <https://www.fema.gov/floodplain-management/manage-risk/local>.

Future development within the floodplain requires a higher level of regulation through state and federal environmental rules for flood hazard areas. **Any proposed conceptual plan should be presented to DEP early in review process, before planning board approval, and before submittal of any permit applications to determine if the project has any fatal flaws rendering it un-permittable in its current design.**

Green infrastructure should be incorporated into all projects within the floodplain. By creating more open public space, Barnegat Township gains flood zone buffer areas and additional recreation area as well as enhanced areas for stormwater management. Any opportunity in a flood area to enhance or expand a buffer area protects vulnerable residential areas and minimizes future flood events. **Barnegat y shall develop a stream corridor buffer area and protection ordinance.**

The DEP supports Barnegat Twp's recommendation in MSA to adopt a Flood Mitigation Plan and an All Hazards Mitigation Plan and Flood Ordinance to effectively manage stormwater runoff and mitigate the adverse impacts of climate related flooding within and adjacent to the township acres of identified floodplain.

Open Space

- Open space not only provides Barnegat Township residents with recreational opportunities, it also acts as a means of climate change mitigation through enhanced tree cover shade and carbon sequestration. It also improves Barnegat Twp and the state’s natural resources by mitigating stormwater runoff, acting as flood storage, and protecting habitat for threatened and endangered species. Within Barnegat Township, there are approximately **12,160.31** acres of preserved park open space set aside for public recreation by Barnegat Twp and the State, large tracts of Federal open space within the Pinelands National Preserve, a Natural Heritage Priority Site in the western portion of Barnegat Twp and extensive acres of open surface water within the Coastal waterways. The 2004 Barnegat Open Space and Recreation Plan was updated and adopted in 2011 which includes concentrating development in the center and core and adding additional open space. **DEP recommends that the Township update these documents to account for any changes since adoption as well as climate change considerations and to consider adding a Greenway plan and an updated Critical Natural Resources Analysis.**

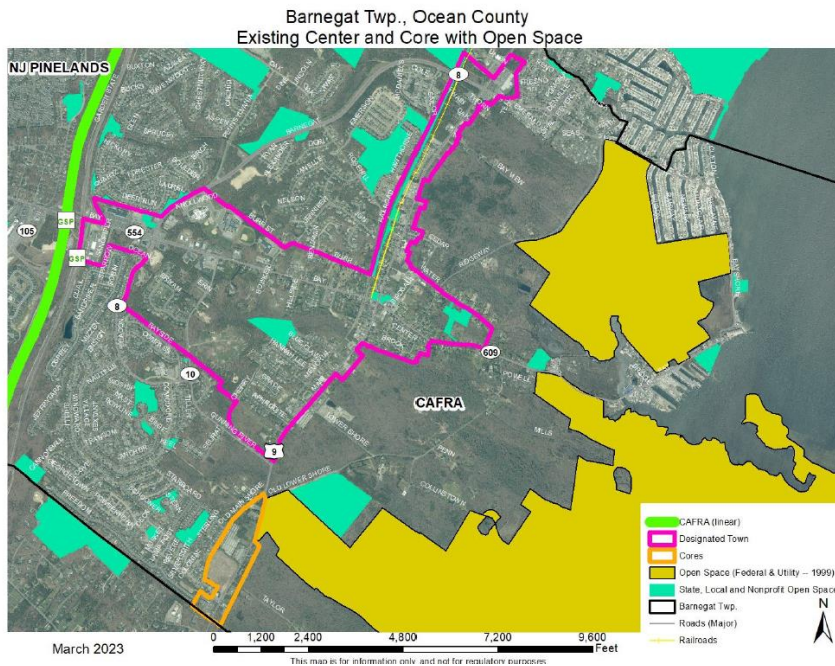
Barnegat Twp., Ocean

Barnegat Twp. includes CAFRA & PINELANDS

Local and State and Federal Open Space

Type	Acres
Municipal	234.78
County	733.61
State	8,011.79
Federal	3,180.13

Preserved Farms = 0 Acres



There are approximately 32.6 acres (4%) Acres of Municipal Open Space in the center and the no open space acres in the core. Within the entire Township there are the following open space areas:

- Total Township wide Open Space is approximately = **12,160.31** Acres

Green Acres

The Green Acres program was created in 1961 to meet New Jersey's growing recreation and conservation needs. Together with public and private partners, Green Acres has protected over a half a million acres of open space and provided hundreds of outdoor recreational facilities in communities around the State. Barnegat Township has received funding through seven Green Acres funding projects, all but one have had the payments issued and are considered closed projects. In addition, Ocean County has received funding through two Green Acres projects within Barnegat Township. There are also dedicated state owned, federally owned, and non-profit parkland parcels within the Township. Therefore, as a reminder to the Township, any use of Green Acres-encumbered parkland for purposes other than recreation and conservation, even temporary use, requires Green Acres review and approval at a minimum. A full jurisdictional determination by GA is required for any land which may have been held for recreation and conservation purposes by the municipality or the county at the time that they accepted GA funding, regardless of whether the lands were listed on a Recreation and Open Space Inventory (ROSI).

Blue Acres - While located in CAFRA area, Barnegat Twp. may reach out to the Blue Acres Program for assistance in identifying funding sources to address residential areas of repetitive flooding. Specifically, the Green Acres, Farmland, Blue Acres and Historic Preservation Bond Act of 2007 authorized \$12 million for acquisition of lands in the floodways of the Delaware River, Passaic River or Raritan River and their respective tributaries for recreation and conservation. An additional \$124 million was approved in the Green Acres, Water Supply and Floodplain protection, and Farmland and Historic Preservation Bond Act of 2009. Properties (including structures) that have been damaged by or may be prone to incurring damage caused by storms or storm related flooding, or that may buffer or protect other lands from such damage, are eligible for acquisition. DEP encourages any town that has homes and neighborhoods that repetitively flood to consider contacting the DEP Blue Acres program regarding guidance for buyouts of flood prone properties (www.nj.gov/dep/greenacres/blue_flood_ac.html)

DEP recommends that Barnegat Township further work with Ocean County and surrounding municipalities to provide and expand corridors of open space and natural features to protect historic structures, support habitat connectivity and adapt to changing climate conditions.

Comment on potential planning and funding opportunities within the Green Acres Program that Barnegat Township may consider in helping achieve its goals. We also have provided a review of the Township's proposed planning areas and development activities in the context of their existing preserved parkland.

Potential Future Planning and Funding Opportunities:

The Township's Municipal Self-Assessment Report identified sustainability and resiliency as integral tenets for future planning goals. Specifically, the Township mentions the desire to reduce potential vulnerabilities of flood-prone areas and promote bikeways and pedestrian friendly modes of recreation and transportation. Considering that the entire area east of the Garden State Parkway has been identified with the CAFRA Zone, Barnegat Township, like many coastal and Bayshore communities, is at

risk of increased flooding in the future. The Township may consider implementing nature-based resiliency strategies, including but not limited to maritime forest planting and living shorelines. These practices have shown to be successful for protecting shorelines from erosion, improving shoreline resiliency, increasing biodiversity, and sequestering carbon. Please consider reviewing the links provided at the end of this section. Through the Green Acres Program’s Stewardship funding, the Township can apply for natural resource and conservation project grants, which include living shoreline and restoration projects.

While about 46% of land being forests and 20% of the land being wetlands, the Landscape Project’s wildlife mapping indicates that about 80% of the Township contains state endangered species and about 44% of the Township contains federally listed endangered or threatened species. Considering that there are state and federally listed threatened and endangered species located within Barnegat Town Center and Barnegat Commercial Core, the Township can protect these species through conservation efforts, such as land preservation. The Township and Nonprofits can work with Green Acres to acquire lands for conservation within these areas and consider creating wildlife corridors to connect with other natural areas. Refer to Table 1 for a breakdown of natural lands and open space by owner.

Table 1. Open space and recreation acres by agency.

Land Managing Agency	Acres (approximate)
Barnegat Township	234
Ocean County	734
State – Fish and Wildlife	5869
State – Natural Lands Trust	149
State – Parks and Forestry	1994
Federal – US Fish and Wildlife	3180

Parks can also play a role in shoreline stabilization and restoration. One example is Hunter’s Point South Park in New York whereas the shoreline was redesigned with nature in mind. Hunter’s Point South Park can withstand flooding through a “soft edge,” comprised of wetlands and other natural materials. Public access to the waterfront, via trails and walkways, is an important feature of this park and serves as spaces for community gathering and public programming. While analyzing aerials of Barnegat Township, it is evident that there are few public access points to the waterfront. The Township may consider developing waterfront parks to not only help with flood mitigation and climate resiliency, but to also serve as community gathering spaces. The Township can apply for parkland acquisition and development funding through Green Acres. Please note that the placement of stormwater management and other climate change mitigation and adaptation infrastructure on Green Acres-encumbered parkland that is required for a non-parkland project or that is intended to serve other development is not permissible under Green Acres regulations. However, resiliency measures that are intended to serve the park and which may have indirect local impacts to flooding may be permitted. Please contact Office of Transactions and Public Land Administration Ocean County Compliance Officer, Kevin Appelget, at kevin.appelget@dep.nj.gov with any questions or concerns.

While there are trails in these above identified open space and recreation lands, namely the Barnegat Branch Trail, GIS mapping using New Jersey’s Statewide Trails geodatabase indicates that there are gaps in trail segments throughout the Township. These missing links create potential for greater

interconnectivity between parks, open spaces, and other places of interest in Barnegat Township. The development of an expansive, interconnected trail network within the Township can serve to increase and improve recreational opportunities, to increase the number of people using active transportation, to reduce the number of automobiles on the roadways, to reduce the Township's impact on climate change, and to safely connect people to the Township's center and core. In addition, trails have positive impacts on the local tax based of a municipality. Through collaboration with Federal, State, County, Municipal and Nonprofit partners, there is an opportunity to close the trail gaps and connect people to where they want to go. The Township may consider utilizing municipally owned lands, especially adjacent to residential, commercial, and recreation lands for developing potential trail connections. The Township may consider collaborating with private developers and private landowners for trail connections. The Township may consider partnering with utility companies to build trails within utility right of ways. The Township may consider partnering with the Township's Board of Education to build trails that will connect students and families to schools. For projects that involve acquisition or park development, either new park developments or rehabilitation of existing parks, the Township can consider applying for funding through Green Acres. Additionally, the Township may want to work with the County or with local nonprofits that are eligible to receive Green Acres funding, as Green Acres also provides funding for nonprofit and county acquisition, development, and stewardship projects.

The Green Acres Program seeks to fund projects that provide and improve recreation and conservation areas throughout the State. One of the goals of the Program is to help alleviate environmental justice issues by giving additional points in the priority ranking system to projects within designated Overburdened Communities (OBC), which are often the communities which have the greatest need for parkland and open space. As identified in the Municipal Self-Assessment Report, Barnegat Township contains two mapped OBCs, identified as low income, which could benefit from increased access to parkland. Barnegat Town Center does overlap with an identified OBC, while the other OBC is adjacent to Barnegat Town Center. The Township may want to consider developing a plan for a proposed public recreation and conservation project that would serve these OBCs. The Township may want to consider collaborating with the National Park Service to increase public access to the Edwin B. Forsythe National Wildlife Refuge. In addition, the Township can make sure that trail connections within the Township also service and benefit residents of these OBCs.

For more information on the Green Acres Program and for examples of assistance applications, please refer to <https://www.nj.gov/dep/greenacres>. The Township may contact Bruce Bechtloff at bruce.bechtloff@dep.nj.gov with any questions regarding park development and stewardship projects or Kathy Minniear at kathy.minniear@dep.nj.gov with any questions regarding park and open space acquisition projects.

While Barnegat Town Center is just touching the 500-Year Floodplain, the entire area to the East is within the 500-Year Floodplain. There may be future opportunities with the Blue Acres Program to pursue residential buyouts within the FEMA Flood Hazard Area which could further expand the Township's passive recreation and conservation opportunities and help mitigate flood risk for some homeowners. For more information on the Blue Acres Program, please refer to <https://dep.nj.gov/blueacres/>

The Green Acres Program applauds Barnegat Township for working to preserve and maintain the Township's parkland. We encourage the Township to apply for funding and to collaborate with eligible

nonprofits and with the County on proposed projects that are eligible for Green Acres funding. The Green Acres Program's partnership with the local governments and nonprofits could help the area achieve its goals towards our shared mission of preserving the area's natural, historic, and recreational resources for the betterment of the local community and New Jersey residents alike.

References for Nature Based Resiliency Strategies

Parks:

Hunter's Point South Waterfront Park, New York City ([link](#))

Northwest Resiliency Park, Hoboken ([link](#))

Corktown Common Park, Toronto ([link](#))

Rodney Cook Sr. Park, Atlanta ([link](#))

Cramer Hill Waterfront Park, Camden, NJ ([link](#))

Berkeley Island County Park, Berkeley Township, NJ ([link](#))

Storm-resistant parks are helping cities defend themselves against flooding, CBS News, September 17, 2019 ([link](#))

Living Shorelines:

Living Shorelines, NOAA Habitat Blueprint ([link](#))

Construction to begin on living shoreline project Soundside Park in Surf City, WECT News, August 8, 2022 ([link](#))

Living Shorelines, American Littoral Society ([link](#))

Could 'living shorelines' aid communities at risk of flooding?, NJ Spotlight News, December 13, 2021 ([link](#))

Oysters take leading role in South Jersey shore protection, The Press of Ocean City, September 28, 2022 ([link](#))

Review of Barnegat Township's Existing Parkland, Proposed Planning Areas and Development Activities:

While the Township was most active with Green Acres from 1980's, Barnegat Township has partnered with the Green Acres Program since 1977 acquiring and developing parks and open spaces within the Township. Overall, the Green Acres Program has helped to fund the acquisition of approximately 58 acres in Barnegat Township and has helped to fund the development of four Township parks. In addition, Barnegat Township contains significant state protected conservation areas, including the Greenwood Forest Wildlife Management Area, Stafford Forge Wildlife Management Area, Bass River State Forest and the NJ Natural Lands Trust Lin Lee and Barnegat Preserve.

Barnegat Township has seven closed projects with the Green Acres Program. Five of these projects have been development projects which have created and improved recreation areas within the Township. Two of these projects have been acquisition projects which have added to the Township's preserved open space and allowed for increased recreational opportunities within the Township. The Township has also had a Planning Incentive Green Acres Project, which helped the Township acquire open space and work towards achieving its planning goals. Barnegat Township currently has no open projects with the Green Acres Program. Park inspection reports reveal that the Township's Green Acres funded parkland was well maintained at its most recent Green Acres Program inspection in August 2022 and only one park was found to be missing a Green Acres acknowledgment sign.

As stated in the Township's Municipal Self Assessment Report, the current petition for Plan Endorsement is to effectuate a renewal (i.e., a continuation) of the Township's existing endorsement, as well as its designated center and core. While there are a few small areas of Green Acres-encumbered County and Municipal parkland within the existing Barnegat Town Center and Barnegat Commercial Core, the boundaries of the center and core do not include significant areas under Green Acres jurisdiction.

The Township's Municipal Self-Assessment Report included recent and upcoming development activities. A review revealed that while one proposed development project (Coastal Woods) is located adjacent to the NJ Natural Lands Trust Lin Lee Preserve, no encroachments or conflicts are evident. However, as a reminder to the Applicant, any use of Green Acres-encumbered parkland for purposes other than recreation and conservation, even temporary use, requires Green Acres review and approval at a minimum. Any easements or other conveyance of land granted for other than conservation and recreation purposes (such as for utilities or road rights-of-way) on Green Acres-encumbered parkland must be reviewed by the Office of Transactions and Public Land Administration Public Land Compliance section and will require Commissioner and State House Commission approval. A full jurisdictional determination by the Office of Transactions and Public Land Administration is required for any land which may have been held for recreation and conservation purposes by the municipality or the County at the time that they accepted Green Acres funding, regardless of whether the lands were listed on a Recreation and Open Space Inventory (ROSI). Please contact the Ocean County Compliance Officer, Kevin Appelget, at kevin.appelget@dep.nj.gov with any questions or concerns.

