

MUNICIPAL STORMWATER MANAGEMENT PLAN

**BOROUGH OF SURF CITY,
OCEAN COUNTY, NEW JERSEY**

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INTRODUCTION

The Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Borough of Surf City ("the Borough") to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

The plan addresses the review and update of existing ordinances, the Borough Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

GOALS

The goals of this MSWMP are to:

- Reduce flood damage to life and property,
- Minimize, to the extent practical, any increase in stormwater runoff from any new development;
- Reduce soil erosion from any development or construction project;
- Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- Maintain groundwater recharge;
- Prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- Maintain the integrity of stream channels for their biological functions, as well as for drainage;
- Minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development.

STORMWATER DISCUSSION

Land development can dramatically alter the hydrologic cycle (see Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat which some species cannot adapt.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended soils, hydrocarbons, pathogens and nutrients.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

BACKGROUND

Surf City Borough encompasses a total area of 0.92 square miles, with 0.72 square miles being land area, and 0.20 square miles comprised of water area, and is located within Ocean County, New Jersey. The most recent census data indicates that the population has risen from 1,375 in 1990 to 1,442 in 2000, an increase of 67, or 4.9%. The 2000 census also indicates that 2,621 housing units are located within the Borough, which is almost double the number of people living year round within the Borough. These figures indicate that this is a resort community, with population surges during the summer months.

Surf City Borough is part of the barrier island of Long Beach Island, and is surrounded by water on two sides; on the east is the Atlantic Ocean, and on the west is the Manahawkin Bay. On the north is the Township of Long Beach and to the south is the Borough of Ship Bottom. Figure 2 depicts the Borough boundary on the USGS quadrangle maps. Figure 3 provides an aerial view of the Borough from 2002 orthography.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics.

For Surf City Borough, there are two major water bodies surrounding the coasts, the Manahawkin Bay and the Atlantic Ocean. The Atlantic Ocean has impairments including dissolved oxygen, total coliform and fecal coliform, however, the Borough does not have any outfalls to the ocean, so there is no impact on the Borough. The Manahawkin Bay impairments include total coliform, fecal coliform and dissolved oxygen, but within Appendix 1-D, the dissolved oxygen has been "De-Listed". This water body is therefore considered moderately impaired. This means the NJDEP is required to develop a Total Maximum Daily Load (TDML) for these pollutants in the waterway.

A Total Maximum Daily Load (TMDL) is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the Federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

Since the Borough of Surf City is an island town, with water on both sides of it's coasts, it is influenced by tidal patterns. The existing stormwater infrastructure is capable of handling design storm events during low tide. However, during a rain storm within high tide, the stormwater piping and inlet system becomes flooded.

No changes in development patterns or population have occurred within the Borough in many years. Occasional tidal flooding is expected within this type of community, and it is not necessary to make any changes to the existing system.

Figure 4 provides wellhead protection areas, which are required as part of the MSWMP.

DESIGN AND PERFORMANCE STANDARDS

The Borough will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the County for review and approval within 24 months of the effective date of the Stormwater Management Rules.

Specific attention is called to NJAC 7:8-5.4(a)3iv, regarding tidal flood hazard areas. It states that the stormwater runoff quantity analysis shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge. For the Borough, which is within a Flood Zone, there is no danger of increased flood damages, as the outfalls are all to the Manahawkin Bay. Therefore, no stormwater quantity analysis will be required of developers, only a water quality analysis. The stormwater runoff quality controls for total suspended solids and nutrient load shall meet the design and performance standards as specified in NJAC 7:8-5.

During construction, Borough Inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

PLAN CONSISTENCY

The Borough is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Borough; therefore this plan does not need to be consistent with any Regional Stormwater Management Plans (RSWMPs) nor any TDMLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is not currently consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. However, after the Ordinances are revised, the municipality will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

The Borough does not currently have a Stormwater Management Ordinance. However, after the Ordinances are revised, language will be added which requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Borough Inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the Ocean County Soil Conservation District.

NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

The Borough has reviewed the master plan and ordinances, and has provided a list of the sections in the Borough land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, they will be submitted to the County review agency for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

The Borough of Surf City Code was reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes will be made to the Surf City Code to incorporate these changes.

