

Municipal Stormwater Management Plan

Prepared for
Mount Laurel Township
100 Mount Laurel Road
Mount Laurel, NJ 08054

April 1, 2005

Revised April 2008

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Mount Laurel Township, Burlington County, New Jersey (“the Township”) 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 any development that provides for disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more. 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.

A “build-out” analysis has been included in this plan based upon existing zoning and land available for development. The plan also addresses the review and update of existing ordinances, the Township 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 Municipal Stormwater Management Plan are to:

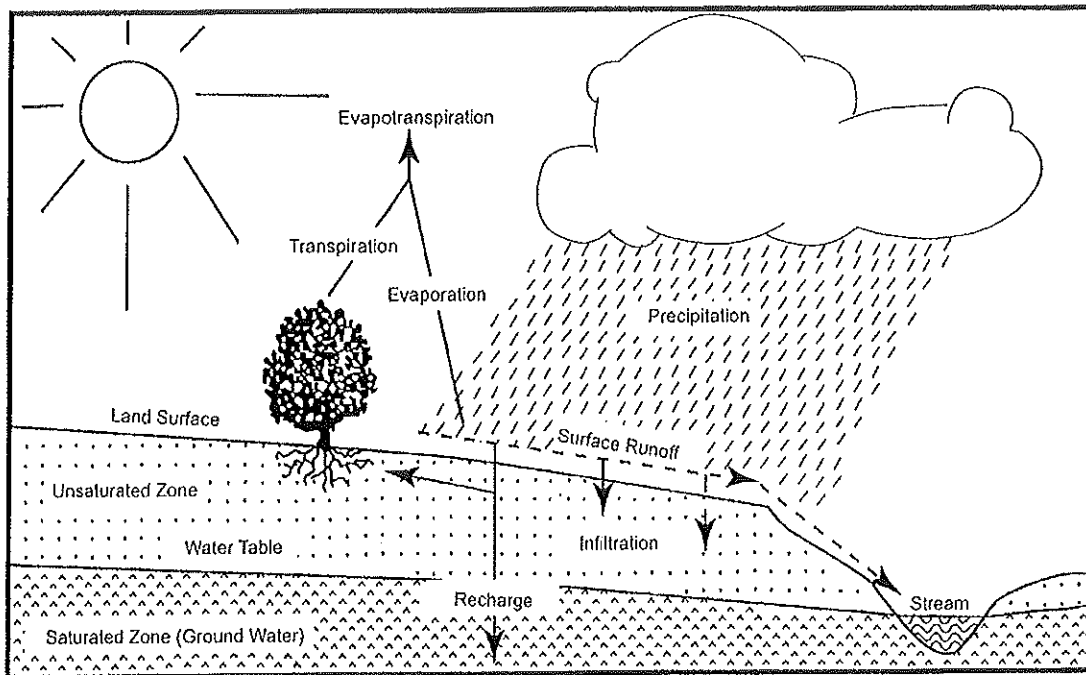
- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other 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; and
- protect public safety through the proper design and operation of stormwater basins.
- maintain existing stormwater systems (ditches, pipes, etc.).
- protect the “sensitive receptors” that are critical in accomplishing the goals of the MSWMP.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

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 from which some species cannot adapt.

Figure 1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

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 solids, 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

Mount Laurel Township encompasses 21.93 square mile area in Burlington County, New Jersey. The population of the Township has increased from 17,614 in 1980, to 30,270 in 1990, to 40,221 in 2000. This population increase has resulted in considerable demand for new development; changes in the landscape have most likely increased stormwater runoff volumes and pollutant loads to the waterways of the municipality. Figure 2 illustrates the waterways in the Township. Figure 3 depicts the Township boundary on the USGS quadrangle maps.

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. The waterways, which flow through the Township are the North and South Branch of the Pennsauken Creeks, Masons Creek, Parkers Creek and the South Branch of the Rancocas Creek.

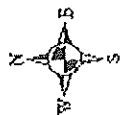
Parkers Creek, Water Management Area (WMA) 19, at Rt. 603 (Site ID# AN0174A) has an overall assessment of moderately impaired. The parameters causing this assessment are benthic macroinvertebrates as determined by NJDEP, AMNET.

Masons Creek, Water Management Area (WMA) 19, at Rt. 38 (Site ID# AN0173) has an overall assessment of moderately impaired. The parameters causing this assessment are benthic macroinvertebrates as determined by NJDEP, AMNET.

The North Branch of the Pennsauken Creek, Water Management Area (WMA) 18, at Church Road (Site ID# AN0178) and at Fellowship Road, Water Management Area (WMA) 18, (Site ID# AN0179) have an overall assessment of severely impaired. The parameters causing this assessment are benthic macroinvertebrates as determined by NJDEP, AMNET.

The Township's goal is to cause no additional load or impairment and to take any steps necessary to meet the requirements of any TMDL adopted to address the listed impairments.