Natural and Historic Resources

New Jersey is the most densely populated state in the nation. One of the consequences of this is the extreme pressure that is placed on our natural resources. As the population grows, we continue to lose or impact the remaining natural areas of the state. As more and more habitat has been lost, people have also gained a greater understanding of and appreciation for the benefits and necessity of conserving the natural ecosystems of the state.

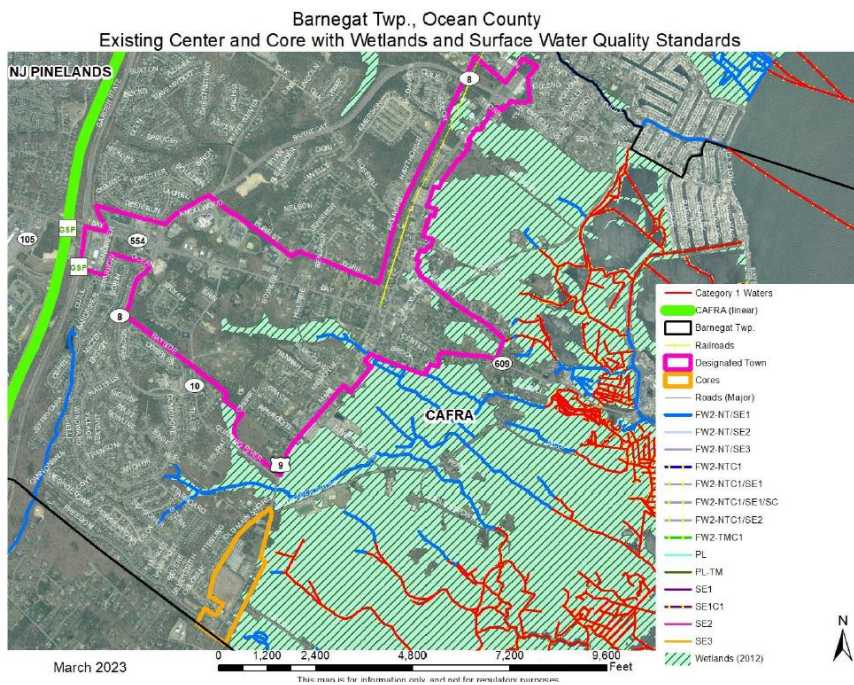
For example, we know that wetlands are critical for recharging aquifers, lessening the damage from flooding and naturally breaking down contaminants in the environment. Forests and grasslands protect the quality of our drinking water, help purify the air we breathe and provide important areas for outdoor recreation. Collectively, these habitats are of critical importance to the diverse assemblage of wildlife found in New Jersey, including endangered, threatened and special concern species.

Wetlands

Freshwater wetlands and transition areas (buffers) are regulated by the Freshwater Wetlands Protection Act rules (NJAC 7:7A). Previously misunderstood as wastelands, wetlands are now recognized for their vital ecological and socioeconomic contributions. Wetlands contribute to the social, economic, and environmental health of our state in many ways:

- Wetlands protect drinking water by filtering out chemicals, pollutants, and sediments that would otherwise clog and contaminate our waters.
- Wetlands soak up runoff from heavy rains and snow melts, providing natural flood control.
- Wetlands release stored flood waters during droughts.
- Wetlands provide critical habitats for a major portion of the state's fish and wildlife, including endangered, commercial and recreational species.
- Wetlands provide high quality open space for recreation and tourism.

There are on-site activity limits on lands identified as wetlands. The NJ Freshwater Wetlands Protection Act requires DEP to regulate virtually all activities proposed in the wetland, including cutting of vegetation, dredging, excavation or removal of soil, drainage or disturbance of the water level, filling or discharge of any materials, driving of pilings, and placing of obstructions. The Department may also regulate activities within 150 feet of a wetland as a transition/buffer area.



Barnegat has 11,735.78 acres of deciduous forested land and any wetlands within those forested areas are protected under state and federal regulation. Category 1 (C1) or critically dependent wildlife (CDW) species are associated with these areas, require a riparian buffer of 300 feet. Wetlands outside C1 category riparian buffers would be 50 feet.

The proposed core has 2.37 acres (4.1%) of wetlands and the proposed center has 49.39 (6.1%) acres of wetlands. These are regulated by the Department and in need of protection and preservation. Guidance is available from the DEP's Division of Land Resource Protection at https://www.nj.gov/dep/landuse/coastal/cp_main.html

Surface Water

Barnegat Township has several valuable and recreational bodies of water including streams, tributaries and lakes. These water bodies are subject to flooding which is exacerbated by an increase in impervious cover and a decrease in stormwater's ability to infiltrate the ground.

Surface Water Quality Standards

The Surface Water Quality Standards (SWQS) are rules established under the New Jersey Administrative Code at N.J.A.C. 7:9B that include the policies, surface water classifications, and surface water quality criteria necessary to protect the quality of New Jersey's surface waters. The SWQS protect the health of New Jersey waters and ensure that they are suitable for all existing and designated uses, including recreation and water supply. SWQS also protect the health of New Jersey citizens and visitors by ensuring that the waters at our bathing beaches are safe for swimming, that water supplies are suitable sources of drinking water, and that the fish and shellfish harvested from our waters are safe to eat. SWQS protect waters for other uses such as trout production and trout maintenance, and agricultural and industrial use.

The SWQS establish designated uses (e.g., drinking water supply, recreation, etc.) to the State's surface waters, classify surface waters based on those uses (e.g. FW1, FW2-TP, etc.), and set water quality criteria that protect the designated uses for each water classification. The SWQS contain various policies for protecting water quality, including general, technical, antidegradation, nutrients, and mixing zones. The SWQS also contain procedures for establishing and modifying water quality-based effluent limitations for NJPDES point sources and reclassifying specific stream segments.

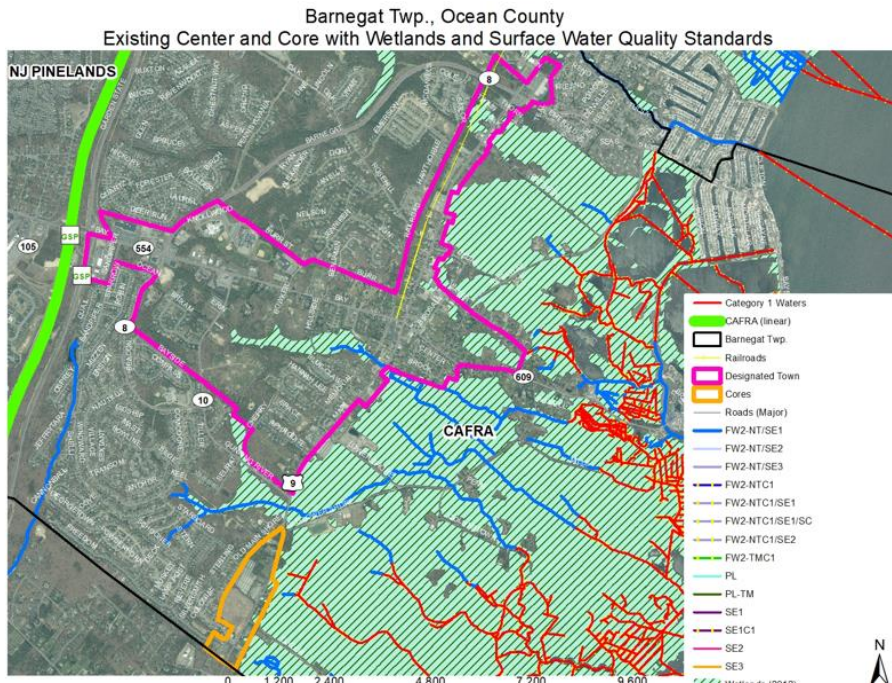
Surface waters are classified based on the type of waterbody and the designated use of the waterbody. Freshwaters are classified as FW1 waters (not subject to any man-made wastewater discharges) and FW2 waters (all other freshwaters except Pinelands waters). FW1 waters are non-degradation waters set aside for posterity because of their unique ecological significance. FW2 waters are further classified based on their ability to support trout, which thrive in cooler stream temperatures. Trout classifications include trout production (FW2-TP), trout maintenance (FW2-TM), and non-trout (FW2-NT).

The SWQS establish antidegradation policies for all surface waters of the State (see N.J.A.C. 7:9B-1.5(d)). The antidegradation policies require that all existing and designated uses shall be maintained and protected for all surface waters of the State; impaired waters must be restored to meet SWQS; and existing water quality shall be maintained.

1. **Category One (C1) Waters:** This tier of antidegradation designation applies to surface waters designated as C1 waters (see N.J.A.C. 7:9B-1.4). C1 waters are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries

resources. C1 waters have more stringent antidegradation requirements than Category Two waters.

2. Category Two (C2) Waters: This tier of antidegradation designation applies to surface waters designated as C2 waters (see N.J.A.C. 7:9B-1.4). Some lowering of existing water quality may be allowed in C2 waters based upon a social and/or economic justification. However, all existing and designated uses must be protected in all cases and waterbodies that are generally not meeting criteria must be improved to meet water quality criteria. All waterbodies not designated as Outstanding Nature Resource Waters or Category One receive the Category Two antidegradation designation.



Additional information is also provided in the [Antidegradation/Category One Fact Sheet](#).

Barnegat Township has 3906.81 acres of floodplain (3,786.81 in 1% 100 yr and 119.27 acres in 0.2% 500 yr) that are protected under state and federal regulation. Overlays for protected areas in flood zone (C1) waters (300 foot buffer), C2 waters (50 foot buffer), Wetlands, Surface Water and Open Space (local, non-profit, State, Federal).

According to NJDEP website www.NJ.Gov/DEP/DWQ/TMDL/0111.html , while there are TMDLs for lake and shellfish impaired waters in the township, there are no stream or lake impaired waters within Barnegat Township's proposed center or core. TMDLS within the Township outlined in <https://www.nj.gov/dep/dwq/tmdl/1501.html> require a total maximum daily load (TMDL) restoration plan as outlined by US Clean Water Act. However, a stream corridor buffer plan would reduce sedimentation to valuable waterways in Barnegat. Stormwater management would also be improved by preventing excessive sedimentation, reducing impervious surface and promoting on site stormwater management.

Open Waters – Surface Water Quality Standards (SWQS) in Center
Tributary of the Double Creek (FW2-NT/SE1) borders then enters the Southeastern area of the Center.

Anadromous waters include: all waters within and around the proposed center unless an impediment to movement can be identified.

Open Waters – Surface Water Quality Standards (SWQS) outside center and Core
Cedar Run (FW2-NT/SE1 (C1) National Wildlife Refuge Boundaries to Barnegat Bay

Arnold Pond (FW2-NT/SE1(C1)

Gunning River (FW2-NT/SE1 (C1) Stream and Tributaries within National Wildlife Refuge Boundaries

Knoll Pond (FW2-NT/SE1 (C1

Freshwater Mussel Habitat - There are no known occurrences of Freshwater Mussels in waters in or around the proposed center.

Vulnerable, Threatened and Endangered Species

Despite being the most densely populated state in the nation, and the fifth smallest in area, New Jersey provides habitat for an incredible number and diversity of wildlife species. There are more than 400 species of vertebrate wildlife which can be found within the state, due in large part to the state's geographic position within North America, as well as 134 freshwater fish and 336 marine finfish. New Jersey lies at the southern edge of the range of many "northern" species and the northern edge of the range of many "southern" species.

Many imperiled species require large contiguous tracts of habitat for survival. The consequence of the rapid spread of suburban sprawl is the loss and fragmentation of important wildlife habitat and the isolation and degradation of the smaller habitat patches that remain. Small patches of fields, forests and wetlands interspersed with development provide habitat for common species that do well living near humans, but do not provide the necessary habitat for most of our imperiled wildlife. We need to conserve large, contiguous blocks of forests, grasslands and wetlands to assure the survival of imperiled species over the long-term.

Future increases in stormwater runoff, flooding and contamination will adversely impact terrestrial and aquatic species. Climate change can adversely impact plants, trees, aquatic and terrestrial animals, reptiles, fish and birds. Increases in temperature and periods of drought can result in loss of suitable conditions for a tree or plant species to survive as well as a higher risk of wildfire.

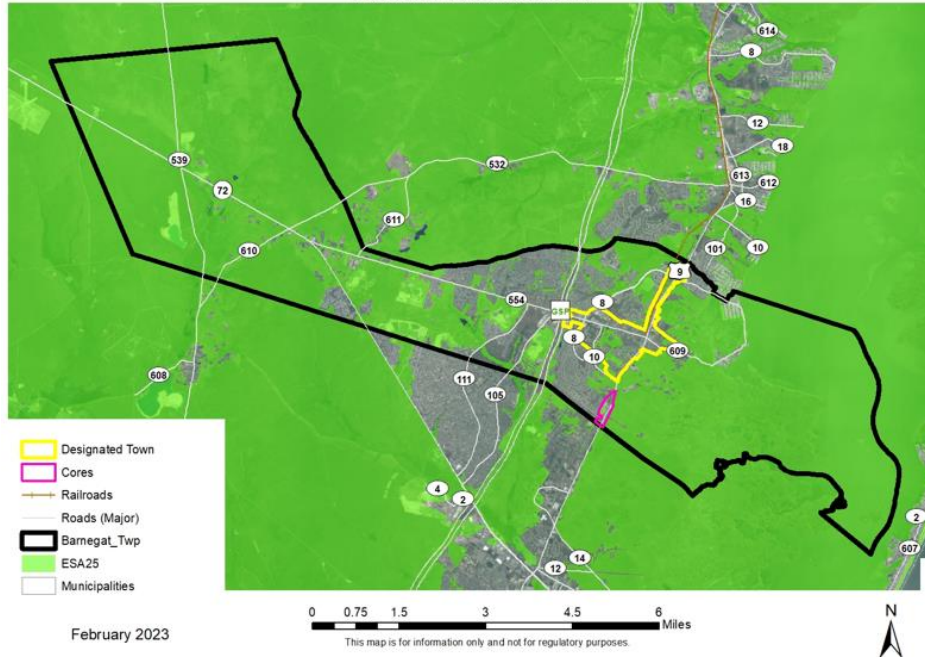
The New Jersey Endangered Species Conservation Act was passed in 1973 and directed the New Jersey Department of Environmental Protection (DEP) to protect, manage and restore the state's endangered and threatened species.

Endangered Species are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey.

Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

There are other classifications for wildlife as well, including Stable, Species of Special Concern and Undetermined. For a complete listing of species monitored by the ENSP, see the Species Status Listing. A full listing of the state's threatened and endangered species can be found at <https://www.nj.gov/dep/fgw/tandespp.htm>.

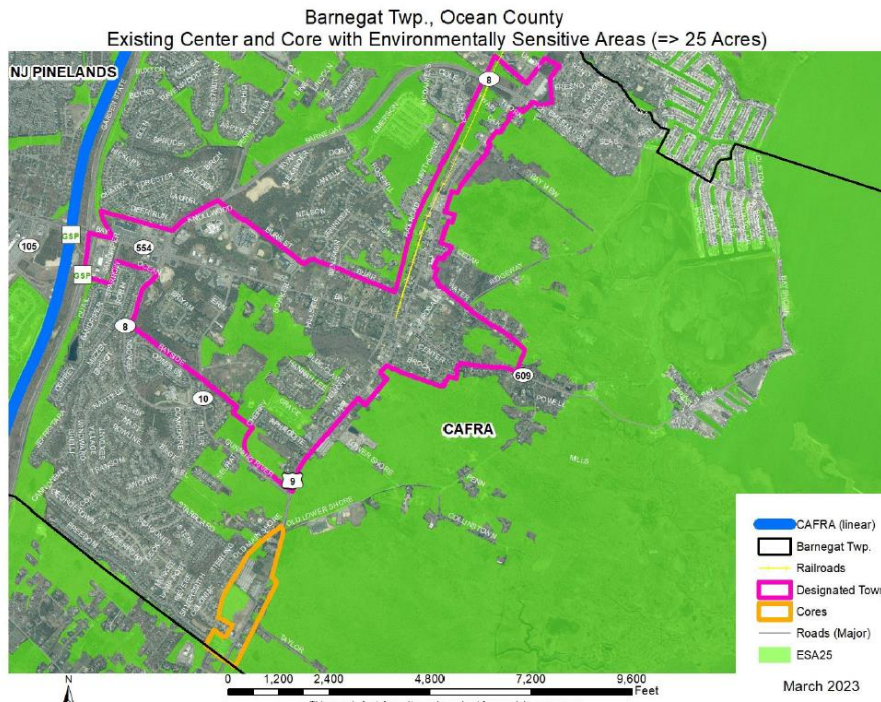
Barnegat Twp., Ocean County
Environmentally Sensitive Area (> = 25 Acres)
with Town Center and Core



Landscape Project

Designed to guide strategic wildlife habitat conservation, the Landscape Project is a pro-active, ecosystem-level approach for the long-term protection of imperiled species and their important habitats in New Jersey. The project began in 1994 to protect New Jersey's biological diversity by maintaining and enhancing imperiled wildlife populations within healthy, functioning ecosystems. The Landscape Project focuses on large land areas called "landscape regions" that are ecologically similar with regard to their plant and animal communities. Using an extensive database that combines imperiled and priority species location information with land-use/land-cover data, the Landscape Project identifies and map areas of critical importance for imperiled species within each landscape region.