Section 4-1 Litter:

This section states that sweeping litter into gutters is prohibited, and provides for proper methods of disposal of litter. *It should be amended to include the sample NJDEP Model Ordinance on Improper Disposal of Waste, with language including the spilling, dumping, or disposal of materials other than stormwater to the municipal separate storm sewer system (MS4), and also include the Yard Waste Collection Program language from the NJDEP Model Ordinance.*

Section 18-5 Curbs, Sidewalks and Driveways:

This section provides requirements for the curb and sidewalk widths for varying street widths, as well as dropped curbs at driveways and dimensions of curbs and sidewalks. *This section should be amended to allow the use of slotted curbed or flush curbs with curb stops to allow vegetated swales to be used for stormwater conveyance and to allow the disconnection of impervious area.*

Section 21-6.1d – Flood Control - Subdivision Proposals:

This section states that all proposals shall be consistent with the need to minimize flood damage, and provide adequate drainage to reduce exposure to flood damage. *This sections should be amended to state that all subdivision proposals shall meet all requirements of NJAC 7:8-5.4(a)3iv, regarding stormwater runoff quantity within tidal flood hazard areas.*

Chapter 28 – Site Plan Review:

This section includes requirements for existing and proposed features which are required to be provided on a site plan submitted to the Borough for approval. *This chapter should be amended to include more specific requirements for site plans, including low impact development, grading recommendations, acceptable plantings and landscaping criteria, etc., as well as language requiring developers to meet New Jersey Best Management Practices (NJBMP) and the New Jersey Soil Erosion and Sediment Control Standards.*

Chapter 29 – Land Subdivision:

This section contains language which will encourage good development patterns within the Borough for streets, lots and blocks within subdivisions. *This section should be amended to reference Residential Site Improvement Standards (RSIS) for street design criteria, stormwater management criteria, grading recommendations, etc., and the New Jersey Soil Erosion and Sediment Control Standards, where applicable.*

Chapter 30 – Zoning:

This chapter outlines the zones within the Borough, and provides minimum lot dimensions as well as some yard restrictions and parking requirements. *This section shall be amended to place maximum limits on coverage to minimize impervious coverage and to meet RSIS, where applicable.*

Section 30-9 – Fences and Shrubs:

This section includes permitted and prohibited shrubs within the Borough. *It should be amended to include landscaping requirements, including a plant listing per Chapter 7 of the NJBMP, to the extent possible for a barrier island. Native vegetation shall be preferred.*

In addition to the above general recommendations, sections can be added to the Ordinance for items such as Drainage/Stormwater Management, Soil Erosion and Sediment Control, Landscaping, etc., to provide for more stringent requirements, improve overall Borough development, and minimize negative impacts to the Borough.

LAND USE/BUILD-OUT ANALYSIS

Since the Borough of Surf City contains 0.92 square miles, 0.72 square miles of which is land area, we are not required to prepare a Land Use/Build-Out Analysis. This analysis is only required of municipalities with more than one square mile of vacant or agricultural lands. The Land Use Map is included as Figure 5 and Figure 6 illustrates the HUC14s (Hydrologic Unit Code) within the Borough.

MITIGATION PROJECT CRITERIA

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards.

The mitigation project should be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.