**Mt. Laurel Township
Well Head Protection Areas
HUC-14's and Waterways**

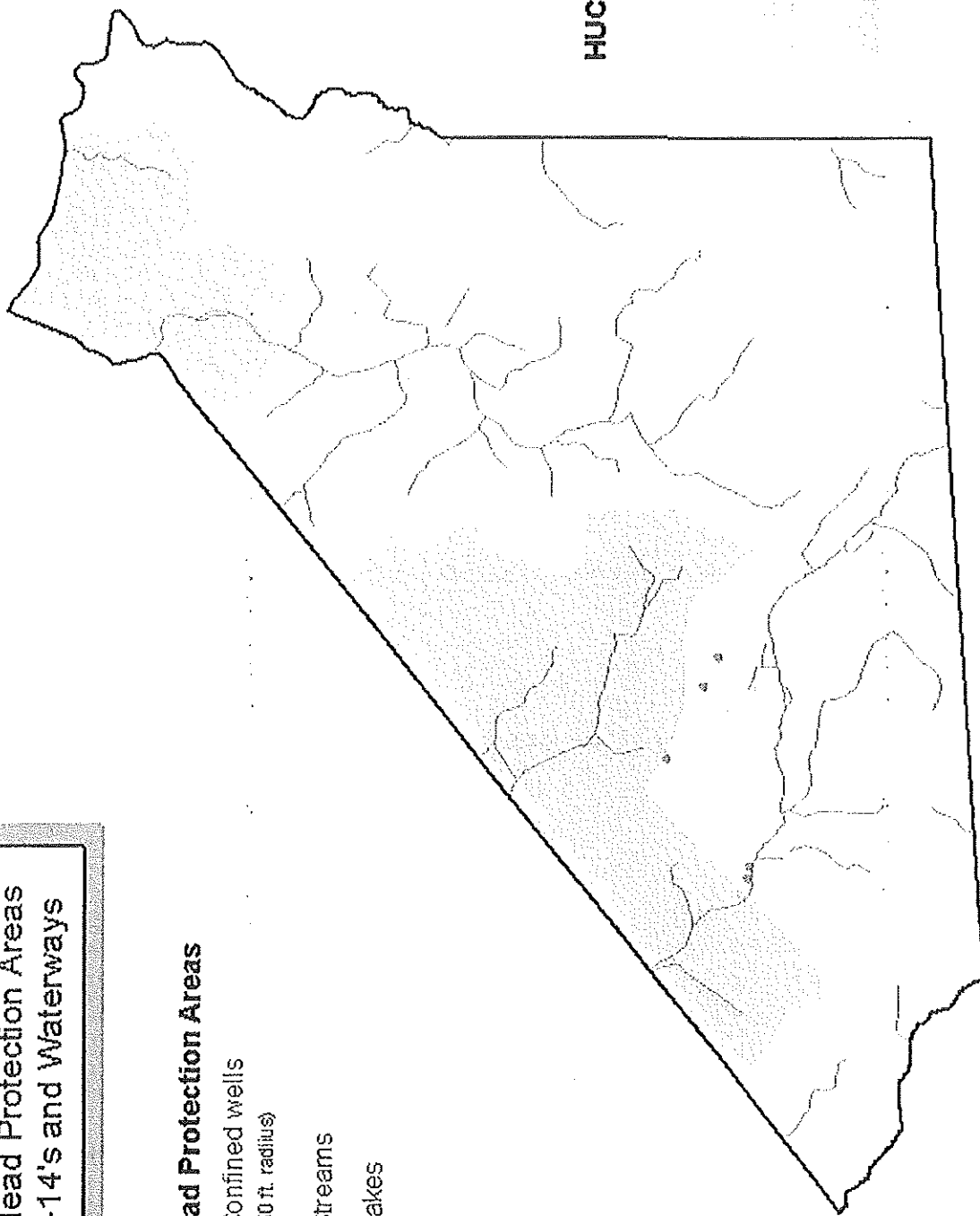


Well Head Protection Areas

◆ Confined wells
(50 ft. radius)

~ Streams

▢ Lakes



HUC-14's

02040202080100
02040202070030
02040202080010
02040202080020
02040202100010
02040202100020
02040202100030

FIGURE 2
-5-

Created by Burlington County
Office of Resource Conservation
October 2004

Sources: Burlington County Engineering municipal boundaries,
NJGS Well head protection areas for public community water
supply wells, NJDEP HUC-14 boundaries & water features

