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Stormwater Management Plan

For

Bridgewater Township Somerset County, New Jersey

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Bridgewater Township ("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 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 base flow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

This 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. In addition, the plan includes 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.

MSWMP Goals

The goals of this MSWMP 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 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.

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. Preventive 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.

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.

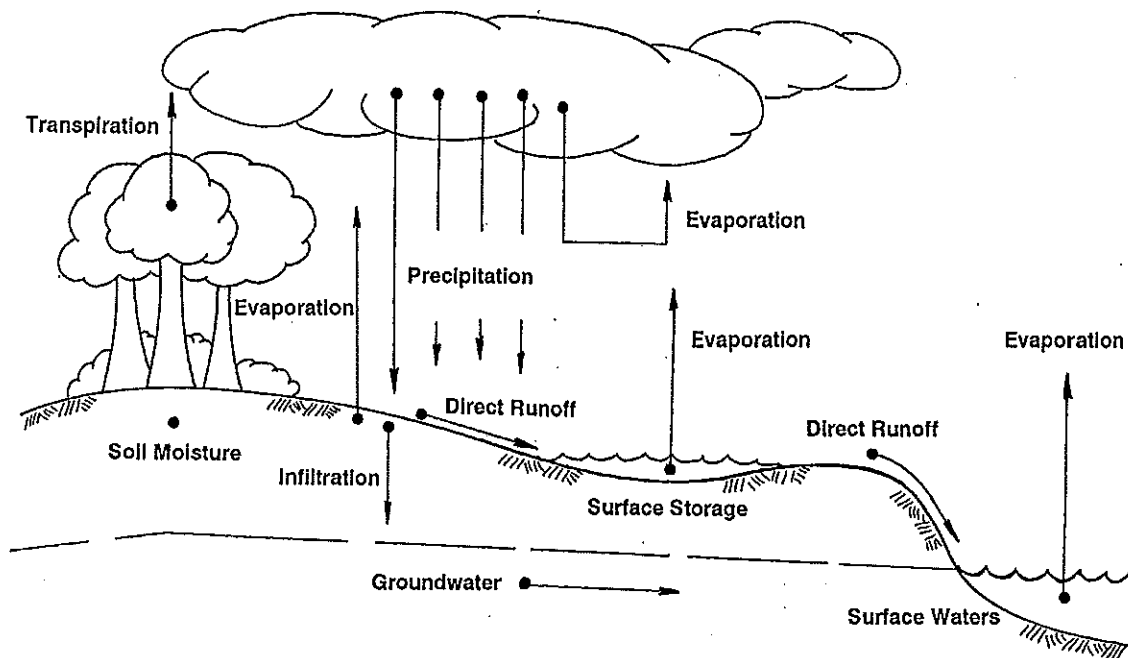


Figure 1 – Hydrologic Cycle

Background

The Township encompasses 32.68 square miles in the central part of Somerset County, New Jersey. The Township land use is mostly residential with commercial and manufacturing districts along the major highway corridor. The undeveloped areas that exist are located throughout the Township. Streams and rivers within the Township are shown in Figure 2 and the topography of the Township is shown in Figure 3.

According to the 2000 census, the Township has 42,940 residents. The population rose approximately 32 percent since the 1990 census. This population increase is significantly more than the overall state and county increases of approximately 9 and 24 percent respectively over the same period.

The Township is situated along the North side of the Raritan River and the east side of the North Branch Raritan River in the Raritan Basin. It is located in Watershed Management Areas (WMA) 8 and 9. The Township contains portions of nine Hydrologic Unit Code (HUC) areas. These HUC14 areas are shown in Figure 4.

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 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.

Based on the AMNET data, the water bodies bordering the Township are moderately impaired. There are six (6) AMNET sites within the Township of Bridgewater as follows:

<u>Location</u>	<u>Site No.</u>	<u>Sample Date</u>	<u>Biological Condition</u>
Cuckel Brook	AN0415	9/11/98	Moderately Impaired
West Branch Middle Brook	AN0416	9/11/98	Moderately Impaired
West Branch Middle Brook	AN0417	9/15/98	Moderately Impaired
East Branch Middle Brook	AN0418	9/11/98	Moderately Impaired
East Branch Middle Brook	AN0419	9/15/98	Non Impaired
Middle Brook	AN0420	9/11/98	Non Impaired

Biological Condition and Sample date are taken from Ambient Biomonitoring Network – Raritan Region prepared by NJDEP, dated June 2000.

A Total Maximum Daily Loads (TMDL) is the amount of a pollutant that can be accepted by a water body without causing an exceedance of water quality standards or interfering with the ability to use a water body 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 BMP's.

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 TMDL's are needed. The Raritan River is listed on the proposed sublist 5 (March 1, 2004) for benthic macroinvertebrate non-attainment just above the Millstone River Confluence (AN0377) and for phosphorous at Manville (01400500). Sunset Lake and the West Branch of Middle Brook at Chimney Rock Road are also listed for fecal coliform non-attainment. A TMDL for the West Branch of the Middle Brook and Chimney Rock Road is proposed for fecal coliform and established by the NJDEP on August 19, 2005.

In addition to water quality problems, the Township has occasional flooding problems. Flooding occurs on the Raritan River and on the North Branch of the Raritan River. Old York Road over the North Branch of the Raritan River is frequently closed due to flooding. Hurricane Floyd (September 19-21, 1999) was the largest flood event in recent

history. A list of flood marks from Hurricane Floyd for Bridgewater Township is shown in Table 1. The 100-year floodplain, shown in Figure 5, depicts the Raritan River and Middle Brook floodplains.

Table 1 – Flood Marks from Hurricane Floyd	
Location	Elev (ft.)
Willow Street #200 & #210 Heavy flooding in back yard	
Mountain Avenue #628 front and back yard 3' from garage floor	
Thomas Avenue #800 back yard full of water	
Nagle Street #305 back and front yard water	
Main Street @Bound Brook line back of Patriots Building by home plate water line	
Main Street & Chimney Rock Road 1' over road at 21 Club	46.19
Kline Place #722-#732, 18' water over road	
Kline Place #739 house surrounded by water	
Kline Place water line at end of Kline Place	50.23
Finderne Avenue Van Veghten Drive – water line from Bldg. 3 to river	
Finderne Avenue #159 to #171 water over road at bridge south of Eng.	
Jamestown & Route 28 No evidence in road – back yards only	
Foothill Road #267 to 50' west of Jamestown Road water over road	62.70
Graybar Drive Cul-de-sac water over road	
English Court #7 to #293 water over road	
Morgan Lane 100' south of bridge to 125' north of bridge water over rd	
Adamsville Road #202 to 50' south of bridge-water over road	66.81
Southside Avenue Driveway to "Nitta Casings Inc." to 100' east of Hamilton Street (Somerville)	44.40
Old York Road Bradley Gardens Firehouse west past pond to Value Towing westerly driveway	56.09
Old York Road #324 to bridge at Township line (looked like 3-4 feet over bridge) at Duke Island Park entrance to Duval Street over road	
Roberts Street 100' south of Old York Road water line	51.17
Holly Court Over road at low point catch basin	
Milltown Road North Branch Park Entrance "C" water at road level	
Milltown Road North Branch Park Entrance Main entrance to office – at road	
Milltown Road North Branch Park Entrance Maintenance building 10" in building	
Milltown Road #445 Gun Club under RR underpass to #460 then south 200'+/- towards Vanderveer Road – water line	75.06
Milltown Road – Greenway Park under water back to Walters Brook Drive	
Van Holton Road #279 back to bridge – water over road	
Roger Avenue Bridge south of Papen Rd. at #1320 water mark 2' up on garage door water over road	268.15
Brown Road & Rector Road Flooding at intersection up to #1320	
Mt. Vernon Road #1314 to #1320 water over road	279.37