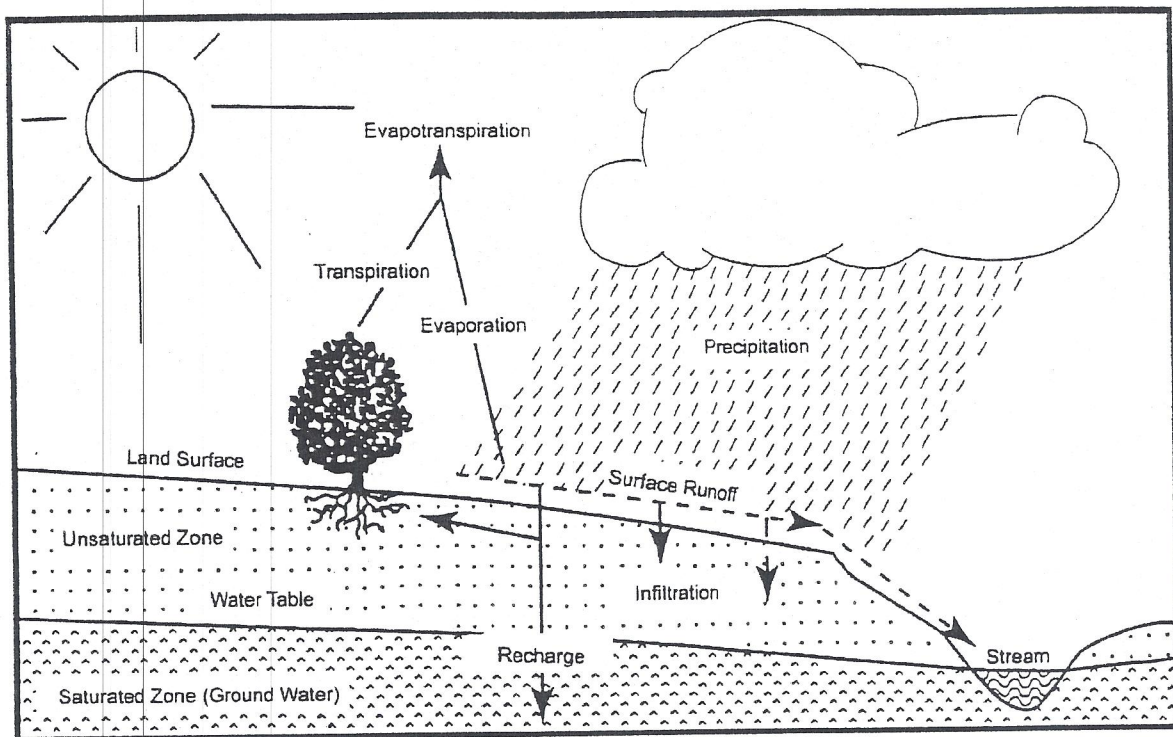
If a suitable site cannot be located in the same drainage area as the proposed development, as discussed above, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts due to a fecal impairment.

Two mitigation options are provided below, but this list shall not be considered all inclusive. If a developer can provide any different options for mitigation, they shall be presented to the Borough Engineer for his approval.

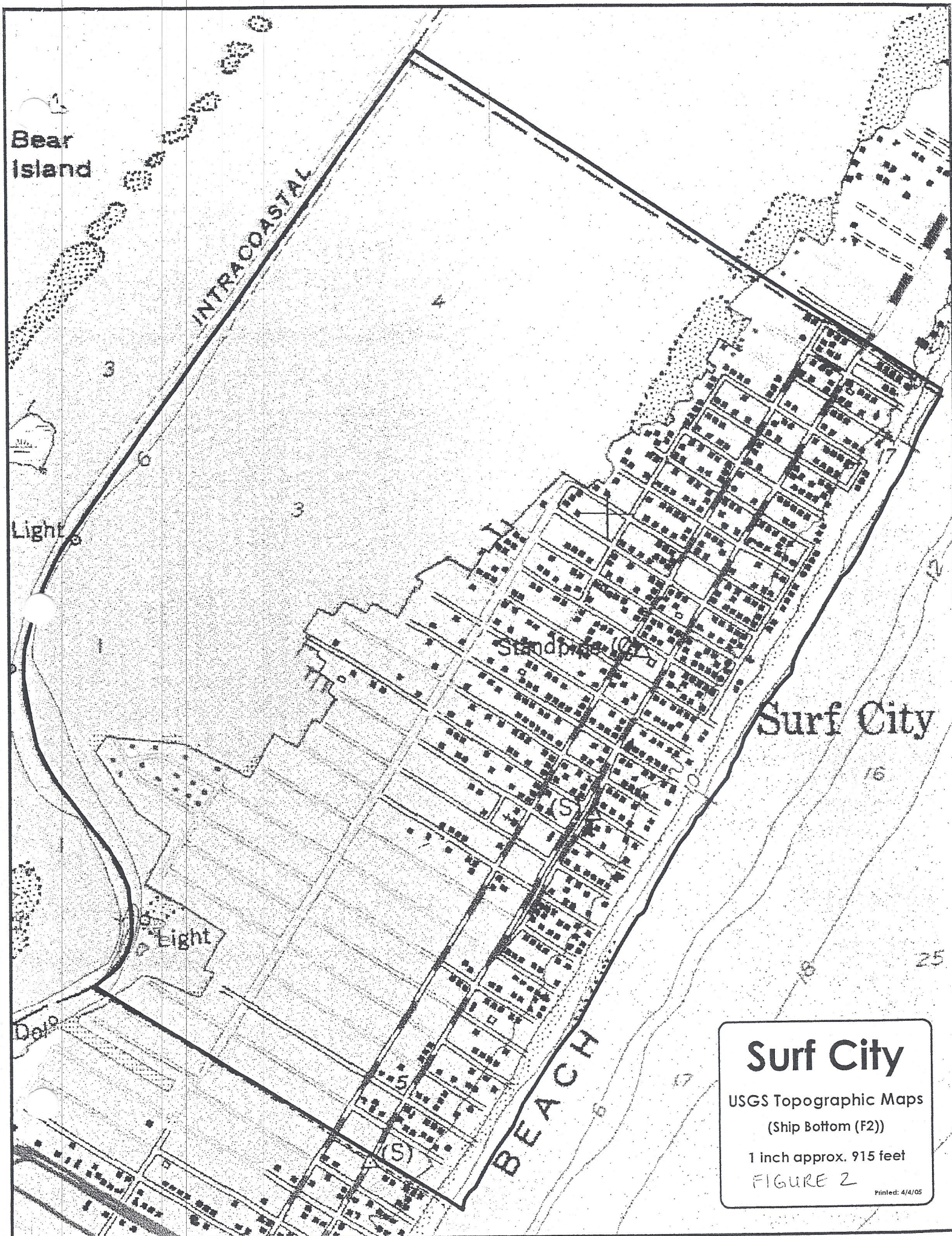
- Retrofit existing stormwater collection inlets, throughout the Borough, with grates and/or curb pieces as required in Appendix C of the NJBMP manual.
- Install prefabricated stormwater filtration systems to provide water quality at the Borough's outfalls. Units installed shall be approved by the NJDEP, and a maintenance schedule shall be provided.