Landscape Project critical habitat maps were developed to provide users with peer-reviewed, scientifically-sound information that is easily accessible. Critical habitat maps were designed for use by anyone, but especially those individuals and agencies who have the responsibility for making land-use decisions, i.e., municipal and county planners and local planning boards, state agencies, natural resource and lands managers, the general public, etc. Critical area maps can be integrated with planning and protection programs at every level of government - state, county and municipal, can provide the basis for proactive planning, zoning and land acquisition projects.



Most importantly, the critical information Landscape Project products provide can be used for planning purposes before any actions, such as proposed development, resource extraction (such as timber harvests) or conservation measures, occur. Proper planning with accurate, legally and scientifically sound information will result in less conflict. Less time will be wasted, and less money spent, attempting to resolve endangered and threatened species issues.

Additional information about the Landscape Project can be found at <https://www.nj.gov/dep/fgw/ensp/landscape/index.htm>.

Barnegat Township overall (including NJ Pinelands Area) Landscape Rank 2,3,4,5 Threatened and Endangered Species are the following:

- Rank 1 = 489.7 Acres
- Rank 2 = 410.01 Acres
- Rank 3 = 2,423.84 Acres
- Rank 4 = 11,903.71 Acres
- Rank 5 = 6,613.46 Acres

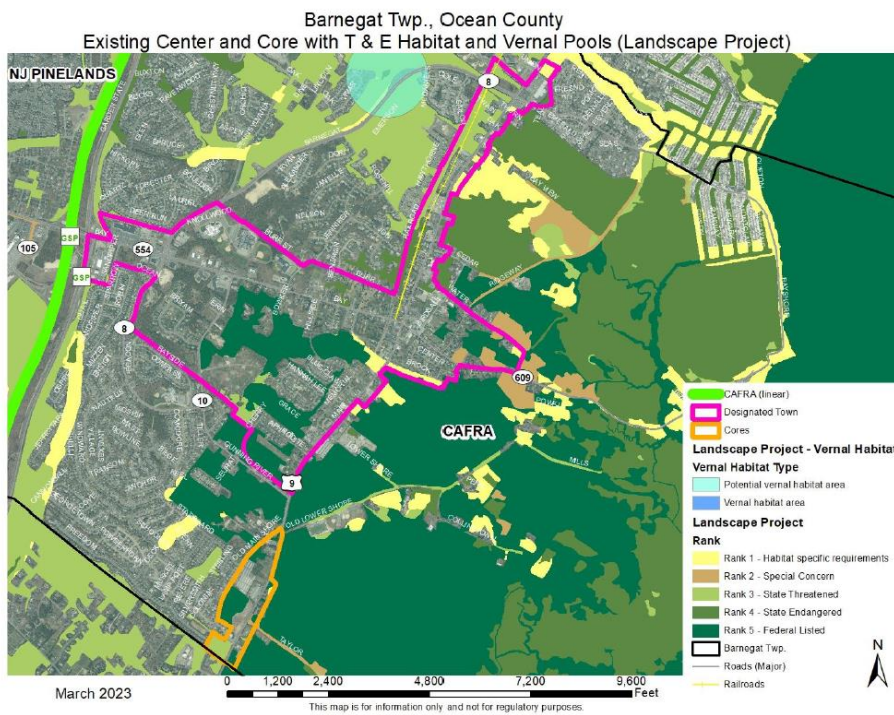
These rankings define the following habitat types:

- Rank 1 is assigned to species-specific habitat patches that meet habitat-specific suitability requirements but do not contain confirmed sightings of endangered, threatened, and special concern wildlife species.
- Rank 2 is assigned to species-specific patches containing one or more occurrences of habitats of special concern.

- Rank 3 is assigned to species-specific habitat patches containing one or more occurrences of State threatened species.
- Rank 4 is assigned to species-specific habitat patches with one or more occurrences of State endangered species.
- Rank 5 is assigned to species-specific habitat patches containing one or more occurrences of wildlife listed as endangered and threatened pursuant to the Federal Endangered Species Act of 1973.

Individual Core Assessment

Key: F – Fed, S – State, E – Endangered, T – Threatened, SC – Special Concern, S – Stable
 CSP - Consensus State Status Pending Rule Revision
 SOA – Species Occurrence Area indicate possible presence
 L – Landscapes indicate habitats valued for



Key: F – Fed, S – State, E – Endangered, T – Threatened, SC – Special Concern, S – Stable
 CSP - Consensus State Status Pending Rule Revision
 SOA – Species Occurrence Area indicate possible presence
 L – Landscapes indicate habitats valued for

Barnegat Center:

Avian Species

Red-shouldered Hawk	(S/E) breeding/non-breeding	SOA/L
Barred Owl	(S/T) Breeding	SOA/L
Black-crowned Night-heron	(S/T) Foraging	SOA/L
Black Skimmer	(S/E) Foraging	SOA

Snowy Egret	(SC) Foraging	SOA/L
Tricolored Heron	(SC) Foraging	SOA/L
Little Blue Heron	(SC) Foraging	SOA/L
Osprey	(SC) Foraging	SOA/L
Glossy Ibis	(SC) Foraging	SOA/L
Common Tern	(SC) Foraging	SOA
Brown Thrasher	(SC) Breeding	SOA/L

Terrestrial species

Northern Pine Snake	(S/T) Occupied Habitat	L
Cope's Gray Treefrog	(S/T) vernal pool breeding	SOA/L
Pine Barrens Treefrog	(S/T) Occupied Habitat	L
Eastern Box Turtle	(SC) Occupied Habitat	SOA
*Northern Myotis	(F/E – CSP/E) Active Season Sighting	SOA/L
*Little Brown Bat	(CSP/E)	
*Tri-colored Bat	(CSP/E)	
*Eastern Small-footed Myotis	(CSP/E)	
*Big Brown Bat	(CSP/SC)	

*(*These Bats are found statewide in habitats with highly suitable roost trees {trees with shaggy or exfoliating bark, and trees of any species over 26 inches dbh})*

Landscape Project 3.3

Barnegat Center – Coastal (18%)

- 10% - Rank 5
- 5% - Rank 4
- 0% - Rank 3
- 8% - Rank 2
- 11% - Rank 1
- 66% - No Rank

Barnegat Center – Pinelands (82%)

- 17% - Rank 5
- 2% - Rank 4
- 7% - Rank 3
- 0% - Rank 2
- 2% - Rank 1
- 72% - No Rank

Barnegat Core:

Avian Species

Red-shouldered Hawk	(S/E) Breeding/Non-breeding	L
Barred Owl	(S/T) Breeding	SOA/L
Osprey	(S/T) Breeding	L
Black Skimmer	(S/E) Foraging	SOA
Black-crowned Night-heron	(S/T) Foraging	SOA/L
Snowy Egret	(SC) Foraging	SOA/L
Tricolored Heron	(SC) Foraging	SOA/L
Little Blue Heron	(SC) Foraging	SOA/L
Glossy Ibis	(SC) Foraging	SOA/L
Common Tern	(SC) Foraging	SOA
Cooper's Hawk	(SC) Breeding	SOA/L
Wood Thrush	(SC) Breeding	L
Veery	(SC) Breeding	L

Terrestrial species

Cope's Gray Treefrog	(S/E) Occupied Habitat	L
*Northern Myotis	(F/E – CSP/E)	SOA/L
*Little Brown Bat	(CSP/E)	
*Tri-colored Bat	(CSP/E)	
*Eastern Small-footed Myotis	(CSP/E)	

*(*These Bats are found statewide in habitats with highly suitable roost trees {trees with shaggy or exfoliating bark, and trees of any species over 26 inches dbh})*

Landscape Project 3.3

Barnegat Core – Coastal (25%)

25% - Rank 5

0% - Rank 4

4% - Rank 3
3% - Rank 2
4% - Rank 1
64% - No Rank

Barnegat Core – Pinelands (75%)

28% - Rank 5
0% - Rank 4
12% - Rank 3
0% - Rank 2
% - Rank 1
60% - No Rank

Natural Heritage Grid Map (This layer indicates occurrences of State Listed plants)

The Natural Heritage Grid Map indicates that there are possible occurrences of data sensitive plants within the proposed center. Specifically, the Natural Heritage Grid Map values grids for the following data sensitive species/ecological communities:

Swamp-pink (S/E)

New Jersey Rush (S/E)

Rose-color Coreopsis

Curly Grass Fern

Pine Barren Gentian

Awned Mountain-mint

Valued grids for plants that have a documented location known precisely and plants that have a documented location known within 1.5 miles overlay the northeastern most 1/3 of the proposed Center.

Also, valued grids for plants that have a documented location known within 1.5 miles cover 43% of the central & southern Center.

Valued grids for plants that have a documented location known within 1.5 miles cover 16% of the Core.

General comment:

Fish and Wildlife local concerns

The Center has largely avoided E&T habitats and Rank 3, 4, & 5 habitats within it.

The Gunning River and its **corridor** are mapped in the Environmentally Sensitive Planning Area, this should also be the case for the unmapped Double Creek Tributary which enters the Center and continues east under Hillside Ave and then continues east as far as Gunning River Road. (Block: 172.01 Lots: 32.01) and parts of (Blocks: Lots) – (172 : 3.02, 5.07, 5.06, 12.01, 29, 40.01, 40.02, 44) (172.01 : 32) (174 : 6.02, 6.03, 11.04, 12.01, 13, 36) (174.08 : 25)

Forested habitats on both sides of any river/stream/wetland corridor should be maintained.

Timing Restrictions for any development within the core or center - a seasonal restriction between 4/1 – 8/31 should be considered for tree or shrub trimming/removal to prevent/avoid taking of active nests with eggs or unfledged chicks of non-game migratory birds in these areas.

The Township planning board should recommend for any proposals that come before it, applicants should provide evidence of consultation with DEP GEO-WEB.

(<https://www.nj.gov/dep/gis/geoweb splash.htm>)

The entire town center and core are designated as Suburban Planning Area (PA-2). A critical environmentally sensitive area (CES) overlay should be placed over areas which has been identified as undeveloped, wetland, flood area and/or ranked 3-5 habitat.

All of these areas identified above within the center and core should be reviewed prior to any planning board approval of a development plan with an updated natural resources inventory, habitat suitability assessment and adherence to all DEP regulations.

Barnegat should continue to promote ongoing and proposed community environmental education and public outreach events.

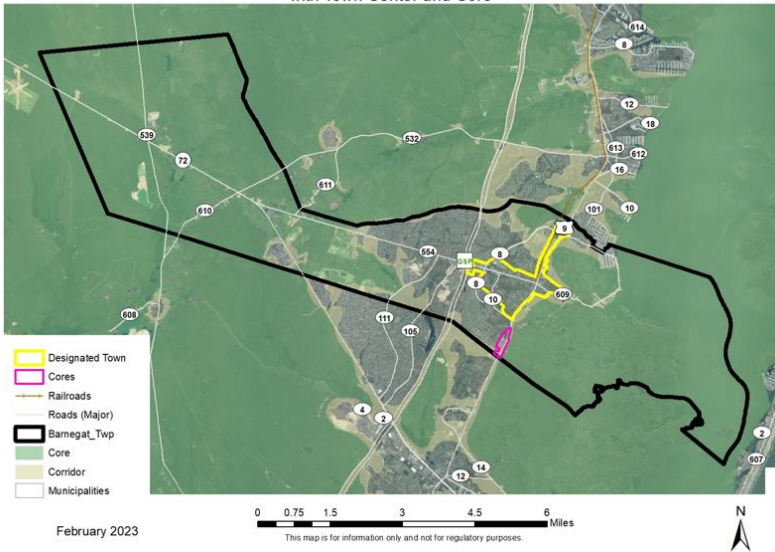
Barnegat should update it's Natural Resources Inventory and adopt a Conservation Plan. DEP supports Barnegat's commitment to conservation and renewable energy, although it encourages the Township to pursue it in an ecologically responsible manner.

Barnegat should continue to protect the Township's open spaces and the recolonization and reuse of open field habitats for ground nesting and foraging birds. DEP supports the Township's commitment to conservation and renewable energy although it encourages the Township to pursue efforts , including solar power installation, in an ecologically responsible manner. Further research is needed to determine the causes and nature of direct and indirect effects of the placement of solar arrays on and/or over ground nesting habitat on birds.

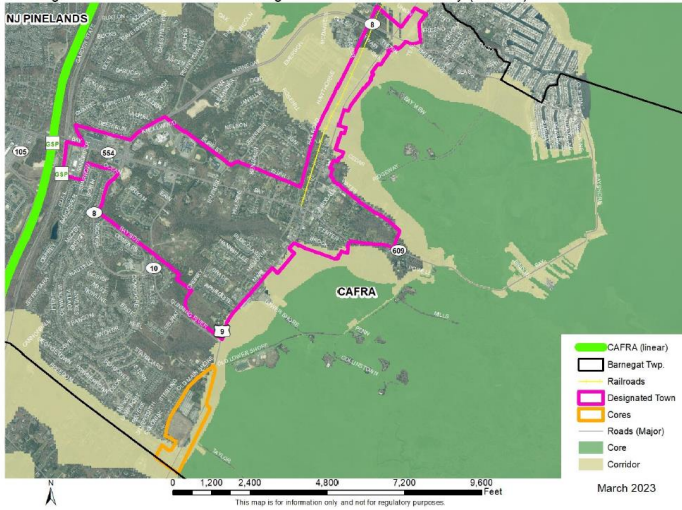
Connecting Habitat Across New Jersey (CHANJ)

A review of the Department's CHANJ mapping (information on this mapping found at <https://www.nj.gov/dep/fgw/ensp/chanj.htm>) shows that in proximity to the proposed cores, there are identified wildlife travel corridors that could serve as viable wildlife passageway through Barnegat Township and around the proposed core and center. A passageway classified as a more restricted wildlife corridor is shown in brown while a passageway classified as less restrictive to wildlife movement is shown in tan, based on the land cover features occurring within it. There is some overlap of habitat corridors in the proposed center and core. These data suggest that there is or could be movement between larger habitat areas adjacent to the proposed cores. Specifically, a CHANJ Corridor passes through the northern finger of the Center (along Rt. 9), but this corridor is compromised by streets, parking lots and buildings.