Mount Laurel Township
USGS Topography

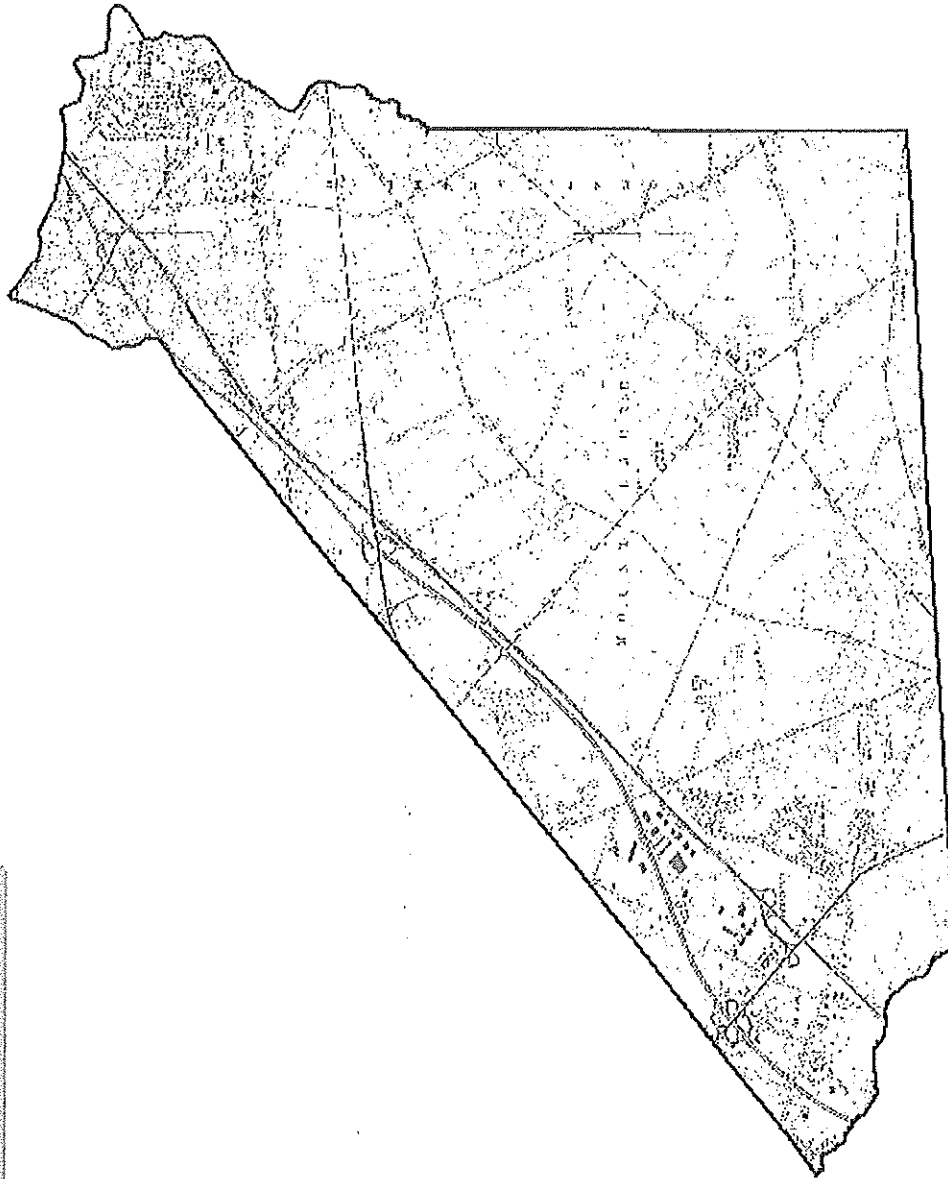


FIGURE 3
-6-

Created by Burlington County
Office of Resource Conservation
October 2004

Sources: Burlington County Engineering municipal
boundaries, USGS topography

The Rancocas Creek, which borders Mount Laurel Township to the north, is severely impaired. Parkers Creek and Masons Creek, which flow into the Rancocas Creek, as noted previously, are moderately impaired. The South Branch of the Pennsauken Creek, which borders the Township to the south is severely impaired. The North Branch of the Pennsauken Creek, which flows westerly from Evesham Township through Mount Laurel Township, as noted previously, is also severely impaired. In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. If the chemical data exceed the states criteria, the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for the pollutants for each waterway.

A 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.

In addition to water quality problems, the Township has exhibited severe water quantity problems including flooding, stream bank erosion, and diminished base flow in its streams. Many of the culverts associated with road crossings in the Township are undersized. During severe storm events, these undersized culverts do not have adequate capacity, thereby causing a backwater effect and flooding upstream. The Township experiences flooding problems along both branches of the Pennsauken Creek. Both creeks have diminished base flows, which causes localized flooding during small storm events (10-year storm). The majority of the development along both creeks was completed prior to the Township adopting ordinances that require on site stormwater management. With the adoption of the Model Stormwater Control Ordinance, redevelopment and new development will be subject to the stormwater runoff quantity reductions, which the existing development was not.

The Township is in the process of developing a mitigation plan to address the stormwater quantity issues associated with the North Branch of the Pennsauken Creek. The Township is working with the adjacent municipalities to address the stormwater quantity issues for the South Branch of the Pennsauken Creek. If a regional plan is developed for either branch, it will be included in the MSWMP in the future.

These culverts were designed for much different hydrologic conditions (i.e., less impervious area) than presently exist in the Township. As the imperviousness increased in the Township, the peak and volumes of stream flows also increased. The increased amount of water resulted in stream bank erosion, which resulted in unstable areas at roadway/bridge crossings, and degraded stream habitats. The high imperviousness of the Township has significantly decreased groundwater recharge, decreasing base flows in streams during dry weather periods. Lower base flows can have a negative impact on instream habitat during the summer months. Wellhead protection areas, which are required as part of the MSWMP, are shown in Figure 2. A map of the groundwater recharge rates is shown in Figure 4.

Mt. Laurel Township Groundwater Recharge Rates and Wetlands



Groundwater Recharge

(Inches/year)