FIGURES

Figure 1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.



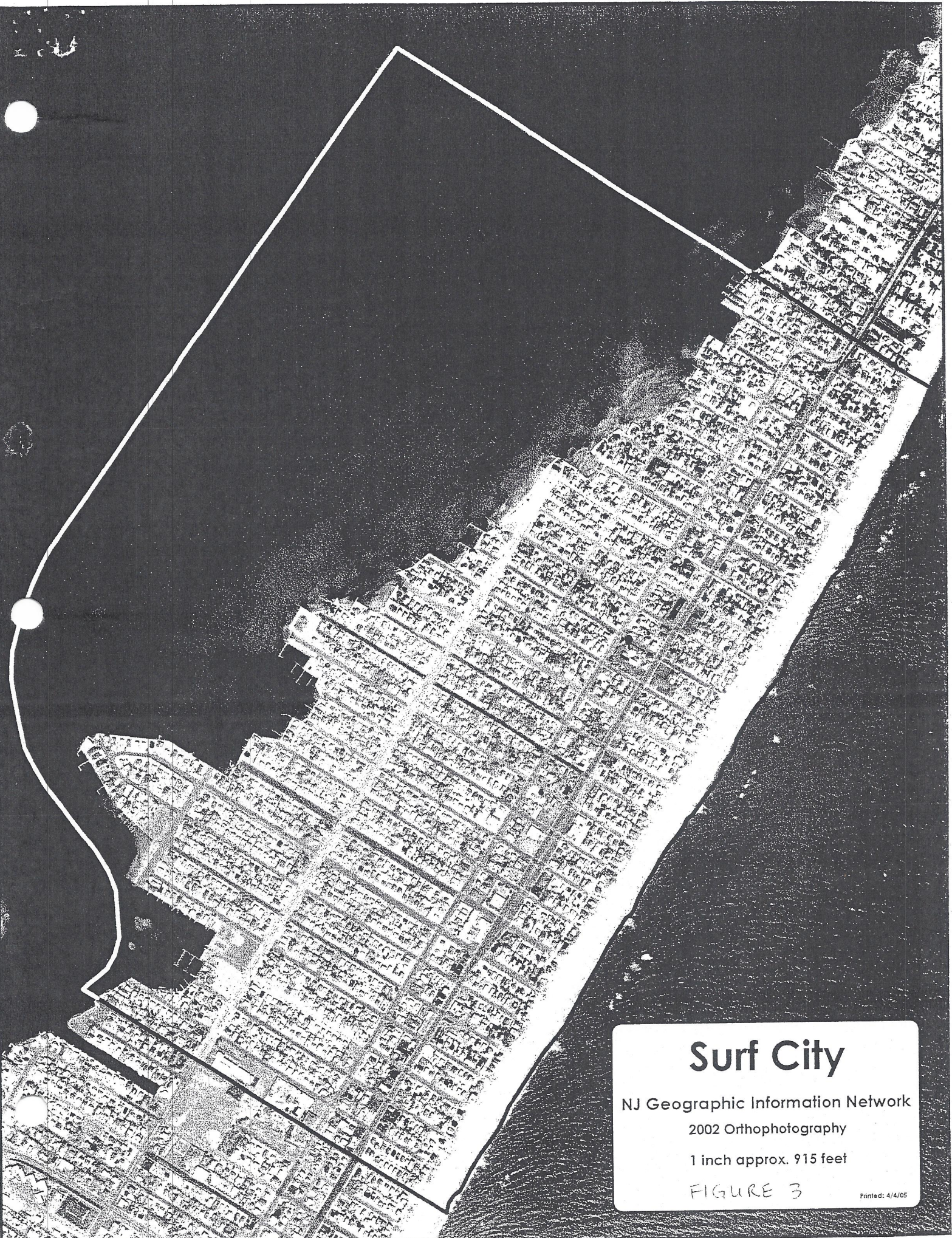
Surf City

USGS Topographic Maps
(Ship Bottom (F2))