Barnegat Twp., Ocean County
 Connecting Habitat Across New Jersey (CHANJ) Core and Corridors
 with Town Center and Core



Barnegat Twp., Ocean County
 Existing Center and Core with Connecting Habitat Across New Jersey (CAHNJ) Core and Corridors



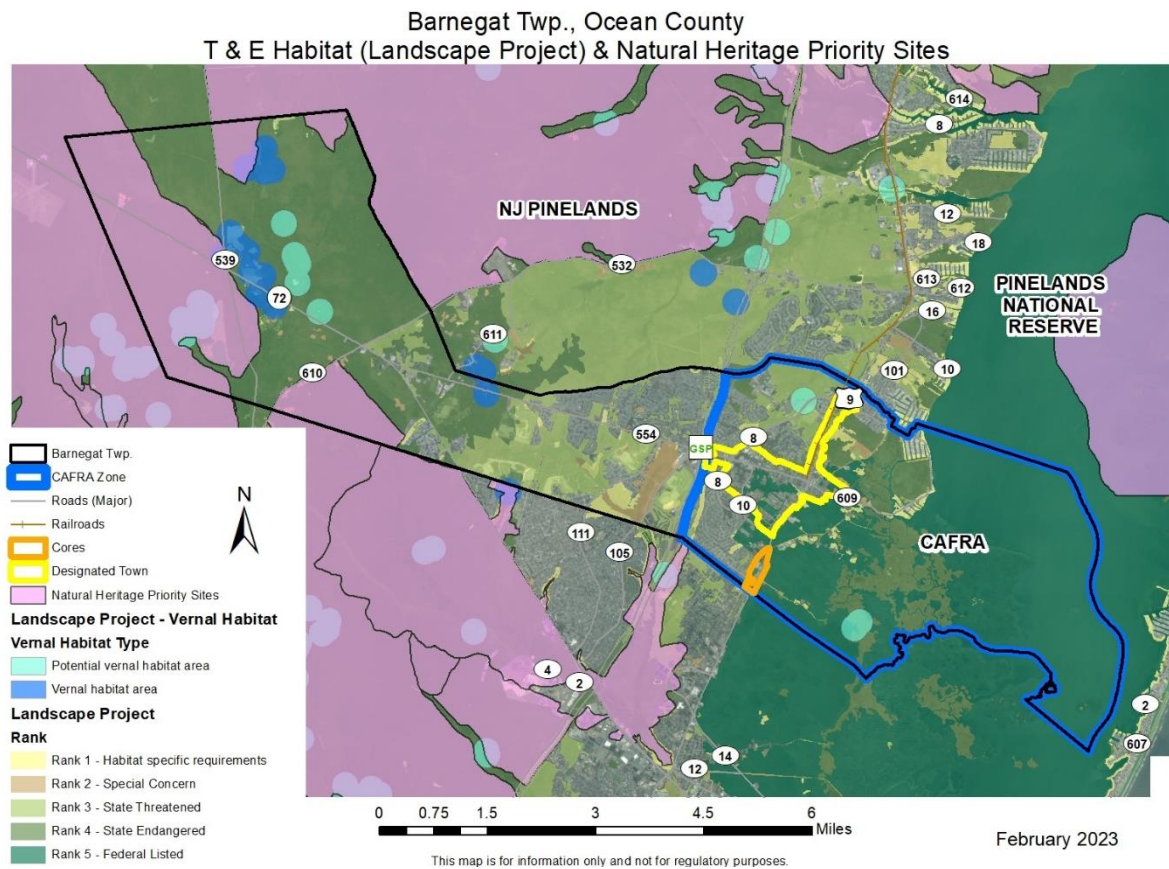
As noted above, a fairly unrestricted wildlife movement corridor exists around the proposed center and core. Given the potential significance of this area as a landscape habitat connector/wildlife movement corridor, **DEP recommends that Barnegat Twp. incorporate a habitat corridor overlay into the zoning ordinance.** By reducing the development potential of this critical area, the likelihood that this area will remain a suitable corridor is significantly increased.

Note: Cores: Patches of contiguous natural land cover (land and water) at least 78.5 ha in size, which are likely to meet the habitat needs (shelter, forage/prey, reproduction) of most terrestrial wildlife species, especially if functionally linked to other Cores.

Corridors: Continuous swaths of habitat representing the most efficient movement routes between Cores. The Corridors are displayed in color gradients (1-5) based on a cost-weighted distance analysis. Gradient 1 (lightest color) represents the most optimal move-through habitat, whereas gradient 5 (darkest color) is the most marginal.

Vernal Pools

No Vernal Pools are identified in the proposed center or core. However, within the entire Township, 33 potential and 4 documented vernal pools have been identified. In 2001, DEP partnered with Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) to develop a method for mapping potential vernal pools throughout New Jersey. Through an on-screen visual interpretation of digital orthophotography, CRSSA identified over 13,000 potential pools throughout the state. A subset of these pools was field verified and confirmed, with an 88% accuracy rate, to meet the physical characteristics to qualify as a vernal pool (Lathrop et al. 2005).



In accordance with N.J.A.C. 7:7A-1.4, the term “vernal habitat” includes a vernal pool - or the area of ponding - plus any freshwater wetlands adjacent to the vernal pool. Vernal habitat areas mapped in the Landscape Zone Project rely upon those data developed by the DEP and CRSSA to identify sites that should be field checked for possible identification as vernal habitat areas. DEP staff is in the process of field-verifying these pools. The Department also maps vernal habitat areas based upon on-the-ground assessment of sites not captured by the CRSSA mapping. The Landscape Project includes all of the CRSSA-identified sites, as well as sites identified by on-the-ground reconnaissance. Within Barnegat, there are documented vernal habitat area identified by the DEP but not within the proposed cores.

State Wildlife Action Plan

The **State Wildlife Action Plan** (SWAP) is a strategic and cost-effective strategy for preserving the state's wildlife resources for the future. Recovering species that have reached threatened or endangered status is typically more costly than preventative actions that keep species populations from reaching such declines. Proactive management actions identified in the SWAP are intended to keep species from becoming threatened or endangered or to aid in the recovery of those that are already listed.

State Wildlife Action Plans are proactive plans created by virtually every state and U.S. territory that assess the health of each state's wildlife and habitats, identify the problems they face, and outline the actions that are needed to conserve them over the long term. The New Jersey Wildlife Action Plan identifies both priority species and habitats, assesses the threats they face and outlines actions to take to improve or stabilize their condition.

New Jersey's State Wildlife Action Plan (2018) was approved by the U.S. Fish and Wildlife Service in July 2018. New Jersey's Plan serves as a blueprint for conserving our wildlife heritage over the next decade. The Plan identifies priority actions over the next five to ten years to address the myriad threats facing our wildlife populations and their habitats. It also identifies species of greatest conservation need in New Jersey, as well as 107 focal species that are of the highest conservation priority.

New Jersey's State Wildlife Action Plan can be found at
https://www.nj.gov/dep/fgw/ensp/wap/pdf/wap_plan18.pdf

Natural Heritage Priority Sites

Following a review of Natural Heritage Grid Mapping layer, Natural Heritage Priority Sites are located in Barnegat Township including state-listed plants, data sensitive species, ecological communities or cave terrestrial communities. A full listing of Rare Plant Species and Ecological Communities Presently Recorded in the NJ Natural Heritage Database for Monmouth County can be found at:
<https://www.nj.gov/dep/parksandforests/natural/heritage/textfiles/monmouth.pdf>.

There is no NHPS overlap with the proposed Barnegat Town Center or Core.

More information about State Endangered plant species and Plant Species of Concern and the codes used on the list of species can be found at:

<https://www.nj.gov/dep/parksandforests/natural/heritage/njplantlist.pdf>

https://www.nj.gov/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf

Forest Fire Management and Mitigation

Adverse effects of climate change increases in average daily temperature contribute to an increase in the potential for forest fires. Public and private property, infrastructure, public safety, and utilities could be compromised in a wildfire emergency. The impacts of a wildfire event can be reduced through the enhancement of the Township's emergency response plan and through the implementation of pre-event wildfire mitigation and response measures. Forest fuel loading conditions are characterized by fire hazard ratings (map below) and through coordination with the New Jersey Forest Fire Service and the New Jersey Emergency Management Program.

Barneget Township has adopted a Wildfire Protection Plan (CWPP) with NJ Forest Fire Service and should update their Community Forest Management Plan and street tree species inventory in their town cores and proposed redevelopment areas. Barneget should also consider initiating a Community Stewardship Incentive Program.

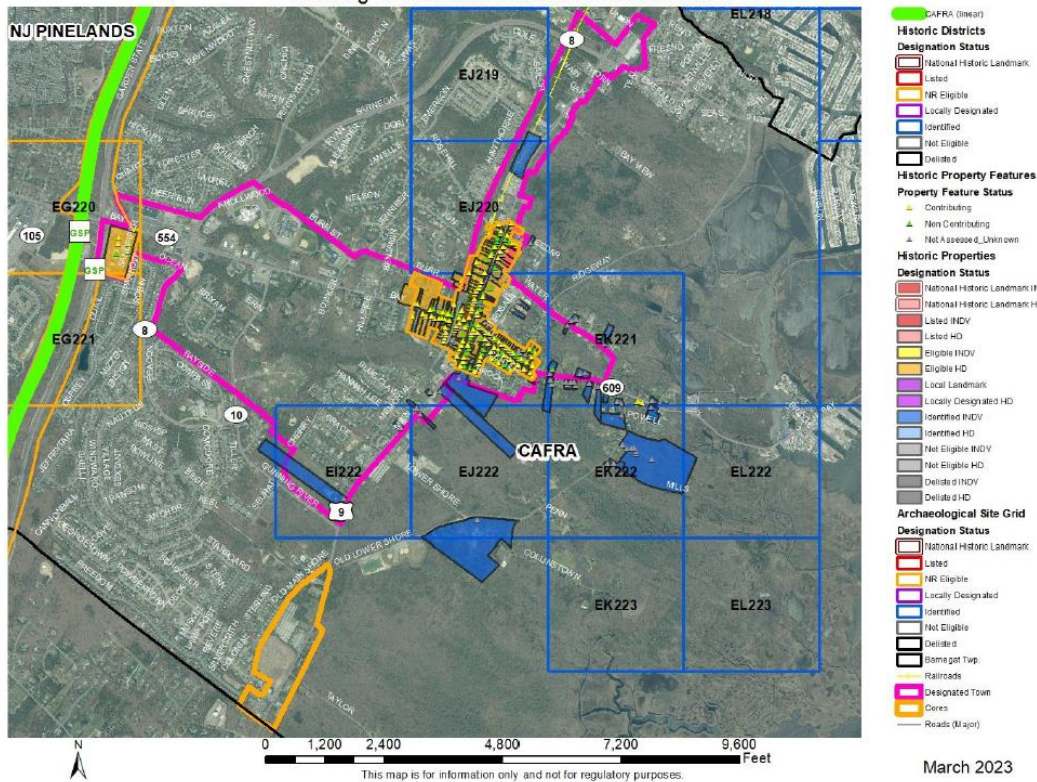
Cultural and Historic Resources

The 2011 Master Plan included a brief summary of Barneget Twp's recognized historic districts. Barneget did not include in the MSA a detailed description of the buildings, lots and blocks and other historic sites within the proposed center and core but have completed an Historic and Cultural Resources Survey, adopted an Historic Resources Plan element, and a Historic District Transition Area as well as an Historic Resources Preservation Plan. While the Township indicates that these areas are eligible for consideration, the Township should clarify if and when these areas were added to the State and National Registers of Historic Places. **The Township shall confirm the Historic District boundaries with the NJ State Historic Preservation Office and update the historic sites inventory as necessary.**

The Historic Preservation Office (HPO) encourages municipal civic planning with a design development philosophy embodying sustainability, limiting environmental impacts through rehabilitation of existing structures over 50 years old, climate resiliency guided by preservation principals, and leadership in energy & environmental design (LEED)-based compatible design for new construction within historic districts and historic villages. Information on the location of known historic structures, historic districts, and historic landscapes and/or structures over 50 years old is available here for MSA consideration: [NJHPO Historic Property Viewer](#). Also, archaeological sites and historic buildings in tidal or storm surge areas are particularly threatened by sea level rise and need to be considered as part of the larger municipal climate change efforts.

The HPO further encourages municipal completion of historic structure and cultural resource inventories within their jurisdiction for consideration during planning activities, preservation stewardship, and rehabilitating historic properties maintaining their unique sense of place within the local community. In addition, local municipalities are required to considered changes and impacts to all municipally owned properties listed on the New Jersey Register of Historic Places pursuant to the New Jersey Register of Historic Places Act [NJ Register Act](#).

Barneget Twp., Ocean County
Existing Center and Core with Historic Sites



Further, municipalities can take advantage of preservation professionals through New Jersey’s Certified Local Government program [CLG Program](#). The CLG program *offers municipalities the opportunity to participate more directly in state and federal historic preservation programs through the development and adoption of a local historic preservation ordinance creating a historic preservation commission for guiding the municipality’s longer-term planning and development policies and making available CLG grants and loans for preservation of local historic properties* ([CLG grants](#)).

Finally, the HPO also plays a formal role during the following regulated activities: any federal funding, licensing, or permitting, any State of New Jersey’s Division of Land Resource Protection Freshwater Wetlands, Waterfront Development, Upland Development, or CAFRA permits, any environmental assessments under Executive Order 215, or any state, county, or municipal undertakings on a property listed on the New Jersey Register of Historic Places pursuant to the New Jersey Register of Historic Places Act. These regulatory reviews not only address above ground historic architecture, but archaeological resources related to pre-Contact period and early historic period development within New Jersey.

Historic Resources in Floodprone Areas

The MSA indicates that very little of the historic known sites are located in environmentally sensitive areas but does not indicate if any sites outside of the center and core are within the 1% flood zone. No historic sites within the proposed center or core are within the floodzone. Barneget Twp should update their historic structure inventory throughout the Township and determine if any (lot and block) are in the 100 or 500 year flood zone.

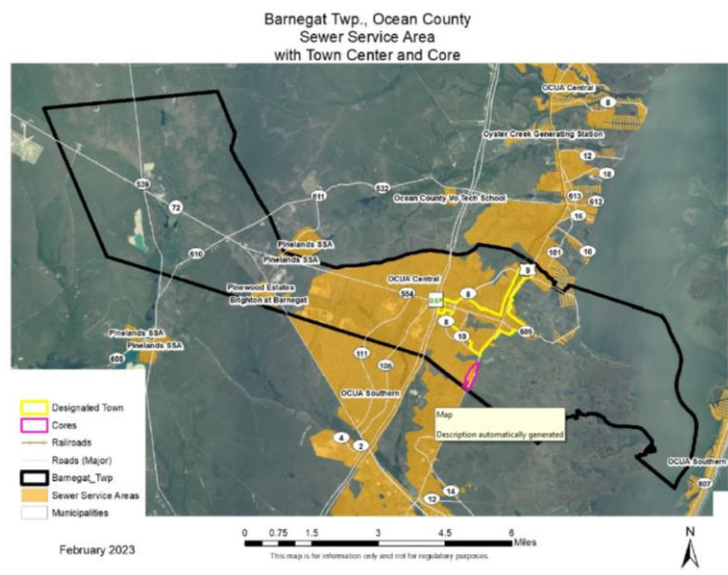
Barnegat Twp shall update its Historic Preservation Plan of the Master Plan as necessary:

- **Update the Historic Districts Inventory** – Barnegat should provide a table in any master plan re-evaluation of all lots and blocks in historic districts, if they are in a core, and if they are in the 1) 100 or 500 year flood zone, 2) rank 3,4,5 threatened and endangered species habitat, 3) SSA or 4) public water system.
- **Update or adopt an Historic Preservation Implementation Ordinance**
 - **Historic structures should be evaluated and protected with enhanced stormwater management plans and flood minimization plans.** DEP adopted Elevation Design Guidelines for Historic Properties in December 2019, which can be found at https://www.state.nj.us/dep/hpo/images/_MULT_DG_32_v2_ID14078r.pdf.
 - **Zoning Update** – Barnegat should revise the Township code to implement within the historic districts the following: define and adopt an historic district buffer area, adopt architectural and development standards within and adjacent to the district, establish an Historic Preservation Commission, continue to update the historic sites inventory and include historic sites in capital improvement program especially related to flood resiliency

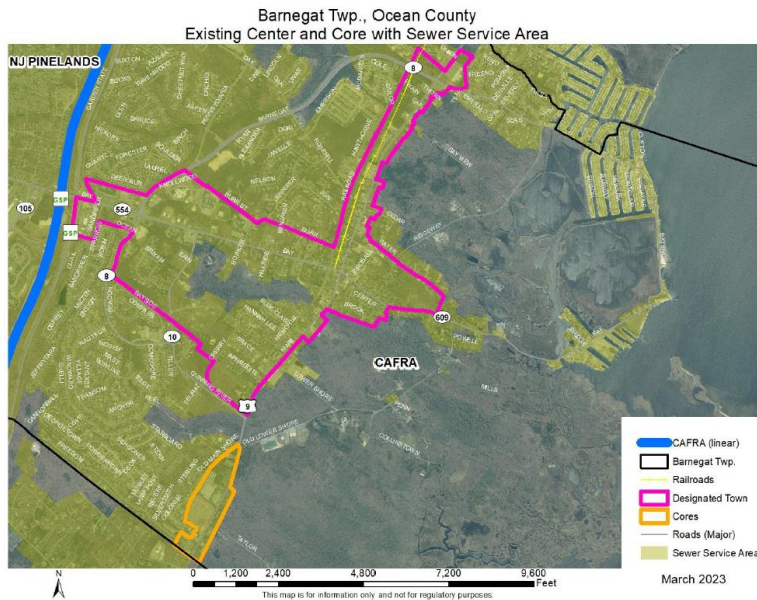
Wastewater and Water Supply

Wastewater Analysis

The infrastructure to collect and convey sanitary wastewater within the municipality is owned and operated by the Barnegat Township Utilities Department. Encompassing 10,179.04 acres and approximately 40% of the Township, the proposed core is entirely in the sewer service area (SSA) and a majority of the center is included in the SSA except for a large wetlands complex to the south of West Bay Avenue. More than 80 miles of sanitary sewer lines are included in the system. Wastewater is directed to the Ocean County Utilities Authority for treatment prior to discharge and is included in the Ocean County Wastewater Management Plan.