Table 1 – Flood Marks from Hurricane Floyd (cont)	
Crim Road Bridge near Washington Valley Road water over gabion wall and over road	
Southbrook Drive #1632 heavy damage at headwall – pavement buckled	
Crim Road at School water over road	
Tullo Road Bridge at Middlebrook over road 100' +/- north and 125' south of bridge	233.47
Brookdale Drive Over road at cul-de-sac	
Brookdale Drive #1658 over road and banks at bridge-heavy silt and rock under bridge	
Bolmer Farm & West Circle Drive Over road-twin pipes across road heavy silt and rocks	
Newmans Lane Over road 400' +/- north and 300' +/- south of bridge at reservoir	
Van Nest Drive #717 at cul-de-sac water over road at ditch	207.06
Primrose Lane 250' west of Vosseler Avenue – over road	
Vosseler Avenue From south side bridge to 300' +/- south of bridge over road	
Brookside Drive At township line and meter pit over road 2' for 200'	205.55
Chimney Road 2 nd bridge at sharp left curve – water over road 150' north and 250' south of bridge	
Vosseler Avenue South of Route 22 at Glen Road and LaMonte Field over road	67.97
Talamini Road 200' +/- west of bridge at swim club 2' over road at Glen Ridge Drive east to golf course fence	102.85
Red Lion Way #747-#753 160' from curb along prop. Line – water up to last pine tree – marked yellow tape.	
Lyme Rock Road #554 75' off road (water level in swale)	
Church Road Water line 100' up from Route 28 – water over bridge	77.91
Riverview Road Water line driveway at #203 (MH)	79.26
Helfreds Landing Water line at intersection Pitt Road - #210 driveway	77.80
Meadowview Drive Water line at #178 – 100' west of North View Drive	
North View Drive At #688 driveway	
Cory Lane Road ok – water line 100' behind #22 (last house on right)	
Love Road #198 20' east driveway – 200' from bridge	84.76
Meadow Road 200' south bridge at township line	
Goldfinch Drive Garage flooding at #301	
Country Club Road 50' north bridge at Township line	107.16
Chambers Court #986 at driveway	
Cedar Brook Road 50' east driveway #721 – ends at #722 driveway	143.86
Ardmaer Drive Up to road at pond	
Perry & Maple Water over road	
Donald Drive South #664 “Yessman” water line at shed – back yard	
Thruway Drive #641 1' +/- over road at bridge	
Baltusrol Way #677 2' up on shed-back yard	

In conjunction with the USGS, Somerset County operates a flood information system for its 21 municipalities. The Somerset County Flood Information System (SCFIS) consists of a network of stream and precipitation gages throughout the County. Information from these gages is automatically transmitted to a central location via telephone, radio and satellite. The information is then processed and appropriate actions are taken. These actions include notifying municipal police, fire and emergency management personnel with flood potential and water level information.

There are several SCFIS stream and precipitation gages near Bridgewater Township. The Township has a precipitation gage along the west branch of Middle Brook near Crim Road. In addition, there are stream gages on the following streams:

Table 2 – Real Time Stream Gages
NORTH BRANCH RARITAN RIVER NEAR RARITAN NJ
NB RARITAN R AT SOUTH BRANCH NJ
RARITAN RIVER AT MANVILLE NJ
RARITAN RIVER BELOW CALCO DAM AT BOUND BROOK NJ

Information from these latter gages is available on the United States Geological Survey (USGS) web site in real time (<http://waterdata.usgs.gov/nj/nwis>).

The Township has a moderate amount of developable land. The existing land use, based on 1995/1997 aerial photography, is shown in Figure 6. The existing zoning is shown in Figure 7. A current aerial photo with parcel lot lines overlain on it is shown in Figure 8. The Township is partly within the State Plan Designation PA1 Metropolitan Planning Area or in a designated center where infiltration requirements are not applicable. Groundwater recharge rates for native soils in this area are generally between 0 and 19 inches annually. The average annual groundwater recharge rates are shown graphically in Figure 9.

According to the NJDEP, "A Well Head Protection Area (WHPA) in New Jersey is a map area calculated around a Public Community Water Supply (PCWS) well in New Jersey that delineates the horizontal extent of ground water captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time for unconfined wells. ... The confined wells have a fifty foot radius delineated around each well serving as the well head protection area to be 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 Area Protection 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 NJDEP SWAP

As shown in Figure 10, the Township contains three Tier 3 well head protection areas. These areas are located between Hillsborough and Somerville, north of Bound Brook and at the northern most portion of the Township near Warren.

In addition to the rivers and streams that run through and along the Township, there are a number of wetland areas. These wetland areas, shown in Figure 11, provide flood storage, nonpoint pollutant removal and habitat for flora and fauna.

Design and Performance Standards

The Township has adopted 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.

Plan Consistency

The Township is not within a Regional Stormwater Management Planning Area and no TMDL's 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 TMDL's. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Township is within the Raritan Basin and much information on the basin and about its characteristics has been developed as part of the Raritan Plan. Additional information concerning this plan can be found at: <http://www.raritanbasin.org>. The Township supports the Raritan Plan.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The Township will utilize the most current update of the RSIS in the stormwater review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates of the RSIS.

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 any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

The Township has reviewed the master plan and ordinances, and there are no existing requirements in the Township land use and zoning ordinances that inhibit the implementation of nonstructural stormwater management strategies. The ordinance texts are completed and have been submitted to the county review agency for review and approval. A copy will be sent to the Department of Environmental Protection upon approval by County.

Land Use/Build-Out Analysis

Since the Township of Bridgewater has a combined total of more than one square mile of vacant lands, the Township is required to do a build-out analysis.

Table 2: Build – Out Calculations for HUC14s

HUC14 and Zone*	Total Acres*	Existing Impervious (%)*	Existing Impervious (Acres)*	Critical Areas (Acres)*	Existing Developed Areas (Acres)*	Remaining Developable Areas (Acres) 1	Allowable Impervious (%) 2	Build-Out Impervious (Acres) 3
0103010080 – Dead River								
R50	29.18	15	4.38	0.00	29.18	0.00	15	0.00
Totals	29.18		4.38	0.00	29.18	0.00		0.00
02030105120050 – East Branch Middle Brook								
R50	1487.91	15	184.46	243.86	1229.70	14.35	15	2.15
C-1	8.04	50	4.02		8.04		50	0.00
RMDU8	9.15	60	5.49		9.15		60	0.00
Totals	1505.10		193.97	243.86	1246.89	14.35		2.15
02030105120060 – West Branch Middle Brook								
R40	41.49	15	6.05		40.34	1.15	15	0.17
R50	3242.11	15	466.80	62.34	3111.97	67.80	15	10.17
M3	253.80	20	50.76		253.80		20	0.00
C1	42.75	50	20.80		41.59	1.16	50	0.58
C3B	6.14	60	3.68		6.14		60	0.00
RMDU8	11.02	60	6.61		11.02		60	0.00
Totals	3597.31		554.70	62.34	3464.86	70.11		10.92

HUC14 and Zone*	Total Acres*	Existing Impervious (%)*	Existing Impervious (Acres)*	Critical Areas (Acres)*	Existing Developed Areas (Acres)*	Remaining Developable Areas (Acres) 1	Allowable Impervious (%) 2	Build-Out Impervious (Acres) 3
02030105120070 – Cuckels Brook								
R40MDU1	189.20	15	26.45	1.60	176.35	11.25	15	1.69
R50	44.79	15	6.72		44.79		15	0.00
M3	37.32	20	7.46		37.32		20	0.00
R20	247.63	25	60.27		241.06	6.57	25	1.64
R10	192.88	35	62.57	9.95	178.77	4.16	35	1.46
C1	38.61	50	19.31		38.61		50	0.00
C-3	155.56	60	84.79		141.31	14.25	60	8.55
GCM	42.30	60	25.14		41.90	0.40	60	0.24
HIC	141.83	60	81.76		136.26	5.57	60	3.34
LL	43.59	60	26.15		43.59		60	0.00
M1A	231.41	60	137.95		229.91	1.50	60	0.90
M1B	42.30	60	25.38		42.30		60	0.00
M2	362.09	60	195.22		325.36	36.73	60	22.04
MPD	7.46	60	4.48		7.46		60	0.00
PRCPD	68.47	60	41.08		68.47		60	0.00
RMUD10.5	24.88	60	14.93		24.88		60	0.00
Totals	1870.33		819.64	11.55	1778.34	80.43		39.86
02030105120130 - Green Brook								
R50	316.70	15	45.10	2.71	300.68	13.31	15	2.00
R20	191.78	25	45.24	8.00	180.97	2.81	25	0.70
C-3	114.62	60	51.88		86.46	28.16	60	16.90
Totals	623.10		142.22	10.71	568.11	44.28		19.60
02030105120140 - Raritan River Lower								
R50	281.79	15	41.34		275.59	6.20	15	0.93
R20	98.88	25	23.77	3.56	95.09	0.23	25	0.06
C5	21.22	40	8.49		21.22		40	0.00
C1	4.47	50	2.24		4.47		50	0.00
C-3	23.60	60	11.62		19.36	4.24	60	2.54
C3A	22.17	60	13.30		22.17		60	0.00
LC	113.63	60	68.18		113.63		60	0.00
M1A	82.61	60	47.09	3.57	78.48	0.56	60	0.34
M2	107.73	60	64.64		107.73		60	0.00
M3	56.05	60	28.21		47.01	9.04	60	5.42
PRCPD	126.86	60	76.12		126.86		60	0.00
RMUD10.5	38.35	60	23.01		38.35		60	0.00
Totals	977.38		407.99	7.13	949.96	20.27		9.29