1 inch approx. 915 feet

FIGURE 2

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Surf City

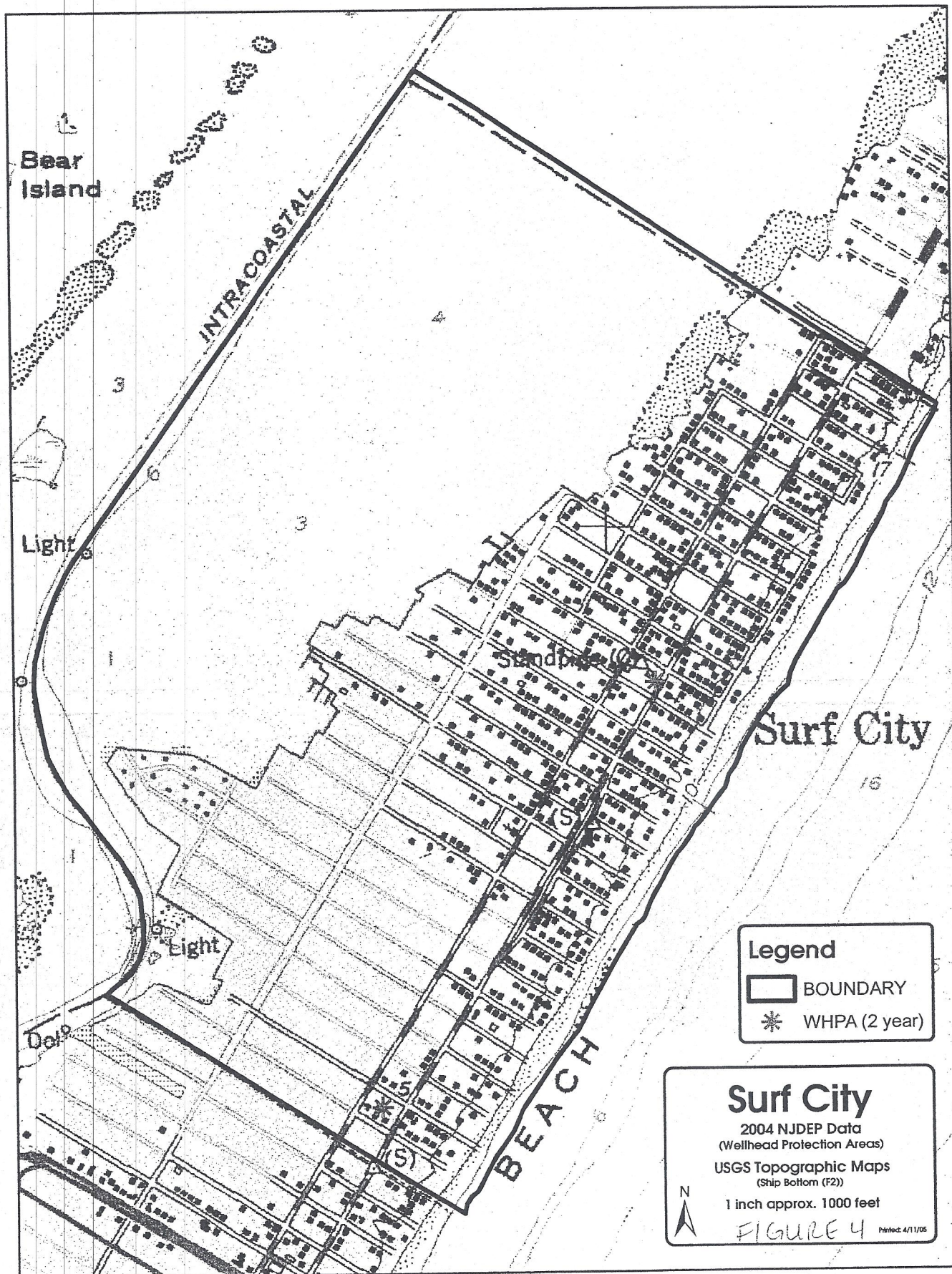
NJ Geographic Information Network

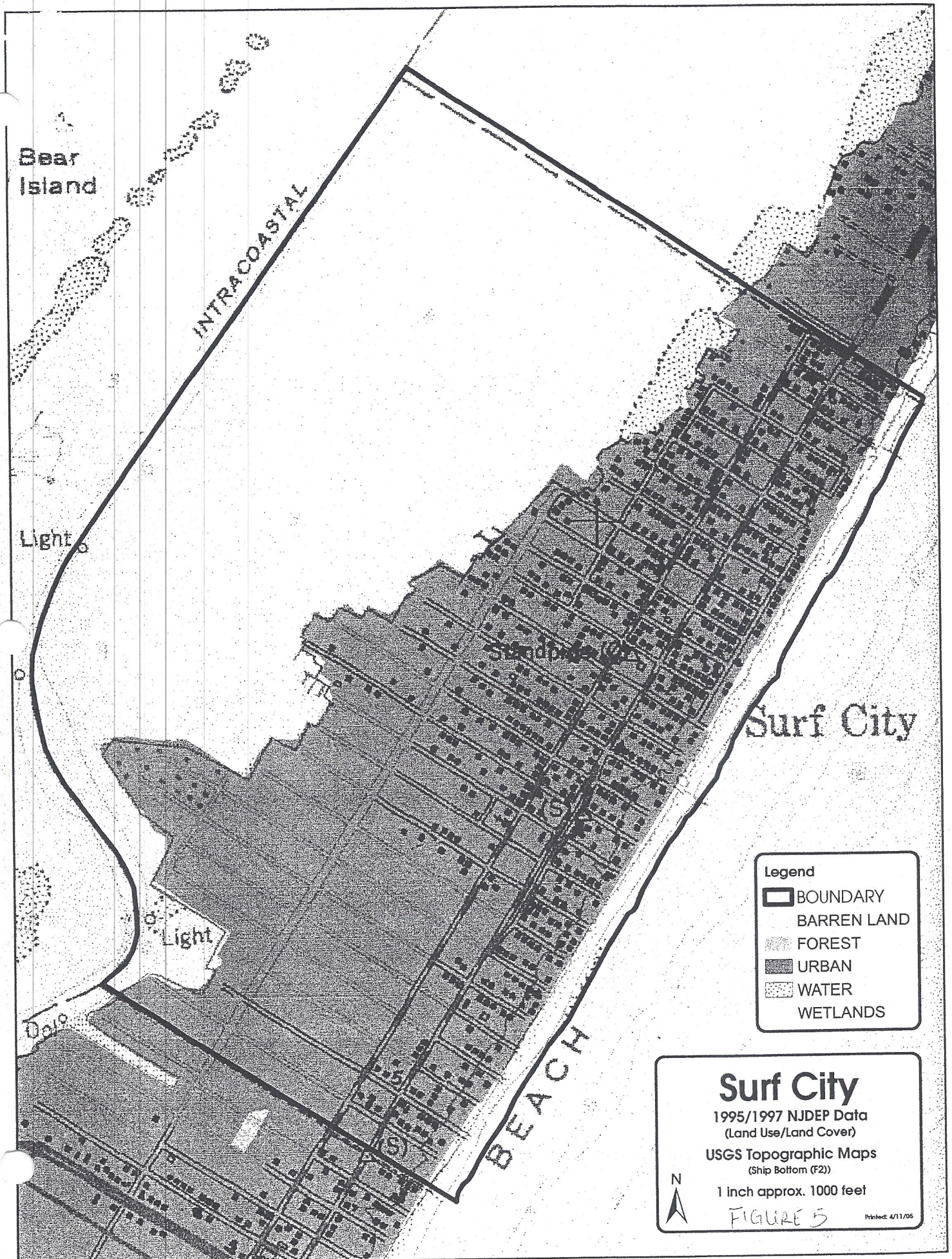