Center: The existing Barnegat Town Center is nearly entirely within the presently adopted sewer service area with the exception of the large undeveloped Rank 5 T&E habitat area. While most of the town center is developed and within the existing sewer service area, there are some environmentally sensitive undeveloped areas that it would be difficult to extend or maintain within the existing the SSA that include: a wooded, T&E habitat area directly to the west of Cherry Street; a wooded, T&E habitat area that runs north and south, approximately 275 feet west of North Main Street in some places and directly to the west of North Main Street in other locations and; a wooded, T&E habitat area that is South of Aphrodite Drive and west of South Main Street.



Core: The existing Barnegat Commercial Core is entirely within the presently adopted sewer service area. However, a lot of the Commercial Core area is undeveloped and environmentally sensitive. These areas include: a wooded, T&E habitat area that is east of Southwind Court and west of South Main Street; wooded, T&E habitat area that runs north-south along the eastern border of Old Main Shore Road; a wooded, T&E habitat area that is just south of the intersection of Old Main Shore Road and Route 9 and; the Wetlands areas that are located east of Route 9.

Capacity Analysis

The WQMP rule at NJAC 7:15-4.5(b)5 adopted in 2013 requires that if the “existing permitted flow is 80% or more at the time of WMP development, a municipality must determine, as part of the buildout analysis, if remaining projected growth (for buildout of the SSA) will result in a capacity deficiency and, if the potential for a capacity deficiency exists.”

The OCUA Central Water Pollution Control Facility [NJ0029408] is currently permitted to discharge up to 32 mgd. The buildout analysis for this treatment plant that was completed for the Ocean County WMP found that at 2035 buildout, the projected flow would be 29.284 MGD. As such, the OCUA Central Water Pollution Control Facility has capacity to accommodate additional flows from any future development within the existing Barnegat Town Center and Commercial Core.

Wastewater Infrastructure in Floodprone Areas

Critical utility infrastructure like powerlines, sewers, and potable water lines can be adversely impacted by flooding. Approximately **307.55 acres (4.9%) of Barnegat's total sewer service area is also in the combined 100 year and additional 500 yr flood acres as follows:**

- **100 Year ~ 277.29 Acres or 4.5% of total municipality**
- **500 Year ~ 30.26 Acres or 0.4% of total municipality**

Barnegat Twp. has several wastewater treatment plant locations with discharge to groundwater or surface water.

Any extension into undeveloped areas would require a habitat suitability determination and any extension into already disturbed areas or areas with existing structures on failing septic systems would need to demonstrate already disturbed, not T+E suitable habitat and to abate an existing imminent public health and safety issue or create a linear boundary with recognizable geographic, political, or environmental features pursuant to NJAC 7:15-4.4 (f). An extension to the sewer service area may also require an amendment to existing WMP and County Plan.

Barnegat Twp. should provide an updated map of wastewater piping in cores and elsewhere in the Township, and update its Wastewater Management Plan

Water Supply

The Division of Water Supply and Geoscience, Bureau of Water Allocation and Well Permitting (BWAWP) has reviewed the Self-Assessment as part of Barnegat Township's State Plan Endorsement proposal. Barnegat Township, located in Ocean County, lies within the public water service area served by Barnegat Township Water Utilities (BTWU) regulated under Water Allocation Permit Number 5301 (Permit). According to the Well Permitting section of the BWAWP, approximately 1007 permits to drill domestic wells have been issued in Barnegat Township.

The Permit includes 6 Kirkwood-Cohansey aquifer wells used for public supply and 3 Kirkwood-Cohansey aquifer wells used for irrigation and public non-community supply. The permitted allocation limits are 154 million gallons per month and 1162 million gallons per year from all diversion sources. The peak annual usage from the public supply wells within the past 5 years was 763.295 mg in 2022 with a monthly peak of 101.077 mg in July 2022.

As per the Municipal Self-Assessment Report, the following development projects were under construction or approved:

- Coastal Woods (Block 92.111, Lot 24.09): An approval for 148 condominium units and a clubhouse has been granted. As of September 12, 2022, construction was in progress.
- Ocean Acres at Barnegat (Various Phases): As of September 12, 2022, platted lots had been approved for construction through an agreement between Walters Homes, the New Jersey Pinelands Commission, and Barnegat Township.
- Barnegat Terrace (Block 162.01, Lot 1.22): An approval for a 9,300 square-foot office

building has been granted. Development has not occurred (n.b., Block 162.01, Lot 1.22 was assessed as vacant on September 12, 2022).

- The Lofts at Barnegat (Block 195, Lots 7, 8.01, 8.02, 8.03, 8.05, 8.05, 9.01 and 10): A preliminary and final major site plan application has been approved for: 24 townhomes; 186 apartments; and 32,000 square feet of commercial mixed-use space. As of September 12, 2022, construction had not started.

As per the Municipal Self-Assessment Report the following major applications were pending as of the preparation of the report:

- WP Barnegat — Starbucks (Block 115, Lot 1.03; West Bay Avenue): This application is for a Starbucks Café with drive-through facility.
- Barnegat Crossing III (Block 92.112, Lots 42.05, 42.06, 42.07, 42.09, 42.10 and 42.11; Lighthouse Drive): A preliminary and final major site plan application has been submitted. However, no hearing had occurred as of September 12, 2022.
- Esposito Enterprises (Block 45, Lot 4): A Zoning Board hearing is scheduled for November 2022.

Portions of the municipality are located in the Great Egg-Mullica Study Area. New or increased allocation are evaluated on a case-by-case basis from confined and unconfined aquifers. Seasonal conjunctive use (confined and unconfined aquifers) and Reclaimed Water for Beneficial Reuse (RWBR) must be evaluated. The USGS Study can be found at: <http://pubs.usgs.gov/sir/2012/5187/support/sir2012-5187.pdf>. In addition, portions of the municipality are located within the Pinelands National Reserve. Water Supply projects in the Pinelands must obtain approval from the Pinelands Commission. The Pinelands National Reserve encompasses approximately 1.1 million acres covering portions of seven counties and all or parts of 56 municipalities. This internationally important ecological region is 1.1 million acres in size and occupies 22% of New Jersey's land area and is underlain by aquifers containing 17 trillion gallons of some of the purest water in the land. Today, with the Pinelands Comprehensive Management Plan, the region is protected in a manner that maintains its unique ecology while permitting compatible development. Additional information is available at: <http://www.nj.gov/pinelands/>. Natural replenishment of ground water is probably occurring in the BTWU Kirkwood-Cohansey wells because the fluctuations can be attributed to seasonal usage. In order to confirm this, static water level reports are required as a condition of this permit to determine future trends. Analysis of BTWU's chloride data indicates that chloride concentrations range from 4.78 to 26.18 mg/l in the Kirkwood – Cohansey Aquifer System at this location. Although the results of local monitoring show that current chloride levels are not indicative of salt-water intrusion conditions, this diversion contributes to the regional potential for saltwater intrusion.

SHBWD submitted an updated Water Conservation and Drought Management Plan on November 4, 2022. Text Condition 1 of the Permit requires that water shall not be used to serve non-potable, consumptive purposes for new projects that are greater than 50 percent non-potable and greater than 50 percent consumptive, where, as determined by the Department, alternate water sources, including but not limited to reclaimed water for beneficial reuse, are feasible to serve the non-potable, consumptive needs of the project. The last Water Utilization Report was submitted on January 23, 2023, for the monitoring period of 10/2/2022-12/31/2022. The Water Utilization Reports also included calculations for acceptable unaccounted-for-water, with the most recent levels reported as 13.41 and 13.67 percent in 2020 and 2021, respectively.

To aid in identifying the existing and proposed water supply sources and the strategies that document how water supply capacity will exist for the amount of growth detailed in the Endorsed Master Plan, the Township and County shall refer to the NJ State Water Supply Plan and contact the Bureau of Water Allocation and Well Permitting.

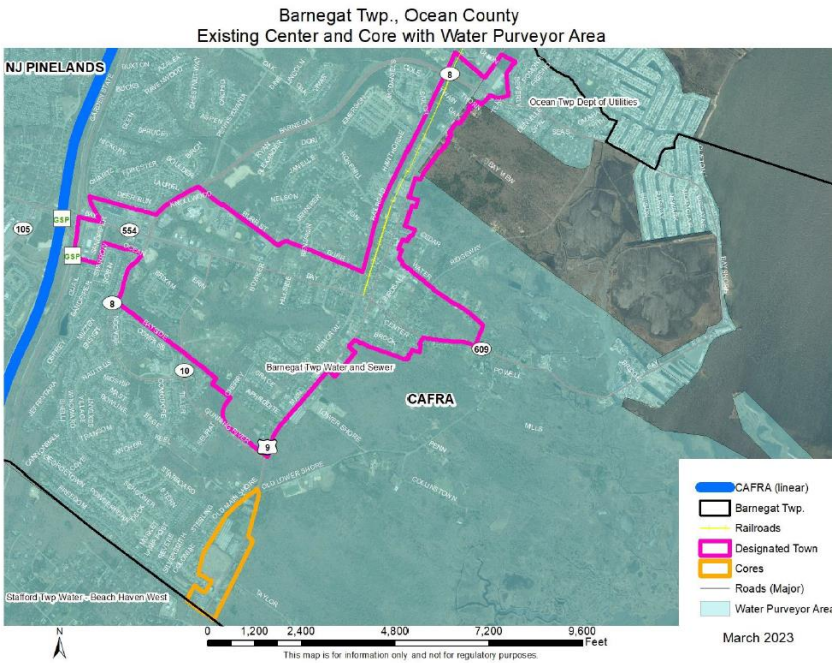
Capacity Analysis

The Bureau of Water Systems Engineering (BWSE) Deficit/Surplus webpage indicates that Barnegat Township’s sources of potable water, water system (Barnegat Twp Water & Sewer Utilities (PWSID #: NJ1533001)) has a surplus of water available to service all pending projects that have received approval through the BWSE. The BWSE’s Deficit/Surplus analysis for the municipalities indicates these facilities have sufficient treatment capacity and infrastructure to meet public demand via the six (6) active potable supply wells. The water treatment plant has a firm capacity of 6.912 MGD. This capacity is more than their summer and peak demand.

Firm Capacity:	6.912	MGD						
Allocation Limits:			Contract Limits:		Total Limits:			
(Monthly)	154.000	MGM	(Monthly)	MGM	(Monthly)	154.000	MGM	
(Yearly)	1,162.000	MGY	(Yearly)	MGY	(Yearly)	1,162.000	MGY	
Five Year Peak Demand:			Allocated Demand:		Deficit/Surplus:			
(Daily)	3.261	MGD	(Daily)	1.068	MGD	(Monthly)	36.273	MGM
Month/Year	07/2022		(Monthly)	16.554	MGM	(Yearly)	268.415	MGY
(Monthly)	101.173	MGM	(Yearly)	129.940	MGY			
Month/Year	07/2022					Firm-Peak Total:		
(Yearly)	763.645	MGY	Total Peak Demand:			(Daily)	2.583	MGD
Year	2022		(Daily)	4.329	MGD			
			(Monthly)	117.727	MGM			
			(Yearly)	893.585	MGY	WAP Number:	5301	

Attached is the Deficit/Surplus Table (updated as of 03/06/2023) for the public community water system (Barnegat Twp Water & Sewer Utilities (PWSID #: NJ1533001)) that serves Barnegat Township.

1. Firm capacity (total capacity-largest source) – 6.912 MGD
2. Water Allocation limits = 154.000 MGM, 1,162.000 MGY
3. Current (utilized) peak demands = 3.261 MGD, 101.173 MGM, 763.645 MGY
4. Surplus (available) water = 2.583 MGD, 36.273 MGM, 268.415 MGY



Water Supply Infrastructure in Flood prone Areas

Barnegat Twp. should determine how many acres of the water purveyor area is within a flood zone identify any water supply infrastructure located in the flood zone and determine their specific vulnerability to flooding events. Additionally, DEP recommends that Barnegat Twp. perform a similar analysis for private wells and both inform the owners of their vulnerability and identify potential solutions to that vulnerability. A Well Search should be conducted to determine if there are any currently documented private domestic wells within the Township.

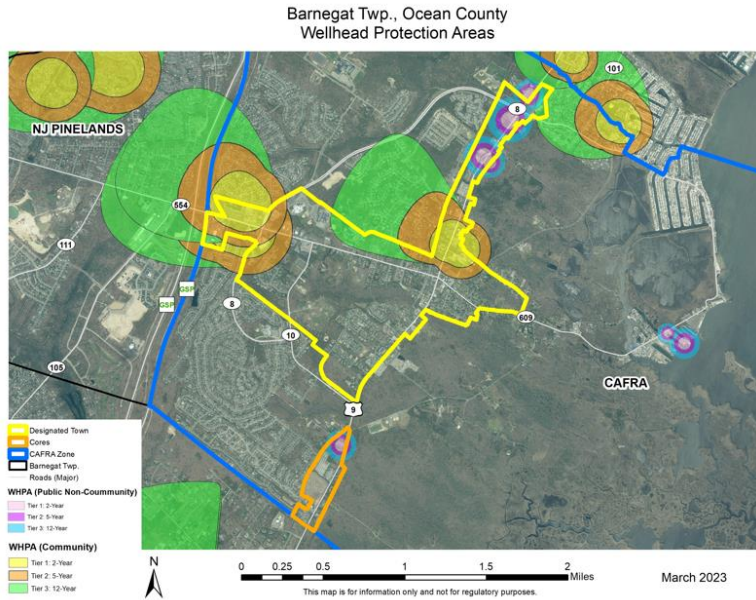
Well Head Protection Areas

A well head protection map was not included in the MSA. Barnegat has land surrounding public community wells, known as Well Head Protection Areas, to prevent contaminants that may move through the ground to be withdrawn in water taken from the well. Protection of the public health, safety, and welfare through protection of ground water resources, ensures a supply of safe and healthful drinking water. Well Head Protection Areas (WHPA) are mapped areas calculated around a Public Community Water Supply (PCWS) well in New Jersey that delineates the horizontal extent of groundwater captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time for confined wells. The confined wells have a fifty-foot radius delineated around each well that defines the well head protection area, which must be acquired and controlled by the water purveyor in accordance with Safe Drinking Water Regulations (see NJAC 7:10-11.7(b)1). WHPA delineations are conducted in response to the Safe Drinking Water Act Amendments of 1986 and 1996 as part of the Source Water Assessment Program (SWAP). The delineations are the first step in defining the sources of water to a public supply well. Within these areas, potential contamination will be assessed and appropriate monitoring will be undertaken as subsequent phases of the SWAP. WHPA delineation

methods are described in *Guidelines for Delineation of Well Head Protection Areas in New Jersey.* (www.state.nj.us/deo/njgs/whpaguide.pdf)

Barnegat Twp. shall include the date when all the wellhead protection areas were established and last reviewed around the community and non-community public supply wells in its planning documents. Barnegat Twp should adopt or update their Water Conservation Plan.