HUC14 and Zone*	Total Acres*	Existing Impervious (%)*	Existing Impervious (Acres)*	Critical Areas (Acres)*	Existing Developed Areas (Acres)*	Remaining Developable Areas (Acres) 1	Allowable Impervious (%) 2	Build-Out Impervious (Acres) 3
02030105070010 - Chambers Brook								
R40	1507.29	15	221.78	12.7	1478.56	16.03	15	2.40
R40C	8.77	15	1.32		8.77		15	0.00
R50	993.65	15	129.13	122.53	860.86	10.26	15	1.54
R20	132.15	25	31.92		127.69	4.46	25	1.12
SED	185.80	50	92.90		185.80		50	0.00
C3A	43.67	60	26.20		43.67		60	0.00
HC	8.77	60	5.26		8.77		60	0.00
P	120.97	60	72.58		120.97		60	0.00
Totals	3001.06		581.10	135.23	2835.09	30.75		5.06
02030105070030 - North Branch Raritan River								
R40	103.89	15	13.73	6.55	91.52	5.82	15	0.87
R40PURD	214.66	15	0.00				15	0.00
R20	71.58	25	10.56	28.36	42.23	0.99	25	0.25
R20.1	273.58	45	123.11		273.58		45	0.00
C1	23.89	50	11.77		23.54	0.35	50	0.18
C4	5.61	50	2.81		5.61		50	0.00
P2	42.17	50	8.91	24.35	17.82		50	0.00
C-3	159.91	60	93.37		155.62	4.29	60	2.57
C3A	1.45	60	0.87		1.45		60	0.00
M1	195.03	60	114.46		190.76	4.27	60	2.56
P	357.74	60	214.64		357.74		60	0.00
RMDU5	21.09	60	12.65		21.09		60	0.00
RMDU6	72.94	60	43.76		72.94		60	0.00
RMDU8	176.75	60	106.05		176.75		60	0.00
Totals	1720.30		756.69	59.26	1430.65	15.72		6.43

HUC14 and Zone*	Total Acres*	Existing Impervious (%)*	Existing Impervious (Acres)*	Critical Areas (Acres)*	Existing Developed Areas (Acres)*	Remaining Developable Areas (Acres) 1	Allowable Impervious (%) 2	Build-Out Impervious (Acres) 3
02030105080010 - Peters Brook								
R40	3327.09	15	485.80	18.54	3238.66	69.89	15	10.48
R40MDU1	14.37	15	2.16		14.37		15	0.00
R50	229.95	15	33.69		224.61	5.34	15	0.80
GCE	191.63	20	38.33		191.63		20	0.00
R20	39.56	25	9.89		39.56		25	0.00
R10	54.01	35	17.27	1.65	49.33	3.03	35	1.06
R10A	18.00	35	6.30		18.00		35	0.00
R10B	16.77	35	5.87		16.77		35	0.00
R40A	20.40	45	9.18		20.40		45	0.00
R40B	27.58	45	12.41		27.58		45	0.00
C1	2.40	50	1.20		2.40		50	0.00
C4	13.21	50	6.61		13.21		50	0.00
SED	117.37	50	58.69		117.37		50	0.00
AAR	19.16	60	11.50		19.16		60	0.00
C2	67.07	60	37.12		61.87	5.2	60	3.12
C2(BRC)	172.46	60	103.48		172.46		60	0.00
C3	150.90	60	65.38		108.96	41.94	60	25.16
GCM	225.24	60	134.36		223.94	1.3	60	0.78
M1	212.02	60	127.21		212.02		60	0.00
M1B	49.14	60	29.48		49.14		60	0.00
M2	16.77	60	10.06		16.77		60	0.00
MPB	29.98	60	17.99		29.98		60	0.00
P	3.63	60	-1.81	6.08	-3.01	0.56	60	0.34
RMDU8	139.01	60	83.41		139.01		60	0.00
SC/MD	58.72	60	34.28	1.59	57.13		60	0.00
SC-HD	13.21	60	7.59	0.34	12.65	0.22	60	0.13
C1A	7.19	70	5.03		7.19		70	0.00
C6	9.58	70	6.19		8.84	0.74	70	0.52
Totals	5246.43		1358.65	28.20	5090.00	128.22		42.40
02030105080020 - Raritan River Lower								
R20	679.71	25	165.06	14.04	660.25	5.42	25	1.36
R10	231.46	35	78.95	4.78	225.57	1.11	35	0.39
C1	25.17	50	10.70	0.63	21.39	3.15	50	1.58
C2	9.30	60	5.41		9.02	0.28	60	0.17
M1	38.39	60	23.03		38.39		60	0.00
P	375.56	60	224.26		373.77	1.79	60	1.07
Totals	1359.59		507.42	19.45	1328.39	11.75		4.56

HUC14 and Zone*	Total Acres*	Existing Impervious (%)*	Existing Impervious (Acres)*	Critical Areas (Acres)*	Existing Developed Areas (Acres)*	Remaining Developable Areas (Acres) 1	Allowable Impervious (%) 2	Build-Out Impervious (Acres) 3
02030105080030 - Raritan River Lower								
R40MDU1	23.87	15	3.51		23.40	0.47	15	0.07
R-10	216.17	35	73.87	1.26	211.05	3.86	35	1.35
C-1	11.98	50	5.40		10.79	1.19	50	0.60
SCR	21.21	50	10.30		20.59	0.62	50	0.31
M2	613.94	60	349.57	15.32	582.62	16.00	60	9.60
RMDU10.5	17.28	60	10.17		16.95	0.33	60	0.20
Totals	904.44		452.81	16.58	865.40	22.47		12.12
Total Existing Impervious Coverage			5779.55	Potential Additional Impervious Coverage				152.39
1 Remaining Developable Areas (Acres) = Total Acres - Critical Areas (Acres) - Existing Developed Areas (Acres) 2 Allowable Impervious (%) is the Maximum Impervious Coverage permitted by the Zoning Ordinance 3 Build - Out Impervious (Acres) = Remaining Developable Areas (Acres) x Allowable Impervious (%)								

Table 3: Pollutant Loads by Land Cover

Land Cover	Total Phosphorous Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/year)
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	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 2004

Table 4: Nonpoint Source Loads at Build – Out for HUC14s

HUC14 and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Total Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030103010080 – Dead River								
R50	15	0.00	1.4	0.00	15	0.00	140	0.00
Totals		0.00		0.00		0.00		0.00
02030105120050 – East Branch Middle Brook								
R50	15	14.35	1.4	20.09	15	215.25	140	2009.00
C-1	50	0.00	2.1	0.00	22	0.00	200	0.00
RMDU8	60	0.00	1.0	0.00	10	0.00	120	0.00
Totals		14.35		20.09		215.25		2009.00
02030105120060 – West Branch Middle Brook								
R40	15	1.15	1.4	1.61	15	17.25	140	161.00
R50	15	67.80	1.4	94.92	15	1017.00	140	9492.00
M3	20	0.00	1.5	0.00	16	0.00	200	0.00
C1	50	1.16	2.1	2.44	22	25.52	200	232.00
C3B	60	0.00	2.1	0.00	22	0.00	200	0.00
RMDU8	60	0.00	1.0	0.00	10	0.00	120	0.00
Totals		70.11		98.97		1059.77		9885.00