1 - 7

8 - 10

11 - 16

Wetlands

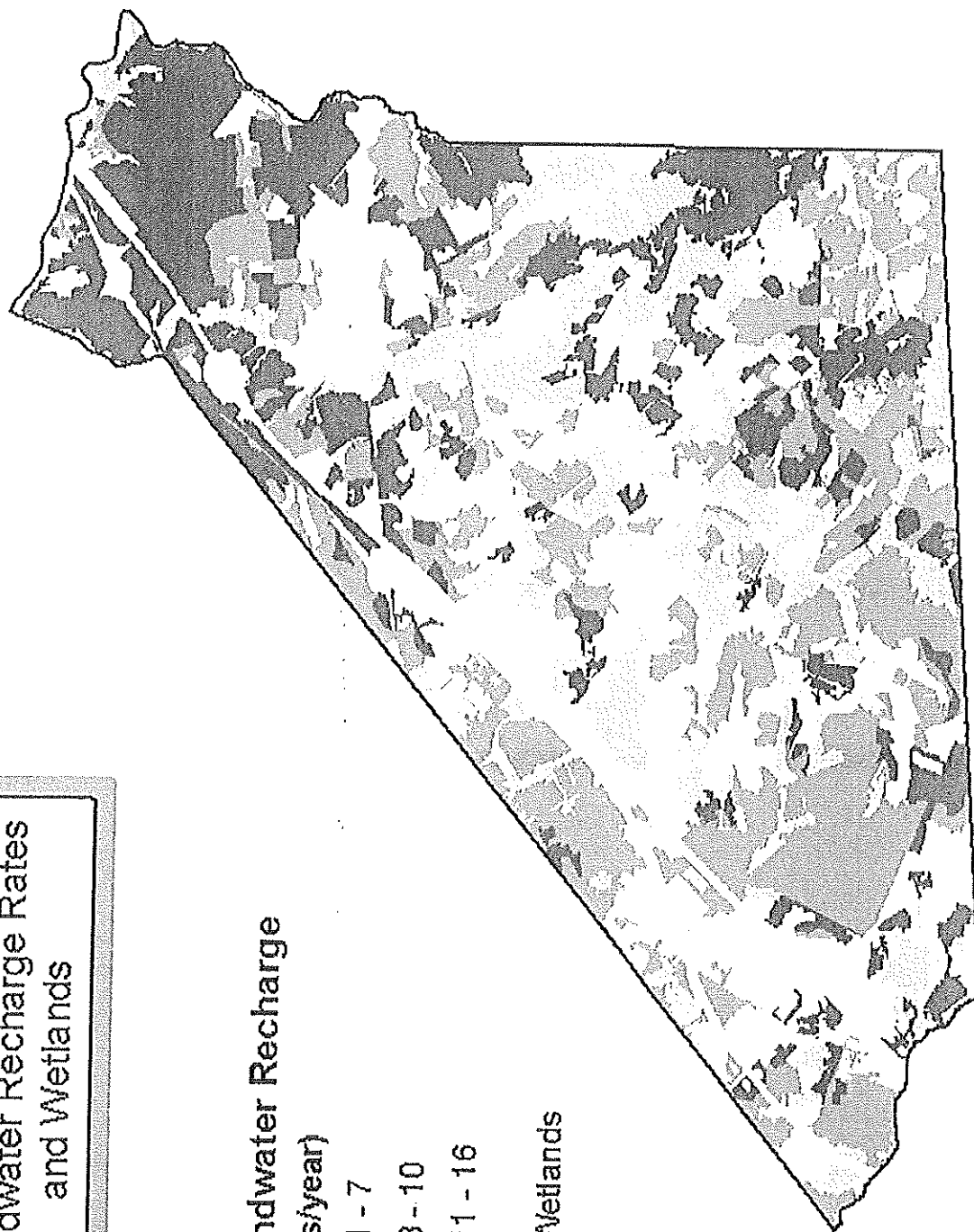


FIGURE 4

Created by Burlington County
Office of Resource Conservation
October 2004

Sources: Burlington County Engineering municipal boundaries,
NJDEP wetlands, NJGS groundwater recharge rates.
Breakdown of recharge rates based on state-wide values determined by NJGS.

Design and Performance Standards

The Township 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 were submitted to the county for review and approval.

During construction, Township inspectors will observe the construction of the project to verify that the stormwater management measures are constructed in general conformance with approved plans. A copy of the Stormwater Control Ordinance is included in Appendix A.

The Township is in the process of developing Maintenance Plans (in accordance with the BMP) to assure the continued maintenance of its existing stormwater facilities. The Township currently, and will continue to, operate and maintain its existing facilities.

Plan Consistency

The Township is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Township; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. A TMDL for total phosphorus is under development in the Rancocas Creek. When RSWMPs or TMDLs are developed in the future, the Municipal Stormwater Management Plan will be updated to be consistent with the RSWMP. A TMDL was implemented for dioxin and PCBs in Strawbridge Lake.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. 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.

A Regional Stormwater Management Plan Guidance document was developed by the Soil District(s) dated January, 2005 for Masons Creek. If a Regional Stormwater Management Plan (RSWMP) is implemented in the future, the Township will participate in the preparation and implementation.

This MSWMP is consistent with the mission statement and goals of the "Management Plan of the Rancocas Creek Watershed," dated March, 2003.

The Township's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Township inspectors will observe on-site soil erosion and sediment control measures and report inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

The Township has reviewed the master plan and ordinances, and has provided a list of the sections in the Township land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. Chapter Y, which is the MSWMP, has been added to the Township Master Plan. 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.

Chapter 138 of the Township Code, entitled Subdivision of Land and Chapter 154 Zoning were reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes are proposed to be made to Article IV of Chapter 138, entitled "Design Standards" to incorporate these strategies.

Section 138-16: Streets describes the requirements for streets in the Township. The Township has several street classifications, ranging from "Major Arterial," which has a minimum right-of-way of 120 feet, to "Minor," which has a minimum right-of-way of 50 feet. Street paving widths are a function of the number of units served, whether a street is curbed, whether on-street parking is permitted, and whether on-site topographical constraints allow design flexibility.

Section 138-17.A.: Sidewalks describe sidewalk requirements for the Township. Sidewalks are required along all streets. The Township requires them in areas where the probable volume of pedestrian traffic, the development's location in relation to other populated areas and high vehicular traffic, pedestrian access to bus stops, schools, parks, and other public places, and the general type of improvement intended indicate the advisability of providing a pedestrianway. Sidewalks are to be a minimum of four feet wide.

Section 138-17.B: Curbs and Gutters requires that concrete curb and gutter, concrete curb, or Belgian block curb be installed in accordance with the Construction Standards. This section allows for curb cuts or flush curbs with bollards to allow vegetated swales to be used for stormwater conveyance and to allow the disconnection of impervious areas.

Section 138-19: Shade Trees requires a minimum of two shade trees per lot to be planted in the front yard. In addition to Section 138-19, the Township has a tree and shrub removal; compensatory planting (Section 138-21) that restricts and otherwise controls the removal of mature trees throughout the Township. This ordinance recognizes that the preservation of mature trees and forested areas is a key strategy in the management of environmental resources, particularly watershed management, air quality, and ambient heating and cooling. This complies with minimizing land disturbance, which is a nonstructural stormwater management strategy. These sections will be amended to require the identification of forested areas, and that twenty-percent (20%) of forested areas be protected from disturbance.

Section 138-20: Buffers requires buffer areas along all lot and street lines separating residential uses from arterial and collector streets, separating a nonresidential use from either a residential use or residential zoning district line, and along all street lines where loading and storage areas can be seen from the street. The landscape requirements for these buffer areas in the existing section do not recommend the use of native vegetation. The language of this section will be amended to require the use of native vegetation, which requires less fertilization and watering than non-native species. A list of native species will be added. Additionally, language will be included to allow buffer areas to be used for stormwater management by disconnecting impervious surfaces and treating runoff from these impervious surfaces. This section will be amended to require the preservation of natural wood tracts and limits land disturbance for new construction.

Section 138-25: Storm Drainage requires that all streets be provided with inlets and pipes where the same are necessary for proper drainage. This section will be amended to consider the use of natural vegetated swales in lieu of inlets and pipes. The Township's Storm Drainage Ordinance, will be updated to include all requirements outlined in N.J.A.C. 7:8-5. These changes were presented earlier in this document.