2002 Orthophotography

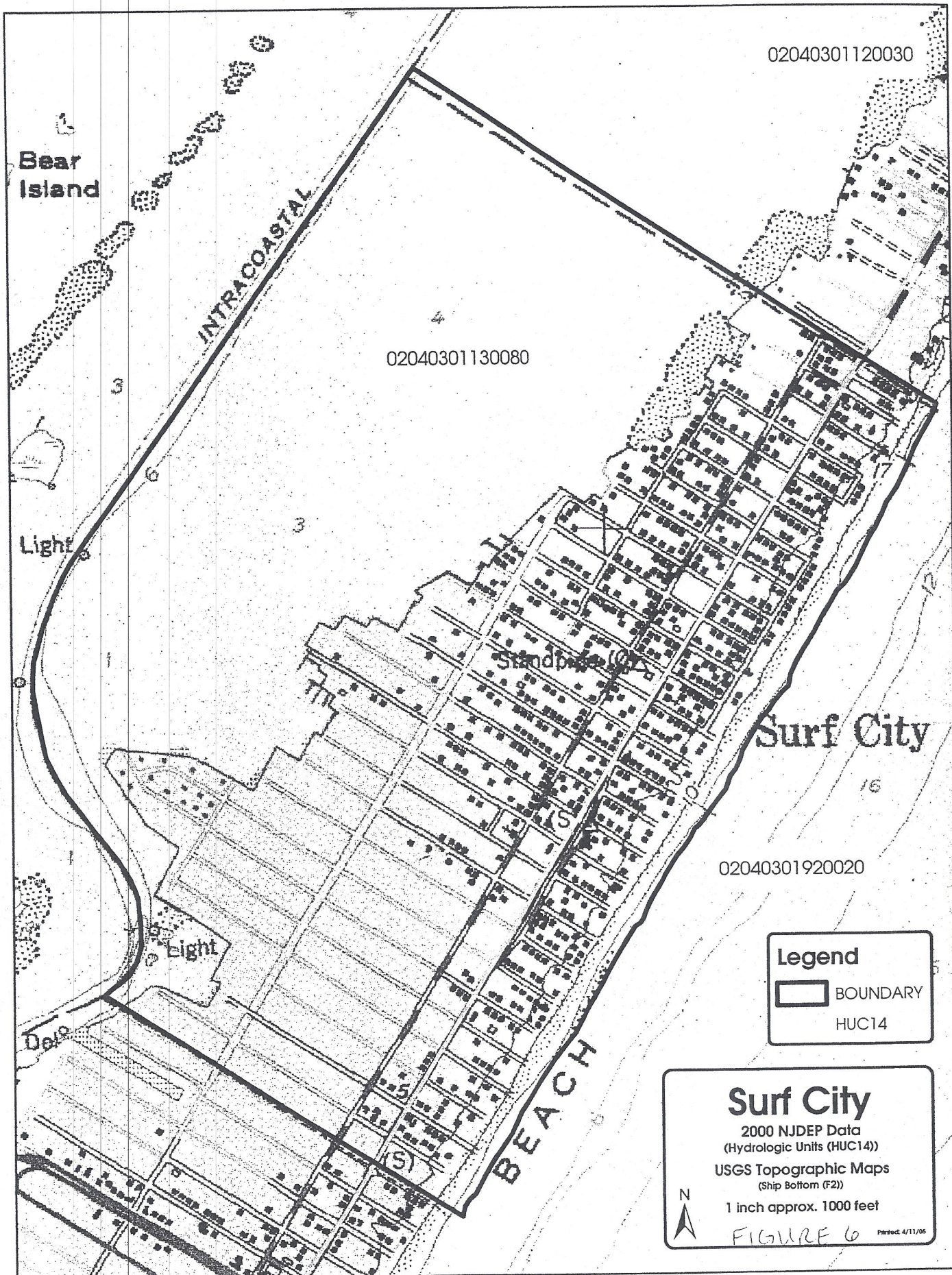
1 inch approx. 915 feet

FIGURE 3

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02040301120030

02040301130080

02040301920020

Legend



BOUNDARY

HUC14

Surf City

2000 NJDEP Data
(Hydrologic Units (HUC14))

USGS Topographic Maps
(Ship Bottom (F2))

1 inch approx. 1000 feet



FIGURE 6

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