F 14 and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Tot. Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030105120070 – Cuckels Brook								
R40MDU1	15	11.25	1.4	15.75	15	168.75	140	1575.00
R50	15		1.4	0.00	15	0.00	140	0.00
M3	20		1.5	0.00	16	0.00	200	0.00
R20	25	6.57	1.4	9.20	15	98.55	140	919.80
R10	35	4.16	1.4	5.82	15	62.40	140	582.40
C1	50		2.1	0.00	22	0.00	200	0.00
C-3	60	14.25	2.1	29.93	22	313.50	200	2850.00
GCM	60	0.40	1.0	0.40	10	4.00	120	48.00
HIC	60	5.57	1.0	5.57	10	55.70	120	668.40
LL	60		1.0	0.00	10	0.00	120	0.00
M1A	60	1.50	1.5	2.25	16	24.00	200	300.00
M1B	60		1.5	0.00	16	0.00	200	0.00
M2	60	36.73	1.5	55.10	16	587.68	200	7346.00
MPD	60		1.0	0.00	10	0.00	120	0.00
PRCPD	60		1.0	0.00	10	0.00	120	0.00
RMUD10.5	60		1.0	0.00	10	0.00	120	0.00
Totals		80.43		124.01		1314.58		14289.60
02030105120130 - Green Brook								
R50	15	13.31	1.4	18.63	15	199.65	140	1863.40
R20	25	2.81	1.4	3.93	15	42.15	140	393.40
C-3	60	28.16	2.1	59.14	22	619.52	200	5632.00
Totals		44.28		81.70		861.32		7888.80

FE 14 and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Total Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030105120140 - Raritan River Lower								
R50	15	6.20	1.4	8.68	15	93.00	140	868.00
R20	25	0.23	1.4	0.32	15	3.45	140	32.20
C5	40		2.1	0.00	22	0.00	200	0.00
C1	50		2.1	0.00	22	0.00	200	0.00
C-3	60	4.24	2.1	8.90	22	93.28	200	848.00
C3A	60		2.1	0.00	22	0.00	200	0.00
LC	60		1.0	0.00	10	0.00	120	0.00
M1A	60	0.56	1.5	0.84	16	8.96	200	112.00
M2	60		1.5	0.00	16	0.00	200	0.00
M3	60	9.04	1.5	13.56	16	144.64	200	1808.00
PRCPD	60		1.0	0.00	10	0.00	120	0.00
RMDU10.5	60		1.0	0.00	10	0.00	120	0.00
Totals		20.27		32.31		343.33		3668.20
02030105070010 - Chambers Brook								
R40	15	16.03	1.4	22.44	15	240.45	140	2244.20
R40C	15		1.4	0.00	15	0.00	140	0.00
R50	15	10.26	1.4	14.36	15	153.90	140	1436.40
R20	25	4.46	1.4	6.24	15	66.90	140	624.40
SED	50		1.0	0.00	10	0.00	120	0.00
C3A	60		2.1	0.00	22	0.00	200	0.00
HC	60		1.0	0.00	10	0.00	120	0.00
P	60		0.1	0.00	3	0.00	40	0.00
Totals		30.75		43.05		461.25		4305.00

FE-14 and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Total Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030105070030 - North Branch Raritan River								
R40	15	5.82	1.4	8.15	15	87.30	140	814.80
R40PURD	15		1.4	0.00	15	0.00	140	0.00
R20	25	0.99	1.4	1.39	15	14.85	140	138.60
R20.1	45		1.4	0.00	15	0.00	140	0.00
C1	50	0.35	2.1	0.74	22	7.70	200	70.00
C4	50		2.1	0.00	22	0.00	200	0.00
P2	50		0.1	0.00	3	0.00	40	0.00
C-3	60	4.29	2.1	9.01	22	94.38	200	858.00
C3A	60		2.1	0.00	22	0.00	200	0.00
M1	60	4.27	1.5	6.41	16	68.32	200	854.00
P	60		0.1	0.00	3	0.00	40	0.00
RMDU5	60		1.0	0.00	10	0.00	120	0.00
RMDU6	60		1.0	0.00	10	0.00	120	0.00
RMDU8	60		1.0	0.00	10	0.00	120	0.00
Totals		15.72		25.68		272.55		2735.40

F 14 and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Tot. Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030105080010 - Peters Brook								
R40	15	69.89	1.4	97.85	15	1048.35	140	9784.60
R40MDU1	15		1.4	0.00	15	0.00	140	0.00
R50	15	5.34	1.4	7.48	15	80.10	140	747.60
GCE	20		1.0	0.00	10	0.00	120	0.00
R20	25		1.4	0.00	15	0.00	140	0.00
R10	35	3.03	1.4	4.24	15	45.45	140	424.20
R10A	35		1.4	0.00	15	0.00	140	0.00
R10B	35		1.4	0.00	15	0.00	140	0.00
R40A	45		1.4	0.00	15	0.00	140	0.00
R40B	45		1.4	0.00	15	0.00	140	0.00
C1	50		2.1	0.00	22	0.00	200	0.00
C4	50		2.1	0.00	22	0.00	200	0.00
SED	50		1.0	0.00	10	0.00	120	0.00
AAR	60		1.0	0.00	10	0.00	120	0.00
C2	60	5.2	2.1	10.92	22	114.40	200	1040.00
C2(BRC)	60		2.1	0.00	22	0.00	200	0.00
C3	60	41.94	2.1	88.07	22	922.68	200	8388.00
GCM	60	1.3	1.0	1.30	10	13.00	120	156.00
M1	60		1.5	0.00	16	0.00	200	0.00
M1B	60		1.5	0.00	16	0.00	200	0.00
M2	60		1.5	0.00	16	0.00	200	0.00
MPB	60		1.5	0.00	16	0.00	200	0.00
P	60	0.56	0.1	0.06	3	1.68	40	22.40
RMDU8	60		1.0	0.00	10	0.00	120	0.00
SC/MD	60		1.0	0.00	10	0.00	120	0.00
SC-HD	60	0.22	1.0	0.22	10	2.20	120	26.40
C1A	70		2.1	0.00	22	0.00	200	0.00
C6	70	0.74	2.1	1.55	22	16.28	200	148.00
Totals		128.22		211.69		2244.14		20737.20

File # and Zone	Build - Out Zoning	Acres	Total Phosphorous lbs/acre/year	Total Phosphorous lbs/year	Total Nitrogen lbs/acre/year	Total Nitrogen lbs/year	Total Suspended Solids lbs/acre/year	Total Suspended Solids lbs/year
02030105080020 - Raritan River Lower								
R20	25	5.42	1.4	7.59	15	81.30	140	758.80
R10	35	1.11	1.4	1.55	15	16.65	140	155.40
C1	50	3.15	2.1	6.62	22	69.30	200	630.00
C2	60	0.28	2.1	0.59	22	6.16	200	56.00
M1	60		1.5	0.00	16	0.00	200	0.00
P	60	1.79	0.1	0.18	3	5.37	40	71.60
Totals		11.75		16.52		178.78		1671.80
02030105080030 - Raritan River Lower								
R40MDU1	15	0.47	1.4	0.66	15	7.05	140	65.80
R-10	35	3.86	1.4	5.40	15	57.90	140	540.40
C-1	50	1.19	2.1	2.50	22	26.18	200	238.00
SCR	50	0.62	1.0	0.62	10	6.20	120	74.40
M2	60	16.00	1.5	24.00	16	256.00	200	3200.00
RMDU10.5	60	0.33	1.0	0.33	10	3.30	120	39.60
Totals		22.47		33.51		356.63		4158.20
Total Non-Point Source Loads At Build-Out				687.53		7307.60		71348.20

Mitigation Plans

This mitigation plan is provided for a proposed development that may be granted a variance or exemption from the stormwater management design and performance standards. Any variance, waiver or exemption granted shall be subject to site-specific analysis and the approval of an acceptable mitigation plan. Presented is a hierarchy of options.

The applicant must demonstrate, through sufficient datum, that there is no practicable, alternative to address Stormwater Quantity, Stormwater Quality or Groundwater Recharge within the project limits. Alternatives should include the options of acquiring additional property, reduction of the scale of development and a no-build option. The applicant must demonstrate that the design is to the maximum extent practical conforming to the NJDEP's current Best Management Practices (BMPs) for non-point source control.

Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area of the proposed development. The project must provide additional 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.
 - a. The applicant can select one of the Township's projects to compensate for the deficit from the performance standards resulting from the proposed project. More detailed information on the projects can be obtained from the Municipal Engineer.
 - b. The applicant can develop a project to compensate for the deficit from the performance standards resulting from the proposed project. Review and approval of the Planning Board, Council and Municipal Engineer is required for all alternative projects.
2. If a suitable site cannot be located in the same drainage area as the proposed development, as discussed in Option 1, 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.