Section 138-34: Natural Features requires that natural features, such as trees, brooks, swamps, hilltops, and views, be preserved whenever possible, and that care be taken to preserve selected trees to enhance soil stability and landscaped treatment of the area. This section will be amended to expand trees to forested areas, to ensure that leaf litter and other beneficial aspects of the forest are maintained in addition to the trees.

Section 138-35: Soil Erosion and Sediment Control addresses soil erosion and sediment control by referencing Chapter 130, the Township's Soil Erosion and Sediment Control Ordinance. This ordinance requires developers to comply with the New Jersey Soil Erosion and Sediment Control Standards and outlines some general design principles, including: whenever possible, retain and protect natural vegetation; minimize and retain water runoff to facilitate groundwater recharge; and, install diversions, sediment basins, and similar required structures prior to any on-site grading or disturbance.

Section 138-36: Parking lot design criteria details off-street parking and loading requirements. All parking lots and loading areas are required to have concrete or Belgian block curbing around the perimeter of the parking and loading areas. This section also requires that concrete or Belgian block curbing be installed around all landscaped areas within the parking lot or loading areas. This section will be amended to allow for flush curb with bollards, or curbing with curb cuts to encourage developers to allow for the discharge of impervious areas into landscaped areas for stormwater management. Also, language will be added to allow for use of natural vegetated swales for the water quality design storm, with overflow for larger storm events into storm sewers. The section allows a developer to demonstrate that fewer parking spaces would be required, provided area is set aside for additional spaces if necessary. This section will be amended to allow vertical parking structures.

Section 138-36.1: Buffering of watercourses and bodies of water requires a minimum buffer of 25 feet from the boundary of any watercourse and the nearest lot lines. This section will be amended to require a 50 foot buffer easement along the boundary of the watercourse.

Section 138-39: Off-site Improvements describes essential off-site improvements. Language will be added to this section to require that any off-site and off-tract stormwater management and drainage improvements must conform to the "Design Standards" described in this plan and provided in Chapter 138 of the Township Code.

Section 138-50: Concrete curbs, gutters and sidewalks will be modified to encourage developers to use pervious paving for patio construction.

Section 154-74 and 154-75: Nonconforming Buildings and Uses, Structures or Lots requires a variance for existing single family homes proposing additions that exceed the maximum percent impervious. The homeowner must mitigate the impact of the additional impervious surfaces unless the stormwater management plan for the development provided for these increases in impervious surfaces. This mitigation effort must address water quality, flooding, and groundwater recharge as described in the Residential Site Improvement Standards (RSIS).















Several changes were made to Chapter 154 Article II of the Township Code entitled "Classification of Districts." The Township has 7 types of residential districts. Each district will be modified to have a maximum percent impervious surface allocation. The maximum impervious surface range from 10 percent for the R-8 Residential District which has a minimum lot size of 2 acres for single family homes to 40 percent for the R-1 Residential District which has a minimum lot size of 9,375 square feet for single family homes. The Township has 8 types of non-residential districts. The maximum impervious surface for the Major Commercial District, Business District and Business Development Overlay Zone will be reduced to 50 percent. The maximum impervious surface for the Industrial Zone, Specially Restricted Industrial Zone and Office Zones will be reduced to 72 percent to comply with the New Jersey Nonstructural Stormwater Management Strategies Point System (NSPS). The remaining non-residential districts have a maximum impervious surface allocation of 80 percent. Although each zone has a maximum allowable percent impervious surface, the Township Code will be amended to remind developers that satisfying the percent impervious requirements does not relieve them of responsibility for complying with the Design and Performance Standards for Stormwater Management Measures. The Township is evaluating the maximum allowable impervious cover for each zone to determine whether a reduction in impervious cover is appropriate. The Township is also evaluating a maximum percent of disturbance for each zone, for those areas identified as natural features in Section 138-34. Also, if a developer is given a variance to exceed the maximum allowable percent imperviousness, the developer must mitigate the impact of the additional impervious surfaces. This mitigation effort must address water quality, flooding, and groundwater recharge.

Land Use/Build-Out Analysis

A detailed land use analysis for the Township was conducted. Figure 2 illustrates the HUC14s within the Township. Figure 4 illustrates the NJDEP mapped wetlands within the Township. Figure 5 illustrates the existing land use in the Township based on DVRPC 2000 Land Use Data. The Township zoning map is shown in Figure 6. The build-out calculations for impervious cover are shown in Table 1. Table 2 presents the pollutant loading coefficients by land cover. The pollutant loads at full build-out are presented in Table 3.

Since a large quantity of TSS, TN and TP loading occurs from the Non-Point Source loads at Build-Out in the Industrial and Residential Zones (R-3 particularly), attention will be given to increase quality, decrease surface flow, and increase groundwater recharge in these areas of Mount Laurel Township.

Mt. Laurel Township Land Use Classification

Land Use	
	Agriculture
	Commercial
	Community Services
	Manufacturing
	Military
	Mining
	Parking
	Recreation
	Residential
	Transportation
	Utility
	Vacant
	Water
	Wooded