Center and Core Wellhead Protection Areas



Stormwater Management

Improvements to surface water infiltration and stormwater management can be implemented in many ways including replacing impervious pavement with pervious surfaces, maintain and restore all surface water bodies potential for additional stormwater retention through dredging and silt control, constructing green infrastructure, requiring buffers to surface water bodies, restoring wetland areas, adhering to state requirements for stormwater management best management practices, and adding stricter municipal building codes. To reduce flooding as temperatures and precipitation rise, **DEP recommends that Barnegat Twp. continue to address stormwater runoff and improve stormwater retention on site at its source including updating their stormwater ordinance and stormwater management plan.**

- **According to DEP records, Barnegat Twp. has updated its Stormwater Management Plan and Ordinance by deadline of March 15, 2021 and is in compliance.** As a portion of the municipality is in the Pinelands, Barnegat Twp, a second reading of the ordinance adopting the new Pinelands Storm water management plan is to be presented at Township meeting March 2023.
- Barnegat intends to adopt two new ordinances for private Salt storage and Tree ordinance within the time frame given once the NJDEP templates are made available.

- Barnegat Twp did not review their stormwater pollution presentation plan (SPP) plan in 2022 but it is recommended that the Township update the cover sheet with the date reviewed and repost the update.
- Barnegat will have a dedicated stormwater management webpage on the Townships new website which is currently being developed to meet the DEP requirement.
- Barnegat submitted GIS data for all outfalls and inlets.

Barnegat Twp. indicated that they have submitted to DEP their electronic outfall pipe and inventory but should also update maps indicating any stormwater outfalls located within the flood zone. Barnegat Twp shall also assess any wastewater system specific vulnerability to flooding events. Zoning ordinance and building codes should be updated to incorporate overlays for aquifer recharge, stream corridor and greenway conservation, and steep slope erosion control.

Barnegat Twp. should seek opportunities to install green infrastructure measures and expand stream corridor buffer areas to offset increased stormwater, but also to lower the impacts of the heat-island effect by reducing the amount of impervious surfaces.

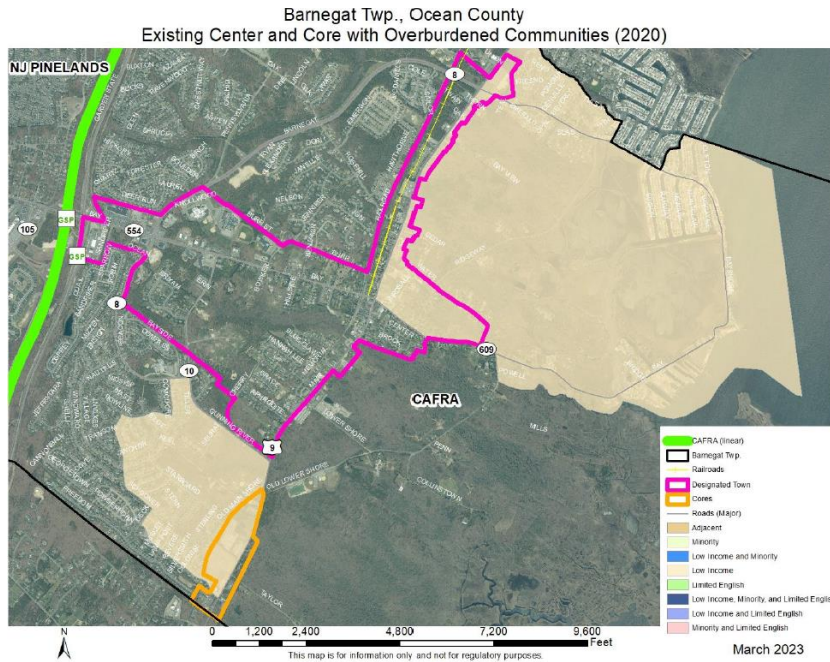
Social Vulnerability and Human Health

Population Assessment

Barnegat Township has a population of approximately 24,296 and was a 16% increase over 2010 and 98% since 1990 population levels. It is projected that in 2050, the population of Barnegat Twp will increase by 15.4% to 28,039. A portion of both the proposed center and core are designated as overburdened communities. 44.2% of the township population are considered low income. Approximately 9% of available housing is vacant and summarized in Barnegat's 2018 Housing Element and Fair Share Plan. There are currently 555 existing and prospective affordable housing units in Barnegat Twp. Transportation and evacuation routes are concentrated along the Garden State Parkway and Route 9.

In planning for climate change related resilience measures, Barnegat must also consider the vulnerability of various populations within the Township to adverse effects of climate change. All residents of Barnegat Twp. are vulnerable to adverse impacts of a climate change, including an increase in temperature and precipitation and a degradation of natural resources. However, climate change also impacts residents differently based on their location in the Township, their social and economic situation, and their ability to anticipate, resist, or recover from a natural hazard.

For those living near Barnegat Twp.'s flood zones, increased stormwater runoff under elevated precipitation and current impervious cover conditions could lead to catastrophic flooding. Any vulnerable residents that are adjacent to or in the floodplain may be at greater risk to flooding. The Township should evaluate residents living in tracts close to or in the floodplain including the elderly, disabled, minorities, and those without personal transportation to identify the social vulnerabilities they may face as a result of increased flooding. For example, if there are people without cars who rely on public transportation, increased flooding could result in loss of wages or their jobs if they cannot get to work on flooded days.



Environmental Justice

As of September 2020, New Jersey has passed new environmental justice legislation and guidance, building on Executive Order 23 to mandate integration of equity considerations into government decision-making. All municipalities should seek to reduce disproportionate environmental and public health stressors and increase environmental and public health benefits for communities of concern, which defined as community block groups having concentrations of low-income, minority, or limited English-proficient residents. Municipalities should empower residents, particularly their most socially vulnerable residents, to meaningfully participate in decision-making that affects their environment, communities, and health. More information can be found on the Office of Environmental Justice Website, <https://www.nj.gov/dep/ej/>.

The Township Housing and Fair Share Plan in accordance with Municipal Land Use Law (MLUL) is included in the Housing Element of the Master Plan adopted in 2018. The Master Plan re-examination Report (2021) and Municipal Self Assessment (2023) mention the 2018 update to the Housing Element. Barnegat Twp. shall continue to meet any requirements of the Council on Affordable Housing (COAH), identify vacant properties and acres completed under COAH rules NJSA 5:97-5.1 and identify efforts to meet affordable housing obligations through the development of vacant land and rehabilitation of vacant or underutilized existing buildings. Although it may be difficult to meet required affordable housing units because the lack of available vacant land, the DEP does not support affordable housing in flood zones. **Barnegat Twp. should determine if any vacant lots under consideration for affordable housing construction have regulated wetlands, are in the 100 year flood zone, or have identified state or federal threatened or endangered species and habitat.**

For areas in need of redevelopment that have environmental constraints may not be considered by DEP Watershed and Land Use Management Program to be eligible for necessary permits to redevelop a

vacant property if the sewer service area needs to be extended. Impediments to SSA extension include significant wetlands, flood zone, or identified threatened and endangered species habitat.

Barnegat Twp. updated its Housing Element of the Master Plan and affordable housing ordinance in 2018. Barnegat Twp, if not already completed, should develop an overlay for proposed affordable housing on vacant or underutilized land including any areas proposed in the center or cores in need of redevelopment.

Healthy Communities

DEP strongly encourages Barnegat Twp. to work with its municipal and county Offices of Emergency Management (OEMs) to review their Emergency Management Plans and complete a Hazard Mitigation Plan, especially but not limited to potential flooding of critical utilities, roadways and historic structures located in the flood zone and vulnerable to flooding related to increased precipitation. Water, sewer utilities, and piping are subject to flooding. **The Township should document that it has an up to date Emergency Master Plan and that they have received an approval letter from NJ State Police for their Local Emergency Management Plan.**

For information, the NJ Department of Health data is limited, at this time, for Barnegat Twp. due to its size. DOH data is more available for municipalities with larger populations. Data for the Township can be found at <https://www-doh.state.nj.us/doh-shad/>.

Greenhouse Gas Emission Reduction

The degradation of air quality and elevated temperatures can lead to negative health issues. Elevated temperatures can interrupt power supply to all residences which could impact those who need electricity for medical equipment in their homes and loss of air conditioning could increase heat stress and its associated impacts. **Barnegat Twp. should conduct an energy audit of all municipal owned buildings to identify energy inefficiencies. The Township shall also explore utilization of alternative fuels and green energy.**

Traffic congestion relief is a priority in Barnegat Twp. along it's existing and proposed commercial and evacuation routes as they explore alternative bikeways, walking paths and additional parking.

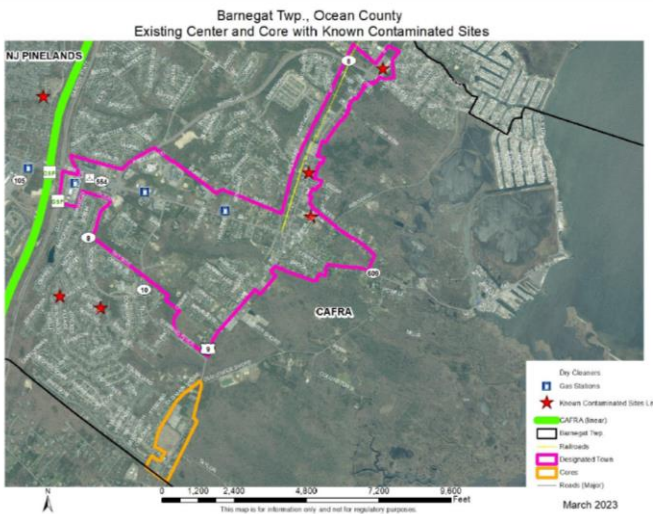
Barnegat Twp. should adopt a Greenhouse Gas Emissions Reduction Ordinance that encompasses energy efficiency and sustainable alternatives to transportation including bike paths and walking trails. The DEP Air Quality, Energy and Sustainability program has a model ordinance available as guidance (<https://www.nj.gov/dep/aqes>)

Contaminated Sites, Solid and Hazardous Waste, & Recycling

Known Contaminated Sites

To protect public health, Barnegat Twp. should maintain and update a map of known contaminated sites and their remediation status. A KCSL Inventory should not only include maps but also a table of site name, address, lot and block, NJDEP Program Interest Number, and note which sites are within the boundary of the proposed Cores or areas in need of redevelopment or identified for any future housing needs.

The Township should also conduct an inventory of home sources of contamination including residential underground heating oil tanks and septic systems. Several contaminated sites are located within or immediately adjacent to the proposed town center and core that may have an impact on ground water quality and have been subject to remediation measures. These include gas stations, underground storage tanks, dry cleaners, and solid waste municipal landfills. Adhering to DEP regulations for spill prevention and completing any required remediation and long-term groundwater monitoring of existing contamination are required in order to protect this valuable resource and public health.



These known contaminated sites in the area of the proposed center and core also identified with Groundwater Contamination Areas of groundwater contamination remediation through natural attenuation.

Brownfields

Barnegat Township has approved redevelopment of the 140 acre former Shoreline Sand and Gravel facility as the Compass Point Coastal Woods Development on Rt 72 at Block 92.111 to the west of the Parkway. This area under construction includes 148 condominium units and a clubhouse as well as 20 % open space. Other than that, Barnegat Twp. does not identify any other contaminated sites, nor does it identify any other brownfield sites. A GIS review indicates some gas stations and dry cleaners that may be an ongoing source of contamination or active remediation.

Barnegat Twp. should identify if any of these Known Contaminated Sites (KCS) meet the DEP definition of a brownfield site.

The Brownfield Act (N.J.S.A. 48:3-51) defines “brownfield” as:

“[A]ny former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant.”

The Solar Act (N.J.S.A. 48:3-51) also defines “brownfield” as:

“[A]ny former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant.”

It is often difficult for municipalities to identify their brownfields. It's even tougher for municipalities to navigate through the cleanup process and partner with willing developers. Sustainable Jersey is a good place to start.

Barnegat Twp. is one of many municipalities that are part of the Sustainable Jersey Certification Program but does not indicate that the municipality has received any certifications. There are Actions within Sustainable Jersey specific to brownfields. They are: Brownfield Inventory and Prioritization; Brownfield Reuse Planning; Brownfield Marketing; and Brownfield Assessment and Investigation.

Each of these Sustainable Jersey Actions provide information on why they are important and how they can be accomplished. There are also resources provided to help municipalities accomplish the Action goals and examples of what other municipalities have done. The DEP has also created programs to aid municipalities with the cleanup of their brownfield sites.

If the Township pursues brownfield cleanup and development in the future, DEP recommends taking actions as part of the Sustainable Jersey Certification Program. These actions include Brownfield Inventory and Prioritization, Brownfield Reuse Planning, Brownfield Marketing, and Brownfield Assessment and Investigation. Each of these Sustainable Jersey Actions provide information on why they are important and how they can be accomplished. There are also resources provided to help municipalities accomplish the Action goals and examples of what other municipalities have done. The DEP has also created programs to aid municipalities with the cleanup of their brownfield sites.

Contaminated Sites and Waste Facilities in Flood-prone Areas

Barnegat should identify if any of the identified known contaminates sites (KCS) are in the 100 year flood zone. An initial review by NJDEP of sites in the proposed cores does not indicate major facilities within the flood zone but this should be confirmed.

Solid and Hazardous Waste

DEP recommends that Barnegat Twp. update its waste management plan to encourage increased recycling and reduction of solid waste removal by public, and private facilities that either collect, transfer, process, or dispose of solid waste or recyclables on its municipal inventory. The municipality should also continue to inform its residents of any opportunities for recycling including additional drop-off depot locations and opportunities for residents, any Township plans to build additional waste management facilities in town, and any additional waste facilities or services to provide a more holistic view of how the Township manages its waste.

Recycling

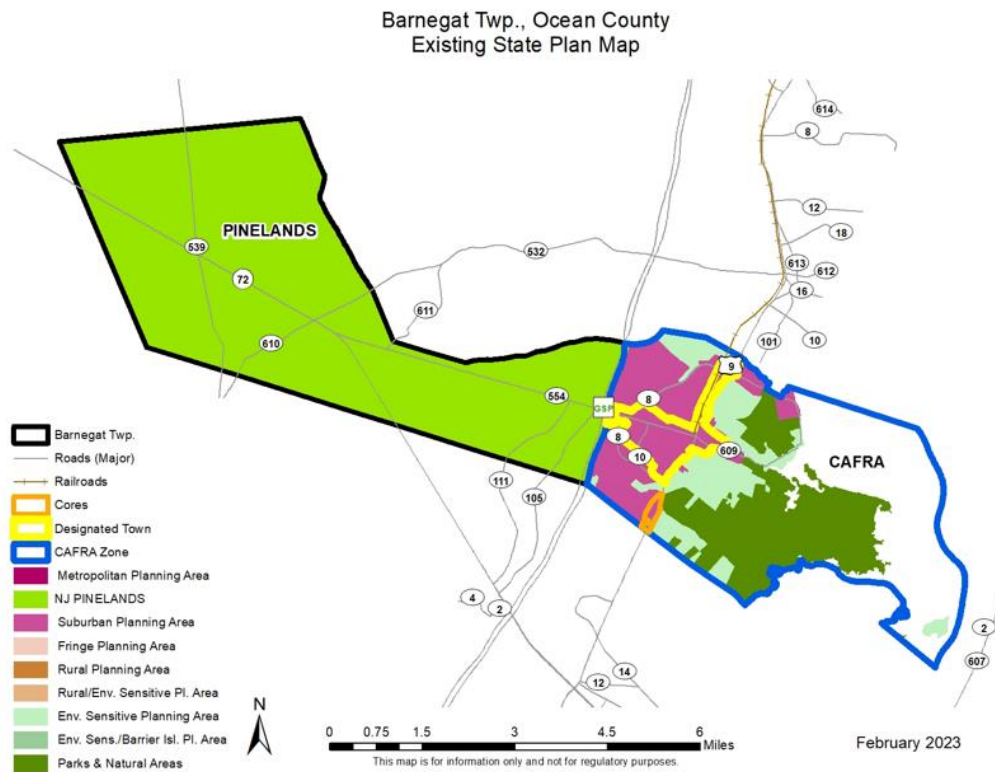
Barnegat Township adopted a Recycling Ordinance and Program in 1993. **Barnegat Twp. should provide the NJDEP a recycling statement of consistency to meet the requirements of N.J.S.A. 13:1E-99.11 et seq. (Recycling Act), NJ Statewide Mandatory Source Separation and Recycling Act. The MSA did not indicate if the recycling plan has been updated since 1993 and did not identify its recycling**

coordinator. Barnegat Twp. should provide the State with tonnage reports each year, and publicize recycling provisions every six months.