3. If a suitable mitigation project cannot be implemented within the same drainage area of the proposed development, a project addressing the same issues may be acceptable within an adjacent upstream or downstream drainage area.
4. A developer may, at the discretion of the municipality, provide funding or partial funding for an environmental enhancement project, or towards the development of a Regional Stormwater Management Plan. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement or mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.

Recommended Implementing Stormwater Control Ordinances

The Township is currently implementing a Stormwater Pollution Prevention Management for New Developments Ordinance and a Municipal Stormwater Regulation Program for Existing Developments. No current ordinances are to be removed, revised or changed.

New Ordinances are as follows:

Stormwater Management Ordinance for New Developments

AN ORDINANCE CREATING AN ARTICLE XXXVII-B ENTITLED "STORMWATER POLLUTION PREVENTION MANAGEMENT FOR NEW DEVELOPMENTS," PURSUANT TO N.J.A.C. 7:8 (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS), IN PART 11 (SPECIAL ENVIRONMENTAL REQUIREMENTS) OF CHAPTER 126 (LAND USE) OF THE MUNICIPAL CODE OF THE TOWNSHIP OF BRIDGEWATER, COUNTY OF SOMERSET, STATE OF NEW JERSEY SO AS TO IMPLEMENT THE TOWNSHIP STORMWATER POLLUTION PREVENTION / MANAGEMENT PLAN (SPPP) ADOPTED IN 2005 THROUGH THE DEVELOPMENT OF A STORMWATER POLLUTION PREVENTION ORDINANCE APPLICABLE TO NEW DEVELOPMENT AND REDEVELOPMENT

WHEREAS, in response to rules adopted by the United States Environmental Protection Agency in 1999, the NJDEP developed a Municipal Stormwater Regulation Program which was delineated in N.J.A.C. 7:8 and 7:14A of its regulations; and

WHEREAS, the purpose of the program was to address the problem of pollutants entering municipal, county and regional waterways from municipal storm drainage systems; and

WHEREAS, as storm water runoff travels across the land surface, it carries pollutants that can pose serious health risks and can disrupt and seriously damage water eco systems, especially as new development and redevelopment intensity increases; and

WHEREAS, the new State stormwater management regulations and the recently adopted Bridgewater Township Stormwater Management Plan are intended to achieve the following goals: minimize any increase in storm water runoff from any new development; reduce soil erosion; assure the adequacy of existing and proposed culverts and bridges; prevent an increase in non point pollution; maintain the integrity of stream channels and minimize pollutants in storm water runoff; and

WHEREAS, to achieve these goals, the NJDEP regulations and the “Bridgewater Plan” mandate that the Township Council adopt an ordinance addressing stormwater pollution prevention management for new development and redevelopment.

NOW THEREFORE, BE IT ORDAINED, by the Township Council of the Township of Bridgewater in the County of Somerset and State of New Jersey that an Article XXXVII-B is hereby created entitled “Stormwater Pollution Prevention Management,” pursuant to N.J.S.A. 7:8 (New Jersey Department of Environmental Protection Regulations), in Part 11 (Special Environmental Requirements) of Chapter 126 (Land Use) of the Municipal Code of the Township of Bridgewater, County of Somerset, State of New Jersey so as to implement the Township Stormwater Pollution Prevention / Management Plan (SPPP) adopted in 2005 through the development of this stormwater pollution prevention ordinance applicable to new development and redevelopment which shall read as follows:

Article XXXVII of Chapter 126 of the Township Municipal code entitled “Stormwater Control” (with its sections 126-279 through 126-285) is hereby divided into two separate Articles each of which shall be numbered and titled as follows:

All new language is in boldface.

The existing Article XXXVII entitled “Stormwater Control” shall be re-numbered and re-titled as follows:

Article XXXVII-A “Stormwater Control”

Sections 126-279 through 126-285 shall remain in effecting its entirety.

There is hereby created an Article XXXVII-B entitled “Stormwater Pollution Prevention Management” which shall be numbered as 126-285.1, 126-285.2 etc.

SECTION I

126-285.1 Scope and Purpose

A. Policy Statement

Flood control, groundwater recharge, and pollutant reduction through nonstructural or low impact techniques shall be explored before relying on structural BMPs. Structural BMPs should be integrated with nonstructural stormwater management strategies and proper maintenance plans. Nonstructural strategies include both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site or from being exposed to stormwater. Source control plans should be developed based upon physical site conditions and the origin, nature, and the anticipated quantity or amount of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the established performance standards for water quality, quantity, and groundwater recharge.

B. Purpose

It is the purpose of this ordinance to establish minimum stormwater management requirements and controls for "major development," as defined in Section 2.

C. Applicability

1. This ordinance shall be applicable to all site plans and subdivisions for the following major developments that require preliminary or final site plan or subdivision review:

Non-residential major developments; and

Aspects of residential major developments that are not pre-empted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

2. This ordinance shall also be applicable to all major developments undertaken by Township of Bridgewater.

D. Compatibility with Other Permit and Ordinance Requirements

Development approvals issued for subdivisions and site plans pursuant to this ordinance are to be considered an integral part of development approvals under the subdivision and site plan review process and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. In their interpretation and application, the provisions of this ordinance shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This ordinance is not intended to interfere with, abrogate, or annul any other ordinances, rule or regulation, statute, or other provision of law except that, where any provision of this ordinance imposes restrictions different from those imposed

by any other ordinance, rule or regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

126-285.2 Definitions

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application. The definitions below are the same as or based on the corresponding definitions in the Stormwater Management Rules at N.J.A.C. 7:8-1.2.

“BMP” means Best Management Practices as contained in the NJ Stormwater Best Management Practices Manual dated April 2004 and as updated, available from www.njstormwater.com.

“CAFRA Planning Map” means the geographic depiction of the boundaries for Coastal Planning Areas, CAFRA Centers, CAFRA Cores and CAFRA Nodes pursuant to N.J.A.C. 7:7E-5B.3.

“CAFRA Centers, Cores or Nodes” means those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

“Compaction” means the increase in soil bulk density.

“Core” means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

“County review agency” means an agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

A county planning agency; or

A county water resource association created under N.J.S.A 58:16A-55.5, if the ordinance or resolution delegates authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

“Department” means the New Jersey Department of Environmental Protection.

“Designated Center” means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

“Design engineer” means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily

be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

“Development” means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, by any person, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. In the case of development of agricultural lands, development means: any activity that requires a State permit; any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act , N.J.S.A 4:1C-1 et seq.

“Drainage area” means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

“Environmentally critical areas” means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitat of endangered or threatened species; large areas of contiguous open space or upland forest; steep slopes; and well head protection and groundwater recharge areas. Habitats of endangered or threatened species are identified, using the Department’s Landscape Project as approved by the Department’s Endangered and Non-game Species Program.

“Empowerment Neighborhood” means a neighborhood designated by the Urban Coordinating Council “in consultation and conjunction with” the New Jersey Redevelopment Authority pursuant to N.J.S.A 55:19-69.

“Erosion” means the detachment and movement of soil or rock fragments by water, wind, ice or gravity.

“Impervious surface” means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

“Infiltration” is the process by which water seeps into the soil from precipitation.

“Major development” means any “development” that provides for ultimately disturbing one or more acres of land. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.

“Municipality” means any city, borough, town, township, or village.

“Node” means an area designated by the State Planning Commission concentrating facilities and activities, which are not organized in a compact form.

“Nutrient” means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

“Person” means any individual, corporation, company, partnership, firm, association, Township of Bridgewater, or political subdivision of this State subject to municipal jurisdiction pursuant to the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

“Pollutant” means any dredged spoil, solid waste, incinerator residue, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works.

“Pollutant” includes both hazardous and non-hazardous pollutants.

“Recharge” means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

“Sediment” means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

“Site” means the lot or lots upon which a major development is to occur or has occurred.

“Soil” means all unconsolidated mineral and organic material of any origin.

“State Development and Redevelopment Plan Metropolitan Planning Area (PA1)” means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the state’s future redevelopment and revitalization efforts.