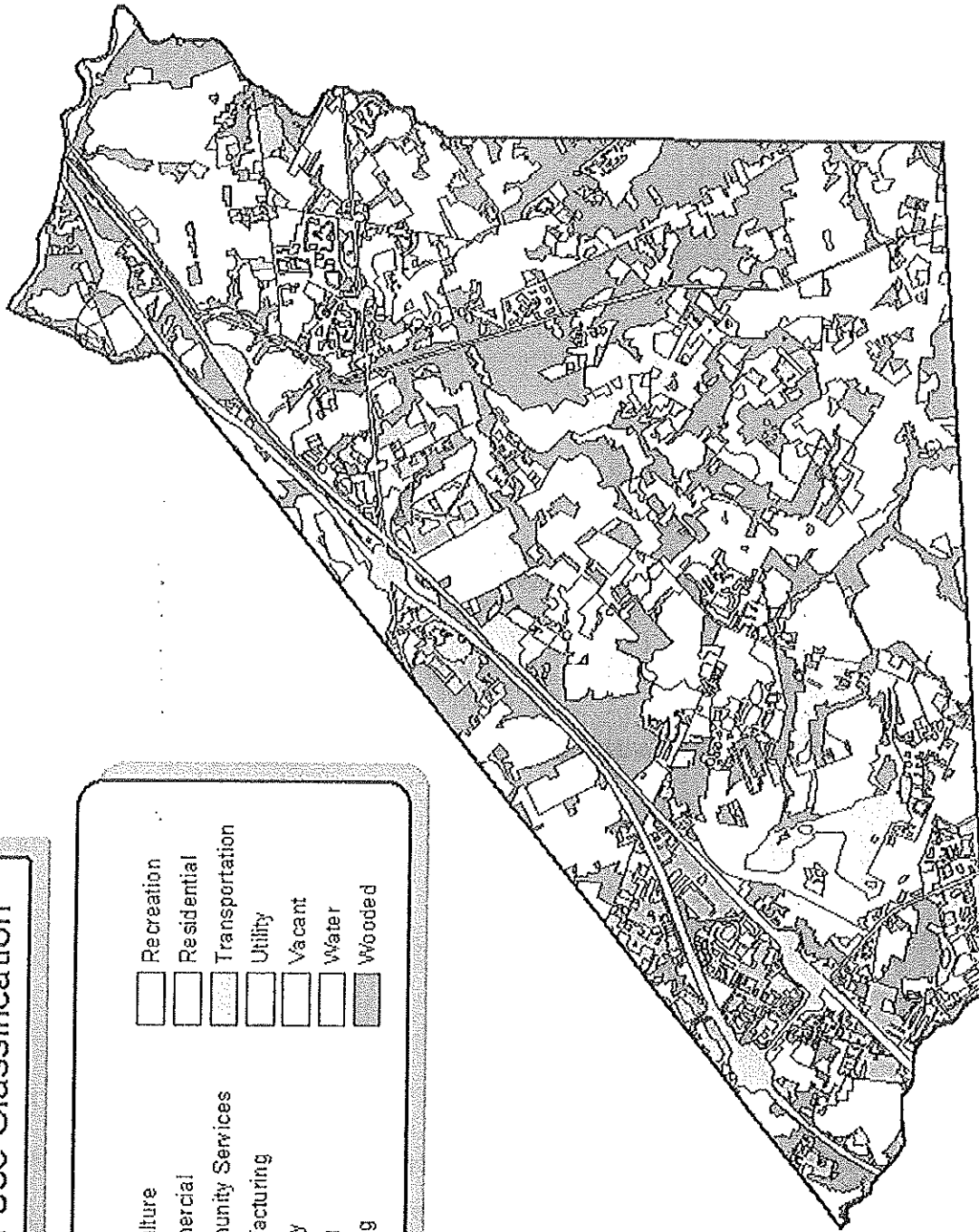


FIGURE 5
-15-

MOUNT LAUREL TOWNSHIP ZONING MAP

PREPARED BY ALAIMO GROUP
SEPTEMBER 2003
SCALE 1" = 1200' (APPROX)

Legend:

- B Business
- NC Neighborhood Commercial
- MCD Major Commercial District
- O-2 Office
- O-3 Office Residential
- I Industry
- SRI Specially Restricted Industry
- PUD Planned Unit Development
- R-1 Residential
- R1D Residential
- R-2 Residential
- R-3 Residential
- R-4 P.A.R.C.
- R-8 Residential
- ORC Outdoor Recreation Conservation