The Township has met its obligation to list at least one municipal recycling ordinance, and the township should post if the current recycling ordinance has been updated and expanded since 1993. DEP recommends that the Township notify the State of any recycling ordinance amendments in the future and adopted through a statement of consistency, pursuant to N.J.S.A. 13:1E-99.16(b). Future communication with the State should also include long-term plans including recycling education campaigns, how the municipality plans to enforce proper recycling practices, and potential plans to build upon the current recycling infrastructure in order to provide the State with an understanding of how the municipality plans to improve its current recycling system.

Critical Environmental Site Overlay

The DEP is recommending that any undeveloped areas in Planning Area 1 or Planning Area 2 in flood zones or within wetlands, stream corridor or threatened and endangered habitat presence and corridors have a CES overlay. A zoning update and habitat suitability determination or environmental assessment would be required before planning board approval of any new development in previously undisturbed areas.



Any development plan would require review not only by NJDEP but also by the NJ Pinelands Commission to the west of the parkway and consistency with the CZM Rules at N.J.A.C. 7:7-13.16(b) to the east of the Parkway. A new coastal planning area map will also require review by NJDEP before State Plan Endorsement. The current CAFRA rules state that the Department evaluate the

new or changed boundary to determine whether it is consistent with the purposes of CAFRA. The Department will review any plan changes to determine if it would result in unacceptable harm to the coastal ecosystem or the resources of the built or natural environment, or would otherwise be clearly inconsistent with the purposes of CAFRA or this chapter. For those new or changed community development boundaries or new or changed core or node boundaries which are located within the Pinelands National Reserve, the Department shall also, in consultation with the New Jersey Pinelands Commission, determine whether the boundaries are consistent with the intent, policies and objectives of the National Parks and Recreation Act of 1978, P.L. 95-625, section 502, creating the Pinelands National Reserve, and the State Pinelands Protection Act of 1979 (N.J.S.A. 13:18A-1 et seq.).

Sewer Service Area Extensions

Any future development plan that would require extension of the current sewer system would require an amendment to the county wide Wastewater Management plan and must include, but not limited to, a public health necessity for extending the line to residents with failing or outdated systems, an updated natural resources inventory, a contiguous sewer line route, an assessment of developed or disturbed lots, vacant undeveloped lots, lots in the 100 year flood zone, and any adverse impact to threatened and endangered species habitat. Coordination with NJDOT and the Pinelands Commission is also required and recommended before planning board approval. In addition, as multiple NJDEP permits and approvals would also be required for any sewer extension project, the DEP recommends early planning consultation with the Department prior to planning board approval to identify further any permitting requirements and constraints. A pre-application conceptual meeting can be scheduled with the NJDEP through the Office of Permitting and Project Navigation at (609) 292-3600 and <https://www.nj.gov/dep/pcer/>

Barnegat Township Redevelopment Areas

The MSA presents areas for redevelopment within and outside the proposed center and core areas.

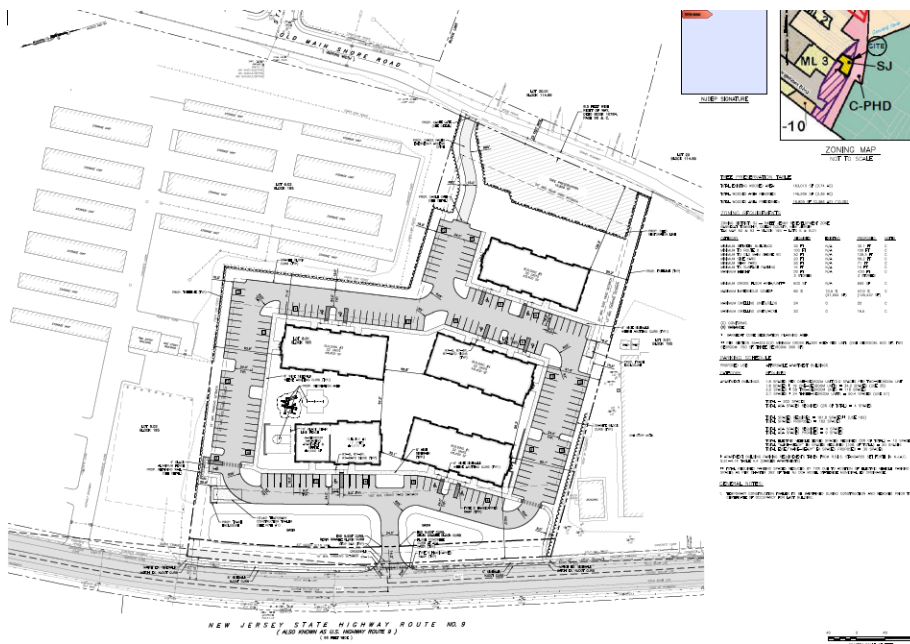
Threatened and Endangered Species - Some habitats have been identified along the roads within the proposed redevelopment areas. Each area has some identified threatened and endangered species and/or habitat that should be confirmed via an updated natural resources inventory and habitat suitability determination.

For developments requiring a CAFRA permit, if additional offsite areas are proposed to be included as part of the project site to meet the impervious cover and vegetative cover requirements of Subchapter 13, these additional parcels would need to be within the same planning area/center designation as the other portions of the property. They should consider this if they have future projects proposed and portions of the sites are in different center/planning area designations so they can consider incorporating these areas in the current centers or changing their planning areas.

A. Sweet Jenny Redevelopment Area – Commercial Core

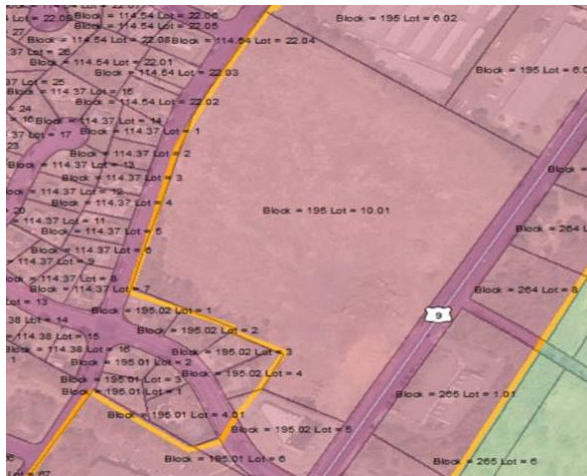
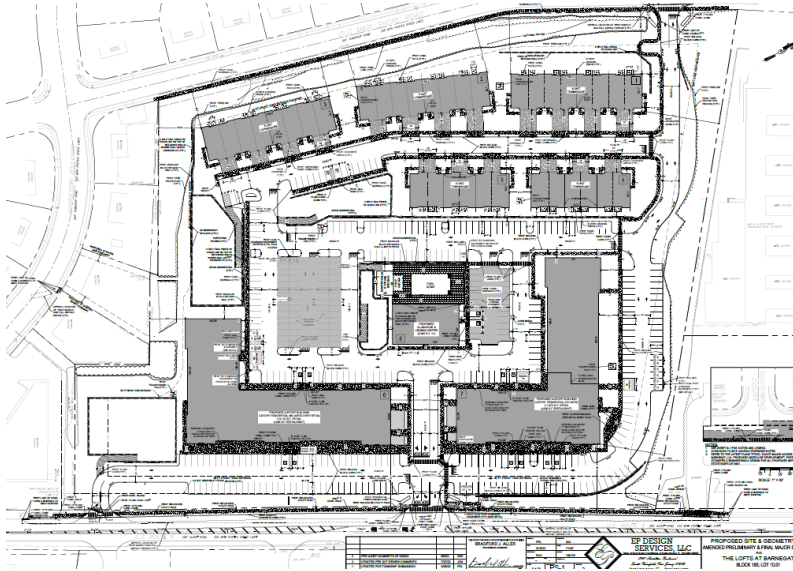
Block 195 Lot 5 and 6.01

Presence of Rank 5 habitat in western side of property. There is a plan indicating 16,809 sf of tree preservation area along Old Main Shore Road.



B. The Lofts at Barnegat Redevelopment Area – Commercial Core

Block 195, Lots 7, 8.01, 8.02, 8.03, 8.05, 9.01 and 10.01 - this area may already be cleared but was rank 3 and 5 habitat. Construction has not begun as the Land Use Regulation program is currently reviewing an application to modify an existing permit that includes areas of tree preservation and planting are located along the perimeter of the site. The development includes 24 townhomes, 186 apartments and 32,000 sq ft of commercial mixed use space.



Conclusion

The DEP will continue to work with the Office of Planning Advocacy to revise the current Town Center and Commercial Core boundary so that it is consistent with not only the Municipal Land Use Law, the State Plan, the Pinelands CMP, the CAFRA Coastal Management Rules and underlying land use and natural resources, but also to avoid and minimize impacts to threatened and endangered species and habitat, wetlands, flood zones, historic resources, surface water quality and critical infrastructure. These modifications are responsive to projected open space and habitat preservation as well as climate change impacts. This will allow Barnegat Twp. to avoid, prepare for, minimize the effect of, adapt to and recover from extreme weather events and changes in environmental conditions that have the potential to adversely affect the resources and residents of the Township.

Summary of Recommendations

Assessment of Proposed Town Center and Commercial Core

In reviewing the Barnegat Township's 2011 Master Plan, a 2021 Re-examination Report and the State Plan endorsement Municipal Self Assessment dated February 7, 2023 proposing re-endorsement of the town center and commercial core, boundary adjustments will be finalized between the Township and OPA with recommendations from DEP and will promote preservation of historic districts, preservation of natural resources, expansion of public access conservation areas and sustainable growth. The proposed center and core are entirely in Planning Area PA-2 (Suburban). However Barnegat should confirm if their Natural Resources Inventory and Land Use Inventory was updated within the last 10 years or at the time of the last master plan re-examination.

1. The Township needs to further identify in proposed preservation or redevelopment areas any vulnerabilities to future flooding and adverse impacts related to climate change. Resiliency actions and restrictions should be applied to any sections in flood zones. DEP can offer Technical Assistance in clarifying development constraints for sites.
2. Future development in the Township will likely be limited by a shortage of available vacant and open land, overlapping restrictions of Special Flood Hazard Areas, and regulated riparian zones. The Township's zoning ordinance should be updated to include overlays that address stormwater management, aquifer recharge, steep slopes, 100 year and 500 year flood zones and critical habitat and habitat corridors. This includes a Critical Environmental Site (CES) overlay for undeveloped areas in the 100 year and 500 year flood zone and environmentally sensitive areas (ESA).
3. Barnegat Twp. should update its Land Development Ordinance to include sustainable development practices.
4. Prior to endorsement, Barnegat Twp. must demonstrate consistency status with the State Plan, the Pinelands Comprehensive Management Plan, and NJDEP guidance for climate resilience and environmental Justice. Barnegat Twp. did not provide in the MSA a summary **Table of all ordinances and plans with most recent date each was adopted or updated**. The Township should complete prior to endorsement and **update annually** a summary table of all ordinances and plans and last date updated. Any required ordinances or plans missing need to be created and adopted. Any existing ordinances, plans, zoning, etc need to be reviewed and updated to include climate resilience, updated inventories data, and social vulnerability and environmental justice. The Office of Planning and Assessment provides guidance for a checklist. In addition, we offer the attached checklist as an option to identify and track all ordinances and plans required for state plan consistency.

Climate Change Resiliency

1. **Barnegat Twp. should prepare for climate impacts described in the state Climate Change Science Report and available on the NJDEP website by completing a climate vulnerability**

assessment and adopting a Climate Resiliency Plan and incorporate climate resiliency into all applicable ordinances.

2. This analysis has an extended focus on increased precipitation and flooding. The Township should also prepare for impacts of increased heat.
3. The Township shall update its Hazard Mitigation Plan and chapter in County Plan and shall include a NJ State Police approval letter for the Local Emergency Management Plan.
4. The Township should also prepare long-term adaptive management forestry practices to preserve its tree cover as precipitation and temperatures increase. If already completed, please provide date completed and link.
5. The Township should expand its conservation corridors connecting parks and walkable community areas via easements and additional open space preservation.

Flooding

1. To address flooding increases, largely due to increases in intense short-term rain events, DEP recommends that Barnegat Twp. utilize the Special Flood Hazard Area for the 0.2 percent (500-year) storm. In assessing flood vulnerability, the Township should evaluate its sewer, water, and stormwater infrastructure, as well as its transportation and evacuation routes.
2. The Township should identify open space, vacant, and underutilized land vulnerable to future flooding and should maintain up to date mapping and inventory of areas that flood regularly, including repetitive loss (RL) and severe repetitive loss (SRL) properties, roadways and intersections, with particular attention to evacuation routes or critical access areas.
3. Future development in the Township will likely be limited by overlapping restrictions of Special Flood Hazard Areas and riparian zones, wetlands, and critical environmental species habitat.
4. When evaluating any construction within the identified floodplain of Barnegat Twp outside of the proposed center and core, the Township and others involved must also consider the cost of damage and replacement in the event of flooding.
 - Any proposed conceptual redevelopment or conservation plan should be presented to DEP early in review process, before planning board approval, and before submittal of any permit applications to determine if the project has any fatal flaws rendering it un-permittable in its current design.
5. The DEP recommends that Barnegat Township, as per the 2021 Master Plan Re-examination Report, enhance its own zoning regulations and building codes to encourage building outside of the flood zone and to minimize construction in flood prone areas to reconstruction of existing buildings. Flood zone area new construction or redevelopment of existing buildings should avoid high density concentration and areas of severe flooding.
 - Construction of any critical utility line and associated infrastructure, emergency services, or public services buildings (schools, hospitals, churches, etc.) should be avoided in the flood hazard area and any currently within the flood zone should be mitigated for flood resilience. When evaluating any construction within the identified floodplain of

Barnegat, one must also consider the cost of damage and replacement in the event of flooding.

6. DEP recommends that Barnegat Township adopt an updated floodplain development ordinance (<https://www.ecode360.com>) that is consistent with the most recent standards and National Flood Insurance Programs. For Guidance please review the model ordinance at <https://www.nj.gov/dep/floodcontrol/modelord.htm> and FEMA guidance at <https://www.fema.gov/floodplain-management/manage-risk/local>.
7. DEP encourages any town that has homes and neighborhoods that repetitively flood to consider contacting the DEP Blue Acres program regarding buyouts. (https://www.nj.gov/dep/greenacres/blue_flood_ac.html)
8. Green infrastructure should be incorporated into all projects within the floodplain.