“State Plan Policy Map” is defined as the geographic application of the State Development and Redevelopment Plan’s goals and statewide policies, and the official map of these goals and policies.

“Stormwater” means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

“Stormwater runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

“Stormwater management basin” means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

“Stormwater management measure” means any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.

“Tidal Flood Hazard Area” means a flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

“Urban Coordinating Council Empowerment Neighborhood” means a neighborhood given priority access to State resources through the New Jersey Redevelopment Authority.

“Urban Enterprise Zones” means a zone designated by the New Jersey Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et. seq.

“Urban Redevelopment Area” is defined as previously developed portions of areas:

- (1) Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
- (2) Designated as CAFRA Centers, Cores or Nodes;
- (3) Designated as Urban Enterprise Zones; and
- (4) Designated as Urban Coordinating Council Empowerment Neighborhoods.

“Waters of the State” means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

“Wetlands” or “wetland” means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

126-285.3 General Standards

A. Design and Performance Standards for Stormwater Management Measures

1. Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards in Section 4. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.

2. The standards in this ordinance apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules.

126-285.4 Stormwater Management Requirements for Major Development

- B. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with Section 10.

- C. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department' Landscape Project or Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly *Helonias bullata* (swamp pink) and/or *Clemmys muhlnebergi* (bog turtle).

- D. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.G:
 1. The construction of an underground utility line provided that the disturbed areas are revegetated upon completion;
 2. The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable; and
 3. The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.

E. A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.G may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

1. The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;
2. The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Sections 4.F and 4.G to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements of Sections 4.F and 4.G, existing structures currently in use, such as homes and buildings, would need to be condemned; and
4. The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under D.3 above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of Sections 4.F and 4.G that were not achievable on-site.

F. Nonstructural Stormwater Management Strategies

1. To the maximum extent practicable, the standards in Sections 4.F and 4.G shall be met by incorporating nonstructural stormwater management strategies set forth at Section 4.E into the design. The applicant shall identify the nonstructural measures incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Paragraph 2 below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.
2. Nonstructural stormwater management strategies incorporated into site design shall:
 - a. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
 - b. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
 - c. Maximize the protection of natural drainage features and vegetation;
 - d. Minimize the decrease in the "time of concentration" from pre-construction to post construction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed;
 - e. Minimize land disturbance including clearing and grading;

- f. Minimize soil compaction;
- g. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;
- h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;
- i. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site, in order to prevent or minimize the release of those pollutants into stormwater runoff.

Such source controls include, but are not limited to:

- (1) Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy Section 4.E.3. below;
- (2) Site design features that help to prevent discharge of trash and debris from drainage systems;
- (3) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and

When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.

3. Site design features identified under Section 4.E.2.i.(2) above shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this paragraph, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see Section 4.E.3.c below.

- a. Design engineers shall use either of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:
 - (1) The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (April 1996); or
 - (2) A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

Examples of grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas, bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater basin floors.

- b. Whenever design engineers use a curb-opening inlet, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) shall have an area of no more than seven (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.
- c. This standard does not apply:
 - (1) Where the review agency determines that this standard would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets that meet these standards;
 - (2) Where flows from the water quality design storm as specified in Section 4.G.1 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:
 - (a) A rectangular space four and five-eighths inches long and one and one-half inches wide (this option does not apply for outfall netting facilities); or
 - (b) A bar screen having a bar spacing of 0.5 inches.
 - (3) Where flows are conveyed through a trash rack that has parallel bars with one-inch (1") spacing between the bars, to the elevation of the water quality design storm as specified in Section 4.G.1; or
 - (4) Where the New Jersey Department of Environmental Protection determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.
- 4. Any land area used as a nonstructural stormwater management measure to meet the performance standards in Sections 4.F and 4.G shall be dedicated to a government agency, subjected to a conservation restriction filed with the appropriate County Clerk's office, or subject to an approved equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity.
- 5. Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website www.njstormwater.org.

G. Erosion Control, Groundwater Recharge and Runoff Quantity Standards

- 1. This subsection contains minimum design and performance standards to control erosion, encourage and control infiltration and groundwater recharge, and control stormwater runoff quantity impacts of major development.

- a. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq. and implementing rules.
- b. The minimum design and performance standards for groundwater recharge are as follows:
 - (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, either:
 - (a) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
 - (b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.
 - (2) This groundwater recharge requirement does not apply to projects within the "urban redevelopment area," or to projects subject to (3) below.
 - (3) The following types of stormwater shall not be recharged:
 - (a) Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than "reportable quantities" as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and
 - (b) Industrial stormwater exposed to "source material." "Source material" means any material(s) or machinery, located at an industrial facility, which is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents

that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

- (4) The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or down gradient of the groundwater recharge area.
- c. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at Section 5, complete one of the following:
- (1) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;
 - (2) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the two, 10, and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;
 - (3) Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. The percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge; or
 - (4) In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with (1), (2) and (3) above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge.
2. Any application for a new agricultural development that meets the definition of major development at Section 2 shall be submitted to the appropriate Soil Conservation District for review and approval in accordance with the

requirements of this section and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For the purposes of this section, “agricultural development” means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacturing of agriculturally related products.

H. Stormwater Runoff Quality Standards

1. Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff by 80 percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional 1/4 acre of impervious surface is being proposed on a development site. The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollution Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

2. For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in Section 7. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed Management, New Jersey Department of Environmental Protection, PO Box 418 Trenton, New Jersey, 08625-0418.
3. If more than one BMP in series is necessary to achieve the required 80 percent TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B - (AXB)/100$$

Where

R = total TSS percent load removal from application of both BMPs, and

A = the TSS percent removal rate applicable to the first BMP

B = the TSS percent removal rate applicable to the second BMP

Best Management Practice	TSS Percent Removal Rate
Bioretention Systems	90
Constructed Stormwater Wetland	90
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	See Section 6.C
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

4. If there is more than one onsite drainage area, the 80 percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.
5. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from

the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in Sections 4.F and 4.G.

6. Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 7.
7. In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.
8. Special water resource protection areas shall be established along all waters designated Category One at N.J.A.C. 7:9B, and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC14 drainage area. These areas shall be established for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries significance of those established Category One waters. These areas shall be designated and protected as follows:
 - a. The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:
 - (1) A 300-foot special water resource protection area shall be provided on each side of the waterway, measured perpendicular to the waterway from the top of the bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided.
 - (2) Encroachment within the designated special water resource protection area under Subsection (1) above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined. All encroachments proposed under this subparagraph shall be subject to review and approval by the Department.
 - b. All stormwater shall be discharged outside of and flow through the special water resource protection area and shall comply with the Standard for Off-Site Stability in the "Standards For Soil Erosion

and Sediment Control in New Jersey,” established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq.

- c. If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard For Off-Site Stability in the “Standards for Soil Erosion and Sediment Control in New Jersey,” established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq., then the stabilization measures in accordance with the requirements of the above standards may be placed within the special water resource protection area, provided that:
 - (1) Stabilization measures shall not be placed within 150 feet of the Category One waterway;
 - (2) Stormwater associated with discharges allowed by this section shall achieve a 95 percent TSS post-construction removal rate;
 - (3) Temperature shall be addressed to ensure no impact on the receiving waterway;
 - (4) The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;
 - (5) A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and
 - (6) All encroachments proposed under this section shall be subject to review and approval by the Department.
- d. A stream corridor protection plan may be developed by a regional stormwater management planning committee as an element of a regional stormwater management plan, or by a municipality through an adopted municipal stormwater management plan. If a stream corridor protection plan for a waterway subject to Section 4.G(8) has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to G.8 shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in G.8.a.(1) above. In no case shall a stream corridor protection plan allow the reduction of the Special Water Resource Protection Area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.
- e. Paragraph G.8 does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before February 2, 2004 , provided that the construction begins on or before February 2, 2009.

126-285.5 Calculation of Stormwater Runoff and Groundwater Recharge

A. Stormwater runoff shall be calculated in accordance with the following:

1. The design engineer shall calculate runoff using one of the following methods:
 - a. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds; or
 - b. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.
2. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term “runoff coefficient” applies to both the NRCS methodology at Section 5.A.1.a and the Rational and Modified Rational Methods at Section 5.A.1.b. A runoff coefficient or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover have existed on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).
3. In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.
4. In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS Technical Release 55 – Urban Hydrology for Small Watersheds and other methods may be employed.
5. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the

design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

- B. Groundwater recharge may be calculated in accordance with the following:
The New Jersey Geological Survey Report GSR-32 A Method for Evaluating Ground-Water Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at <http://www.state.nj.us/dep/njgs/>; or at New Jersey Geological Survey, 29 Arctic Parkway, P.O. Box 427 Trenton, New Jersey 08625-0427; (609) 984-6587.