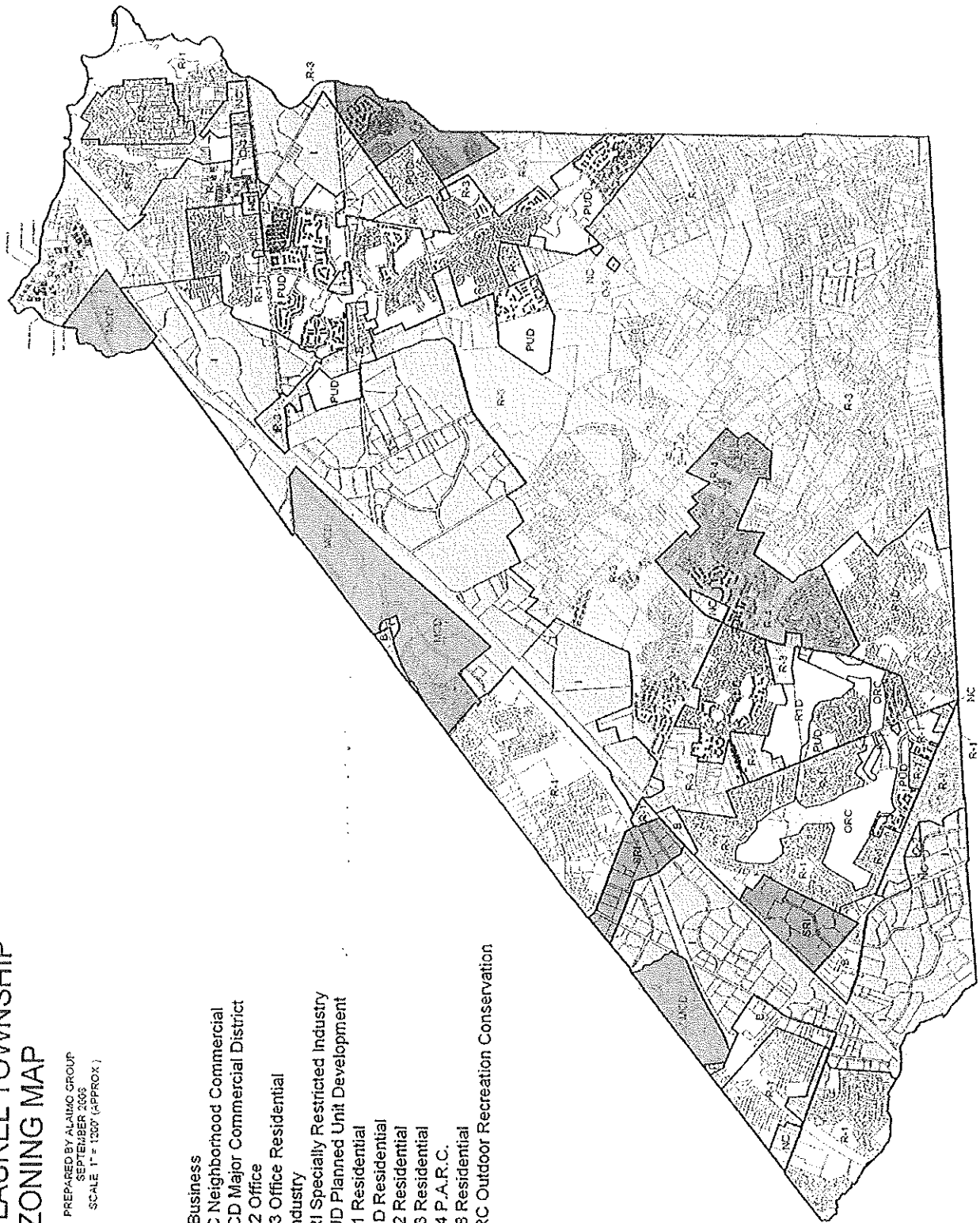


FIGURE 6
-16-

1. This map was prepared by the Alaimo Group, Inc. for the Township of Mount Laurel, New Jersey. It is not to be used for any other purpose without the written consent of the Alaimo Group, Inc.

Table 1: Build-Out Calculations for Mount Laurel Township HUC14s

HUC14 and Zone	Total Area (Acres)	Wetlands/ Water Area (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
02040202080020					
Industrial (I)	266.12	33.55	232.57	72%	167.45
Major Commercial (MCD)	95.98	11.56	84.42	50%	42.21
Planned Unit Development (PUD)	120.60	15.67	104.93	50%	52.47
Residential (R-1)	153.97	14.64	139.33	40%	55.73
Residential (R-2)	44.75	0.38	44.37	38%	16.86
Residential (R-3)	354.51	32.21	322.30	26%	83.80
TOTALS	1,035.93	108.01	927.92		418.52
02040202070030					
Industrial (I)	286.15	29.16	256.99	72%	185.03
Neighborhood Commercial (NC)	41.25	3.72	37.53	80%	30.02
Office (O3)	40.32	3.52	36.80	72%	26.50
Planned Unit Development (PUD)	339.72	92.72	247.00	50%	123.50
Residential (R-1)	225.78	48.03	177.75	40%	71.10
Residential (R-2)	84.95	2.40	82.55	38%	31.37
Residential (R-3)	1,045.03	371.98	673.05	26%	174.99
Residential (R-8)	159.37	30.98	128.39	10%	12.84
TOTALS	2,222.57	582.51	1,640.06		655.35
02040202080010					
Business (B)	35.03	7.19	27.84	50%	13.92
Industrial (I)	937.97	247.58	690.39	72%	497.08
Major Commercial (MCD)	103.45	15.13	88.32	50%	44.16
Planned Unit Development (PUD)	673.06	78.52	594.54	50%	297.27
Residential (R-1)	20.36	1.85	18.51	40%	7.40
Residential (R-3)	2,240.91	1,097.95	1,142.96	26%	297.17
Residential (R-4)	140.67	80.79	59.88	50%	29.94
TOTALS	4,151.45	1,529.01	2,622.44		1,186.94
02040202100020					
Business (B)	63.54	5.62	57.92	50%	28.96
Industrial (I)	968.35	255.31	713.04	72%	513.39
Major Commercial (MCD)	392.89	89.12	303.77	50%	151.89
Neighborhood Commercial (NC)	0.23	0.23	0.00	80%	0.00
Residential (R-1)	506.06	88.69	417.37	40%	166.95
Residential (R-3)	485.44	220.13	265.31	26%	68.98
Residential (R-4)	76.38	56.74	19.64	50%	9.82
Specially Restricted Industrial (SRI)	104.43	3.29	101.14	72%	72.82
TOTALS	2,597.32	719.13	1,878.19		1,012.81

Table 1: Build-Out Calculations for Mount Laurel Township HUC14s (Continued)

HUC14 and Zone	Total Area (Acres)	Wetlands/ Water Area (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
02040202060100					
Residential (R-3)	18.35	2.81	15.54	26%	4.04
TOTALS	18.35	2.81	15.54		4.04
02040202100040					
Business (B)	65.78	9.96	55.82	50%	27.91
Industrial (I)	527.89	153.76	374.13	72%	269.37
Neighborhood Commercial (NC)	38.86	7.36	31.50	80%	25.20
Office (O2)	6.96	0.00	6.96	72%	5.01
Residential (R-1)	384.92	81.92	303.00	40%	121.20
Residential (R-3)	54.15	2.23	51.92	26%	13.50
TOTALS	1,078.56	255.23	823.33		462.19
02040202100010					
Business (B)	33.38	0.00	33.38	50%	16.69
Industrial (I)	23.92	3.83	20.09	72%	14.46
Neighborhood Commercial (NC)	21.67	11.49	10.18	80%	8.14
Office (O2)	0.31	0.00	0.31	72%	0.22
Outdoor Rec. Conservation (ORC)	230.50	21.79	208.71	6%	12.52
Planned Unit Development (PUD)	404.23	54.62	349.61	50%	174.81
Residential (R-1)	376.20	12.68	363.52	40%	145.41
Residential (R-3)	971.86	334.07	637.79	26%	165.83
Residential (R-4)	210.63	63.98	146.65	50%	73.33
Residential (R-1D)	487.04	143.82	343.23	39%	133.86
Specially Restricted Industrial (SRI)	120.34	46.43	73.91	72%	53.22
TOTALS	2,880.08	692.714	2,187.37		798.49