Historic Resources

1. Barnegat Twp. shall update as necessary its Historic and Cultural Resources Inventory and adopted an Historic Preservation Plan Element in the 2012 Master Plan as well established a Historic District and a Historic District Transition Area. Historic structures within the Township's Historic Districts should continue to be evaluated and protected with enhanced stormwater management and flood minimization plans within the municipal code.
2. Revise the Township code to implement within the historic districts the following:
 - Update as necessary the existing Historic district overlay with defined historic district buffer area;
 - Update as necessary the architectural and development standards within and adjacent to the district;
 - Continue to maintain an Historic Preservation Commission;
 - Continue to update the historic sites inventory and include historic sites in capital improvement program especially related to flood resiliency

Open Space and Wildlife

DEP recommends that Barnegat Twp. regularly update their natural resources inventory every 10 years and adopt a resource conservation protection overlay. The Township expressed in the MSA that it wishes to acquire additional parkland for public community use in proximity to it's center, core and walkable areas.

Barnegat Twp. should update its 2004 Open Space and Recreation Plan to protect the Township open spaces and expand conservation easements.

- Continue to work with Ocean County and surrounding municipalities to provide and expand corridors of open space and natural features.

- Support habitat connectivity, adaptation to changing climate conditions, and to protect historic structures between and including town NGO, state, and federal open space within Barnegat township owned open space, green acres encumbered open space, , the Pinelands Reserve and the Natural Heritage Priority Sites.
- Barnegat Twp. should also incorporate conservation easement tracking and monitoring in its Open Space Plan and a Habitat Conservation Protection ordinance.

Barnegat Twp. should expand on long-term tree shade and forestry adaptive management practices to preserve its tree cover as precipitation and temperatures increase.

- Adopt or update a tree ordinance to protect trees during development and in accordance with 2016 Community Forest Management Plan
- Adopt a Community Wildfire Protection Plan utilizing guidance from NJ Forest Fire Service

The Township should promote the recolonization and reuse of open field habitats for ground nesting and foraging birds.

The Township should continue to expand public outreach and educational opportunities.

The Township should adopt a Farmland Preservation ordinance. Currently 64.61 acres are designated for agricultural use and 3 acres of agricultural land is located in the Town Center and should be preserved.

Wastewater, Water Supply, and Stormwater

1. Barnegat Twp. should regularly re-assess vulnerability of the municipal stormwater, wastewater management system and potable water supply system infrastructure that serves the town including any treatment plants, pump stations, delivery piping or outfalls in the flood zone, determine their specific vulnerability to flooding events, and evaluate resiliency solutions.
2. Barnegat Twp. should continue to address stormwater runoff, improve retention on site at its source, reduce flooding and maintain water quality as temperatures and precipitation rise. Improvements can be implemented in many ways, including replacing impervious pavement with pervious surfaces, maintaining and restoring all surface water bodies potential for additional stormwater retention through dredging and silt control, constructing green and natural infrastructure, requiring buffers to surface water bodies, restoring wetland areas, adhering to state requirements for stormwater management best management practices, and adding stricter municipal building codes.
3. Stormwater Management - DEP recommends that the Township continue to address stormwater runoff and improve stormwater retention on site at its source. DEP recommends that Barnegat Twp maintain compliance with MS4 permit. Barnegat Twp.'s stormwater pollution prevention plan and stormwater management ordinance were updated prior to deadline of March 2021.

- The Township is in compliance and has updated their Stormwater Management Plan and Ordinance by March 15, 2021.
 - The Township is in compliance with the MS4 permit by submitting to DEP updated outfall location maps at its wastewater treatment plant and elsewhere in the Township.
 - Inventory and update maps of any stormwater outfalls located within the flood zone and determine their specific vulnerability to flooding events.
 - Update ordinance to incorporate overlays for aquifer recharge, stream corridor and greenway conservation, and steep slope erosion control.
 - Adopt an Impervious Surface Reduction Plan - Evaluate and reduce impervious surfaces and improve stormwater in-situ recharge.
 - Stream Corridor and Green Infrastructure - The Township should seek opportunities to install green infrastructure measures and expand stream corridor buffer areas to offset increased stormwater runoff and to lower the impacts of heat-island effect directly related to the amount of impervious surfaces.
4. Wastewater Management – Barnegat Twp shall identify any wastewater treatment facility buildings, pump stations and any piping in the floodzone. The Township shall also identify any residential houses in need of expansion of sewer service area to relieve failing septic as a health priority.
- DEP supports ongoing resiliency improvement measures at any Barnegat Twp wastewater treatment facilities and infrastructure and should be included in an updated municipal chapter of the Ocean County Hazard Mitigation Plan if relocating any conveyance or outfall pipe.
 - While the sewer service area includes approximately 40% of Barnegat Twp., the Township should also identify any active commercial or home septic systems.
 - The current sewer service area also includes areas identified as habitat for threatened and endangered species. Future evaluation of the County approved sewer service area may eliminate those species habitat areas. Such parcels would be subject for review either through a Municipal Chapter of the Ocean County Wastewater Management Plan or through a site specific amendment pursuant to the DEP Water Quality Management rules.
5. Potable water supply system – Barnegat Twp’s public water service area covers approximately 69.4% of the Township. The Township should determine if any of its potable water treatment infrastructure is located in the 100 year flood zone including outfalls, and conveyance piping and wellhead protection areas. The Township shall identify any water supply infrastructure located in the flood zone and determine their specific vulnerability to flooding events.

- Additionally, DEP recommends that the Township determine if there are any private domestic wells within the Township and within the cores and both inform the owners of their vulnerability and identify potential solutions to that vulnerability.
- The Township shall update maps and prepare tables of location, capacity, etc. of the wellhead protection area around the community public supply wells in its planning documents. Barnegat Twp shall adopt or update their Water Conservation Plan.

Contaminated Sites, Solid and Hazardous Waste, and Recycling

1. Barnegat Twp. shall complete a Known Contaminated Sites Inventory of the Township as well as of the Center and Core. There are a few identified sites in and adjacent to the center and core and the Township shall determine if any identified contaminated sites within the proposed center or core are currently undergoing remediation efforts and groundwater monitoring. The Township should identify if any of these Known Contaminated Sites (KCS) also meet the current DEP definition of a brownfield site and evaluate for redevelopment.
2. If the Township pursues brownfield cleanup and development in the future, DEP recommends taking actions as part of the Sustainable Jersey Certification Program.
3. Barnegat Twp. should also expand its inventory of potential sources of contamination by identifying all commercial and private home underground storage tanks and septic systems.
4. Barnegat Twp should update its 1993 recycling ordinance and municipal solid waste and recycling management plan to identify not only public, but also private facilities that either collect, transfer, process, or dispose of solid waste or recyclables on its municipal inventory. The Township should notify the State of any update to its recycling ordinances adopted through a statement of consistency, pursuant to N.J.S.A. 13:1E-99.16(b).

Environmental Justice and Social Vulnerability

1. As per new environmental justice legislation, all municipalities should seek to reduce disproportionate stressors and increase benefits for socially vulnerable populations and frontline communities. The Township can do this by empowering residents, particularly its most socially vulnerable residents, to meaningfully participate in decision-making that affects their environment, communities, and health.
2. The Township shall regularly update its available land inventory to further identify sustainable development potential while meeting conservation and environmental protection goals.
3. The Township last completed a Fair Share Housing plan in 2018. The Township shall update or adopt its affordable housing ordinance and shall develop including an overlay for proposed affordable housing on vacant or underutilized land.
4. The Township should update any assessment of any Redevelopment Areas vulnerable to future flooding, with regulated wetlands and/or with identified critical species habitat during the planning process that would limit any future affordable housing.

Greenhouse Gas Reduction and Energy

1. All communities are encouraged to implement actions to meet New Jersey's goals for greenhouse gas emissions reduction. The Sustainable Jersey Gold Star in Energy identifies a suite of actions and levels of performance that municipalities can take to reduce greenhouse gas emissions. Information on the goals star standard can be found at <https://www.sustainablejersey.com/actions/gold-star-standards>.
2. DEP supports Barnegat Twp's commitment to pursue the utilization of renewable energy, although it encourages the Township to pursue it in an ecologically responsible manner. The Township shall conduct an energy audit of all municipal buildings and adopt or update an Energy Master Plan.
3. DEP supports renewable energy through solar arrays installation, although it expresses concerns for their placement in ground nesting habitats for birds. Barnegat Twp adopted a Solar Energy Plan in 2019. The Township should continue to protect the it's open spaces and the recolonization and reuse of open field habitats for ground nesting and foraging birds as they evaluate sustainable, renewable and alternative energy sources and sites.
4. Barnegat Twp. shall adopt a Greenhouse Gas Emissions Reduction Ordinance that encompasses energy efficiency and sustainable alternatives to transportation including bike paths, walking trails and contiguous sidewalks and potential congestion relief bypass routes. For guidance please refer to the Great Plains Institute database of climate ordinances at: https://www.betterenergy.org/blog/database-of-climate-ordinances-now-available-to-planners/?mc_cid=ee681f368d&mc_eid=64c234231d

Attachments

Municipal Checklist



Municipal Ordinance
Checklist.docx

NJ DEPARTMENT OF TRANSPORTATION

**State Development and Redevelopment Plan
Plan Endorsement
Opportunities and Constraints Analysis**

For:

Township of Barnegat, Ocean County

March 13, 2023

This document constitutes the New Jersey Department of Transportation's component of the State Opportunities and Constraints Analysis conducted as part of the Plan Endorsement process. This document provides a collection of the most recent data and information that exists in the Department pertaining to transportation features, studies, projects, grants, designations and other significant issues as applicable. The document should serve as a baseline to inform the remainder of the Plan Endorsement process. It should be understood that this assessment reflects conditions as they presently exist, and that changes may occur at any time during the Plan Endorsement process.

NJDOT has examined the following categories for pertinent data:

State Highways

U.S. Route 9 – MP 73.30 – 76.61

Route 72 – MP 12.00 – 18.06

Garden State Parkway – 66.65 – 68.96

Straight Line Diagram sheets are attached.

State Highway Access Management Code – Access Levels and Desirable Typical Sections

The attached Access Classification table does not identify any changes to the State Highway Access Code Appendix B-1 access classification designations for the above noted segments of the State Highway System (SHS) as a result of Plan Endorsement. We have not been made aware of any proposed changes at this time to be included in the Barnegat Township collective SDRP boundaries. Therefore, the Bureau of Statewide Strategies has identified the Barnegat Township, Ocean County Plan Endorsement petition will not result in a change in rules for managing access to the state highway system.

Additionally, as NJDOT endeavors to coordinate reviews with other state agencies, we would direct their attention to SDRP's Statewide Goals, Strategies and Policies with special emphasis on the following Statewide Policies on Transportation:

- *Transportation - Improve transportation systems by coordinating transportation and land-use planning; integrating transportation systems; developing and enhancing alternative modes of transportation; improving management structures and techniques; and utilizing transportation as an economic development tool.*
 - *Statewide Transportation Policy 1, regarding transportation maintenance and repair - The maintenance and repair of the existing transportation network is the highest transportation priority.*
 - *Statewide Transportation Policy 4, regarding integration of land use and planning – Establish a working partnership between transportation*

agencies, municipalities, counties, regional governments, and the private development community to strengthen the linkages between land use planning and transportation planning for all modes to achieve the following objectives”: (1) Reduce consumption of land and increase the efficiency of infrastructure, (2) Support public transportation systems and other alternatives to the automobile, (3) Reduce total vehicle miles of travel, and (4) Reduce the overall consumption of energy resources for transportation purposes.

- *Statewide Transportation Policy 18, regarding highway access management - calls for control of local access to highway capacity in ways that ensure that regional needs, adequate system capacity and public health and safety are protected and minimize sprawl. Encourage parallel service roads, shared driveways and parking, and pedestrian access between neighboring uses.*

Consistent with NJDOT's asset management approach, the maintenance and repair of the existing transportation network highest priority. New Jersey is an infrastructure preservation as opposed to a capacity expansion State. A limited focus of locating develop along the state highway system will encourage auto-dependence and exacerbate traffic congestion and roadway safety issues. The induced demand for additional roadway capacity that results from Plan Endorsement is to be satisfied by the efficient management of a complete roadway network across jurisdictional boundaries as well as the employment of coordinated transportation and land use planning activities.

Congestion Management System

According to the attached charts, the Overall Congestion Assessment for U.S. Route 9 is classified as “Mildly Congested”. The Overall Congestion Assessment for Route 72 is classified as “Moderately Congested”. The Overall Assessment for the Garden State Parkway is classified as “Mildly Congested”.

The Overall Assessment is based on a review of Congestion Management System (CMS) and PDA Suite Data (also attached), showing weekdays and summer weekends of the year 2019. The congestion analysis is valid between February 2023 and February 2026. The PDA Suite was developed by the University of Maryland for the I-95 Corridor Coalition.

Major Capital Projects/Initiatives and Mitigation Projects

The FY 2022 – FY 2031 Statewide Capital Improvement Program shows no major capital projects in the area.

Designated Transit Villages

Not applicable.

Designated Scenic Byways

Not applicable

Open Local Aid Grant Projects

- Improvements to Spruce Circle South and Spruce Court – FY 2023 Municipal Aid - \$298,480
- Improvements to Spruce Circle North – FY 2022 Municipal Aid - \$221,487
- Improvements to Pine Oak Blvd. Phase 2 – FY 2021 Municipal Aid - \$293,800
- Improvements to Pine Oak Blvd. – FY 2020 Municipal Aid - \$325,000

Corridor Studies

Barnegat Township participated in the Route 9 Corridor Integrated Land Use and Transportation Study completed in 2005.

Local Planning Assistance Projects

No local planning assistance projects have been conducted.

Bicycle and Pedestrian Local Planning Assistance Projects

No local bicycle and pedestrian local assistance studies have been conducted.

The Safety Management System Analysis has shown that the subject highway segments do not appear within the top 100 on any of the 2019 NJDOT Lists (2014-2016 crashes) or on the 2015 Bike List (2009-2013 crashes).

In addition, we are sharing the following information from the **Horizontal Curve Inventory and Safety Assessment** studies which might benefit the development of this effort:

Our study reviewed additional countermeasures that might be applicable on the following horizontal curves:

- *For 00000009__MP 74.20 – 74.37*
 - a. Advanced Curve Warning Signs*
 - b. Edgeline/shoulder Rumble Strips*
 - c. Enhanced (Wider) Pavement Markings*

- d. *Obstacle Removal*
- e. *Post-Mounded/Roadside Delineation*
- *For 00000072__ MP 16.11 – 16.76*
 - a. *Advanced Curve Warning Signs*
 - b. *Create Clear Zone or Guiderail*
 - c. *Edgeline/shoulder Rumble Strips*
 - d. *Enhanced (Wider) Pavement Markings*
 - e. *Guiderail Delineation*
 - f. *Obstacle Removal*
 - g. *Safety Edge*
 - h. *Speed Reduction Markings – Optical Speed Bars, and/or In-Lane Words/Markings*

Barnegat Township has not adopted a Complete Streets policy.

Public Use/General Aviation Airports

Not applicable.

Rail and Truck Freight

No rail freight lines appear in Barnegat Township. The Tuckerton Railroad Mainline near Barnegat Township is abandoned.

There are no Weigh-in-Motion stations or truck parking facilities in the Township.

Traffic Engineering and Safety Initiatives

The Bureau of Traffic Engineering has no projects or studies within Barnegat Township.

Existing and Planned Park-and-Rides

Barnegat Township does not have any NJDOT-owned or leased park-and-rides.

Other Significant Issues

Most coastal communities will, at some point, require dredging within their jurisdictions. Whether that dredging is for a private, municipal, state, or federal facility it will require a suitable location to manage dredged material. Each coastal community should designate and reserve space commensurate with their dredging needs if they wish to have safe navigation in, around and through their jurisdictions. The use of this reserved space should be such that it can be converted to dredged material management at any time and

on relatively short notice. Failure to do this may result in undesirable delays in dredging channels. Coastal communities that would like to learn more about dredging and dredged material management should contact the Office of Maritime Resources for assistance.

In addition to dredging and dredged material management, the NJDOT Office of Maritime Resources is responsible for coordinating with FHWA on their passenger ferry program. Any municipality looking to develop ferry terminals or improvements to ferry facilities should inform the office of their intentions.

ATTACHMENTS

Straight Line Diagram Sheets
Access Classification Table
Congestion Management System Charts
PDA Suite Congestion Scan Analyses

NOTE: OPA may access NJDOT GIS data layers as needed.