126-285.6 Standards for Structural Stormwater Management Measures

- A. Standards for structural stormwater management measures are as follows:
1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, environmentally critical areas, wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).
 2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir, with a minimum spacing between bars of one-inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of Section 8.D.
 3. Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.
 4. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter.
 5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at Section 8.

- B. Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established by Section 4 of this ordinance.
- C. Manufactured treatment devices may be used to meet the requirements of Section 4 of this ordinance, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

126-285.7 Sources for Technical Guidance

- A. Technical guidance for stormwater management measures can be found in the documents listed at 1 and 2 below, which are available from Maps and Publications, New Jersey Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.
 - 1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended. Information is provided on stormwater management measures such as: bioretention systems, constructed stormwater wetlands, dry wells, extended detention basins, infiltration structures, manufactured treatment devices, pervious paving, sand filters, vegetative filter strips, and wet ponds.
 - 2. The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended.
- B. Additional technical guidance for stormwater management measures can be obtained from the following:
 - 1. The "Standards for Soil Erosion and Sediment Control in New Jersey" promulgated by the State Soil Conservation Committee and incorporated into N.J.A.C. 2:90. Copies of these standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625; (609) 292-5540;
 - 2. The Rutgers Cooperative Extension Service, 732-932-9306; and
 - 3. The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey, 08625, (609) 292-5540.

126-285.8 Safety Standards for Stormwater Management Basins

A. This section sets forth requirements to protect public safety through the proper design and operation of stormwater management basins. This section applies to any new stormwater management basin.

B. Requirements for Trash Racks, Overflow Grates and Escape Provisions

1. A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management basin to ensure proper functioning of the basin outlets in accordance with the following:

- a. The trash rack shall have parallel bars, with no greater than six inch spacing between the bars.
- b. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.
- c. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack.
- d. The trash rack shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.

2. An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:

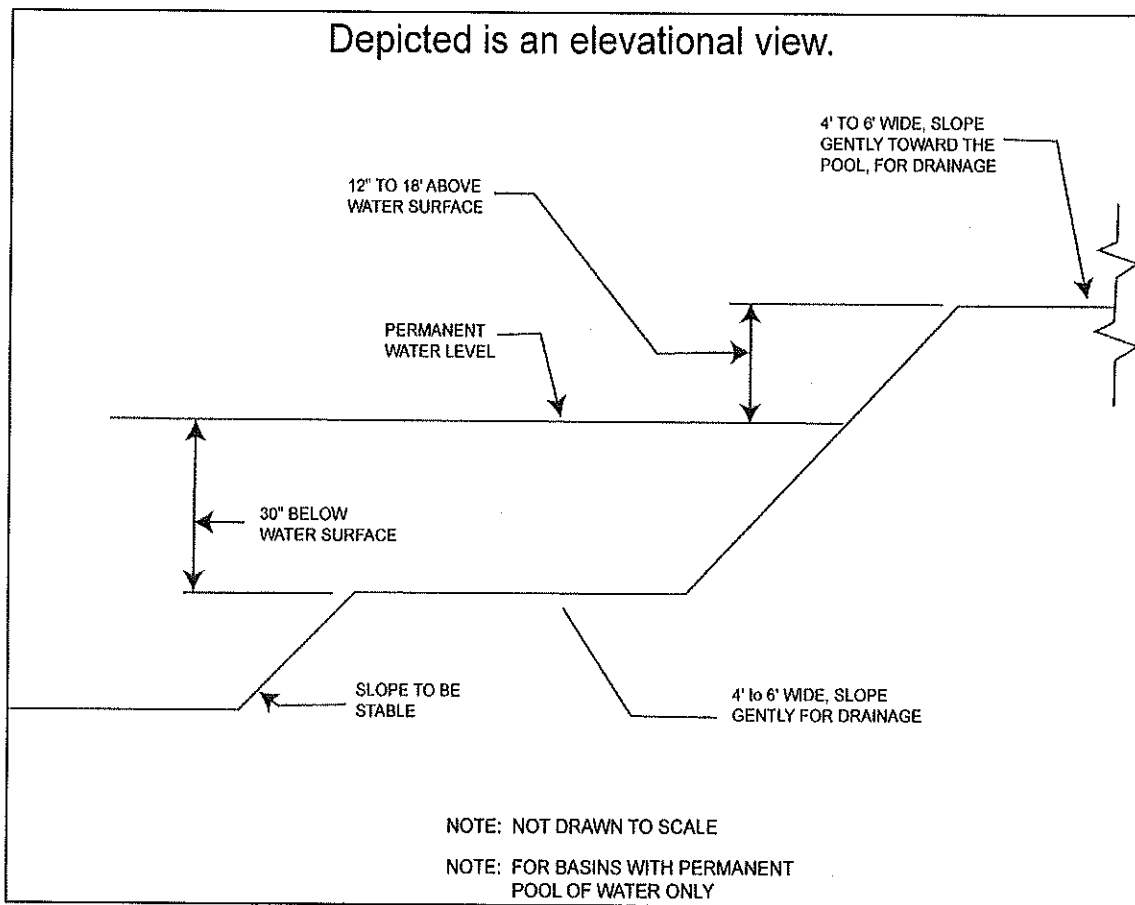
- a. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.

- b. The overflow grate spacing shall be no less than two inches across the smallest dimension.
 - c. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs./ft sq.
3. For purposes of this paragraph 3, escape provisions means the permanent installation of ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Stormwater management basins shall include escape provisions as follows:
- a. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. With the prior approval of the reviewing agency identified in Section 8.C a freestanding outlet structure may be exempted from this requirement.
 - b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See Section 8.D for an illustration of safety ledges in a stormwater management basin.
 - c. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical.

C. Variance or Exemption from Safety Standards

1. A variance or exemption from the safety standards for stormwater management basins may be granted only upon a written finding by the appropriate reviewing agency (municipality, county or NJDEP) that the variance or exemption will not constitute a threat to public safety.

D. Illustration of Safety Ledges in a New Stormwater Management Basin



126-285.9 Requirements for a Site Development Stormwater Plan

A. Submission of Site Development Stormwater Plan

1. Whenever an applicant seeks municipal approval of a development subject to this ordinance, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan at Section 9.C below as part of the submission of the applicant's application for subdivision or site plan approval.
2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.

3. The applicant shall submit the necessary quantity of copies as required, under section 126-153 A. (18) for Site Plans and 126-236 T. for Subdivisions, of the materials listed in the checklist for site development stormwater plans in accordance with Section 9.C of this ordinance.

B. Site Development Stormwater Plan Approval

The applicant's Site Development project shall be reviewed as a part of the subdivision or site plan review process by the municipal board or official from which municipal approval is sought. That municipal board or official shall consult the engineer retained by the Planning and/or Zoning Board (as appropriate) to determine if all of the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this ordinance.

C. Checklist Requirements

The following information shall be required:

1. Topographic Base Map

The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

2. Environmental Site Analysis

A written and graphic description of the natural and man-made features of the site and its environs. This description should include a discussion of soil conditions, slopes, wetlands, waterways and vegetation on the site. Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

3. Project Description and Site Plan(s)

A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings, roads, parking areas, utilities, structural facilities for stormwater management and sediment control, and other permanent structures. The map(s) shall also clearly show areas where alterations occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high ground water elevations. A written description

of the site plan and justification of proposed changes in natural conditions may also be provided.

4. Land Use Planning and Source Control Plan

This plan shall provide a demonstration of how the goals and standards of Sections 3 through 6 are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

5. Stormwater Management Facilities Map

The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

- a. Total area to be paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.
- b. Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

6. Calculations

- a. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in Section 4 of this ordinance.
- b. When the proposed stormwater management control measure (e.g., infiltration basins) depends on the hydrologic properties of soils, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure.

7. Maintenance and Repair Plan

The design and planning of the stormwater management facility shall meet the maintenance requirements of Section 10.