Table 2: Pollutant Loads by Land Cover

Land Cover	Total Phosphorus Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agricultural	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

Source: NJDEP Stormwater BMP Manual 200

Table 3: HUC-14 Nonpoint Source Loads at Build-Out

HUC14 and Zone	Build-Out Zoning	Developable Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
02040202080020								
Industrial (I)	Industrial	232.57	1.5	348.86	16	3,721	200	46,514.00
Major Commercial (MCD)	Commercial	84.42	2.1	177.28	22	1,857	200	16,884.00
Planned Unit Development (PUD)	High, Medium Density Residential	104.93	1.4	146.90	15	1,574	140	14,690.20
Residential (R-1)	Low Density Rural Residential	139.33	0.6	83.60	5	697	100	13,933.00
Residential (R-2)	Low Density Rural Residential	44.37	0.6	26.62	5	222	100	4,437.00
Residential (R-3)	Low Density Rural Residential	322.30	0.6	193.38	5	1,612	100	32,230.00
TOTALS		927.92		976.64		9,682		128,688.20
02040202070030								
Industrial (I)	Industrial	256.99	1.5	385.49	16	4,111.84	200	51,398.00
Neighborhood Commercial (NC)	Urban, Mixed Urban, Other Urban	37.53	1.0	37.53	10	375.30	120	4,503.60
Office (O3)	Industrial	36.80	1.5	55.20	16	588.80	200	7,360.00
Planned Unit Development (PUD)	High, Medium Density Residential	247.00	1.4	345.80	15	3,705.00	140	34,580.00
Residential (R-1)	Low Density Rural Residential	177.75	0.6	106.65	5	888.75	100	17,775.00
Residential (R-2)	Low Density Rural Residential	82.55	0.6	49.53	5	412.75	100	8,255.00
Residential (R-3)	Low Density Rural Residential	673.05	0.6	403.83	5	3,365.25	100	67,305.00
Residential (R-8)	Low Density Rural Residential	128.39	0.6	77.03	5	641.95	100	12,839.00
TOTALS		1,640.06		1,461.06		14,089.64		204,015.60
02040202080010								
Business (B)	Commercial	27.84	2.1	58.46	22	612.48	200	5,568.00
Industrial (I)	Industrial	690.39	1.5	1,035.59	16	11,046.24	200	138,078.00
Major Commercial (MCD)	Commercial	88.32	2.1	185.47	22	1,943.04	200	17,664.00
Planned Unit Development (PUD)	High, Medium Density Residential	594.54	1.4	832.36	15	8,918.10	140	83,235.60
Residential (R-1)	Low Density Rural Residential	18.51	0.6	11.11	5	92.55	100	1,851.00
Residential (R-3)	Low Density Rural Residential	1,142.96	0.6	685.78	5	5,714.80	100	114,296.00
Residential (R-4)	High, Medium Density Residential	59.88	1.4	83.83	15	898.20	140	8,383.20
TOTALS		2,622.44		2,892.60		29,225.41		369,075.80

HUC14 and Zone	Build-Out Zoning	Developable Area (Acres)	TP (lbs/acre/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
02040202100020							
Business (B)	Commercial	57.92	2.1	121.63	22	1,274.24	200
Industrial (I)	Industrial	713.04	1.5	1,069.56	16	11,408.64	200
Major Commercial (MCD)	Commercial	303.77	2.1	637.92	22	6,682.94	200
Residential (R-1)	Low Density Rural Residential	417.37	0.6	250.42	5	2,086.85	100
Residential (R-3)	Low Density Rural Residential	265.31	0.6	159.19	5	1,326.55	100
Residential (R-4)	High, Medium Density Residential	19.64	1.4	27.50	15	294.60	140
Specially Restricted Industrial (SRI)	Industrial	101.14	2.1	212.39	22	2,225.08	200
TOTALS		1,878.19		2,478.61		25,298.90	306,191.60
02040202060100							
Residential (R-3)	Low Density Rural Residential	15.54	0.6	9.32	5	77.70	100
TOTALS		15.54		9.32		77.70	1,554.00
02040202100040							
Business (B)	Commercial	55.82	2.1	117.22	22	1,228.04	200
Industrial (I)	Industrial	374.13	1.5	561.20	16	5,986.08	200
Neighborhood Commercial (NC)	Urban, Mixed Urban, Other Urban	31.50	1.0	31.50	10	315.00	120
Office (O2)	Industrial	6.96	1.5	10.44	16	111.36	200
Residential (R-1)	Low Density Rural Residential	303.00	0.6	181.80	5	1,515.00	100
Residential (R-3)	Low Density Rural Residential	51.92	0.6	31.15	5	259.60	100
TOTALS		823.33		933.31		9,415.08	126,654.00
02040202100010							
Business (B)	Commercial	33.38	2.1	70.10	22	734.36	200
Industrial (I)	Industrial	20.09	1.5	30.14	16	321.44	200
Neighborhood Commercial (NC)	Urban, Mixed Urban, Other Urban	10.18	1.0	10.18	10	101.80	120
Office (O2)	Industrial	0.31	1.5	0.47	16	4.96	200
Outdoor Rec. Conservation (ORC)	Urban, Mixed Urban, Other Urban	208.71	1.0	208.71	10	2,087.10	120
Planned Unit Development (PUD)	High, Medium Density Residential	349.61	1.4	489.45	15	5,244.14	140
Residential (R-1)	Low Density Rural Residential	363.52	0.6	218.12	5	1,817.60	100
Residential (R-3)	Low Density Rural Residential	637.79	0.6	382.67	5	3,188.95	100
Residential (R-4)	High, Medium Density Residential	146.65	1.4	205.31	15	2,199.75	140
Residential (R-1D)	Low Density Rural Residential	343.22	0.6	205.94	5	1,716.15	100
Specially Restricted Industrial (SRI)	Industrial	73.91	2.1	155.21	22	1,626.02	200
TOTALS		2187.33		1976.30		19,042.28	265,117.80