8. Waiver from Submission Requirements

The municipal official or board reviewing an application under this ordinance may, in consultation with the municipal engineer, waive submission of any of the requirements in Sections 9.C.1 through 9.C.6 of this ordinance when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

126-285.10 Maintenance and Repair

A. Applicability

1. Projects subject to review as in Section 1.C of this ordinance shall comply with the requirements of Sections 10.B and 10.C.

B. General Maintenance

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.
2. The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.
3. Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.
4. If the person responsible for maintenance identified under Section 10.B.2 above is not a public agency, the maintenance plan and any future revisions based on Section 10.B.7 below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.
5. Preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.
6. The person responsible for maintenance identified under Section 10.B.2 above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design

of the development, including a record of all inspections and copies of all maintenance-related work orders. The log shall be kept on-site and be made available for inspection by any review agency having jurisdiction.

7. The person responsible for maintenance identified under Section 10.B.2 above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed. Adjustments to the plan and/or deed must be submitted to the Township Committee for review and approval.
 8. The person responsible for maintenance identified under Section 10.B.2 above shall retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by Sections 10.B.6 and 10.B.7 above.
 9. The requirements of Sections 10.B.3 and 10.B.4 do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.
If the municipality does not take this responsibility, the ordinance requires the posting of a two-year maintenance guarantee in accordance with N.J.S.A. 40:55D-53.
 10. In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance or repair, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have fourteen (14) days to effect maintenance and repair of the facility in a manner that is approved by the municipal engineer or his designee. The municipality, in its discretion, may extend the time allowed for effecting maintenance and repair for good cause. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or County may immediately proceed to do so and shall bill the cost thereof to the responsible person.
- C. Nothing in this section shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

126-285.11 Penalties

Any person who erects, constructs, alters, repairs, converts, maintains, or uses any building, structure or land in violation of this ordinance shall be subject to the following penalties not to exceed Five Hundred Dollars (\$500.00) and/or imprisonment for a time not to exceed ninety (90) days. After notified of violation, each day of continuance thereof may, in the discretion of the court, be treated as a separate and distinctive violation hereof.

SECTION II

If any part of this ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of the ordinance.

SECTION III

Should any section, paragraph, sentence or clause of this ordinance be declared unconstitutional or invalid, for any reason, the remaining portions of this ordinance shall not be affected thereby and shall remain in full force and effect and, to this end, the provisions of this ordinance are hereby declared severable.

SECTION IV

The within ordinance shall take effect in the time and manner provided by law and, in particular, the procedure delineated in the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

Stormwater Management Ordinance for Existing Developments

AN ORDINANCE CREATING A CHAPTER 114 ENTITLED "MUNICIPAL STORM WATER REGULATION PROGRAM FOR EXISTING DEVELOPMENTS," PURSUANT TO N.J.A.C. 7:8 AND 7:14A (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS), OF THE MUNICIPAL CODE OF THE TOWNSHIP OF BRIDGEWATER, COUNTY OF SOMERSET, STATE OF NEW JERSEY SO AS TO IMPLEMENT THE TOWNSHIP STORMWATER POLLUTION PREVENTION / MANAGEMENT PLAN (SPPP) ADOPTED IN 2005 THROUGH THE DEVELOPMENT OF STORMWATER POLLUTION PREVENTION ORDINANCES APPLICABLE TO EXISTING DEVELOPMENTS

WHEREAS, in response to rules adopted by the United States Environmental Protection Agency in 1999, the NJDEP developed a Municipal Stormwater Regulation Program which was delineated in N.J.A.C. 7:8 and 7:14A of its regulations; and

WHEREAS, the purpose of the program was to address the problem of pollutants entering municipal, county and regional waterways from municipal storm drainage systems; and

WHEREAS, with respect to existing developed areas within the municipality, the problem was to be addressed through local public education, ordinances and programs focused on the improper disposal of waste, solid and floatable controls, maintenance yard operations and employee training pursuant to N.J.A.C. 7:14A; and

WHEREAS, the Township Council of the Township of Bridgewater wishes to address these pollution prevention issues, with respect to existing developments, by enacting a new Chapter 114 of its Municipal Code which shall address the following subject matters:

- | | |
|------------------------------|-------------------------|
| * Litter Control | * Pet Waste |
| * Improper Disposal of Waste | * Wildlife Feeding |
| * Containerized Yard Waste | * Yard Waste Collection |
| * Illicit Connections and | |

WHEREAS, the aforesaid NJDEP regulations mandate that the municipality develop ordinances and begin implementing them with respect to the above subject matters as they relate to existing developments.

NOW THEREFORE, BE IT ORDAINED, by the Township Council of the Township of Bridgewater in the County of Somerset and State of New Jersey that a Chapter 114 of the Municipal Code of the Township of Bridgewater, County of Somerset, State of New Jersey, entitled "Municipal Stormwater Regulation Program," be created for the purpose of enacting stormwater pollution prevention ordinances applicable to existing developments regulating the following subject matters: litter control; pet waste; improper disposal of waste; wildlife feeding; containerized yard waste; yard waste collection and illicit connections, all as follows:

SECTION I

Part 1 - Litter Control Ordinance

114-1 Purpose:

An ordinance to establish requirements to control littering in Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

114-2 Definitions:

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Litter - any used or unconsumed substance or waste material which has been discarded, whether made of aluminum, glass, plastic, rubber, paper, or other

natural or synthetic material, or any combination thereof, including, but not limited to, any bottle, jar or can, or any top, cap or detachable tab of any bottle, jar or can, any unlighted cigarette, cigar, match or any flaming or glowing material or any garbage, trash, refuse, debris, rubbish, grass clippings or other lawn or garden waste, newspapers, magazines, glass, metal, plastic or paper containers or other packaging or construction material, but does not include the waste of the primary processes of mining or other extraction processes, logging, sawmilling, farming or manufacturing.

- b. Litter Receptacle – a container suitable for the depositing of litter.
- c. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.

114-3 Prohibited acts and regulated activities:

1. It shall be unlawful for any person to throw, drop, discard or otherwise place any litter of any nature upon public or private property other than in a litter receptacle, or having done so, to allow such litter to remain.
2. Whenever any litter is thrown or discarded or allowed to fall from a vehicle or boat in violation of this ordinance, the operator or owner, or both, of the motor vehicle or boat shall also be deemed to have violated this ordinance.

114-4 Enforcement:

This ordinance shall be enforced by the Police Department and/or other Municipal Officials of Township of Bridgewater.

114-5 Penalties:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 2 - Pet Waste Ordinance

114-6 Purpose:

An ordinance to establish requirements for the proper disposal of pet solid waste in the Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for failure to comply.

114-7 Definitions:

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Immediate – shall mean that the pet solid waste is removed at once, without delay.
- b. Owner/Keeper – any person who shall possess, maintain, house or harbor any pet or otherwise have custody of any pet, whether or not the owner of such pet.
- c. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- d. Pet - a domesticated animal (other than a disability assistance animal) kept for amusement or companionship.
- e. Pet solid waste – waste matter expelled from the bowels of the pet; excrement.
- f. Proper disposal – placement in a designated waste receptacle, or other suitable container, and discarded in a refuse container which is regularly emptied by the municipality or some other refuse collector; or disposal into a system designed to convey domestic sewage for proper treatment and disposal.

114-8 Requirement for Disposal:

All pet owners and keepers are required to immediately and properly dispose of their pet's solid waste deposited on any property, public or private, not owned or possessed by that person.

114-9 Exemptions:

Any owner or keeper who requires the use of a disability assistance animal shall be exempt from the provisions of this section while such animal is being used for that purpose.

114-10 Enforcement:

The provisions of this Article shall be enforced by the Police Department and the Local Board of Health of Township of Bridgewater.

114-11 Violations and Penalty:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 3 - Improper Disposal of Waste Ordinance

114-12 Purpose:

An ordinance to prohibit the spilling, dumping, or disposal of materials other than Stormwater to the municipal separate storm sewer system (MS4) operated by the Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

114-13 Definitions:

For the purpose of this ordinance, the following terms, phrases, words, and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Municipal separate storm sewer system (MS4)– a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that is owned or operated by [insert name of municipality] or other public body, and is designed and used for collecting and conveying stormwater. **NOTE:** In municipalities with combined sewer systems, add the following: "MS4s do not include combined sewer systems, which are sewer systems that are designed to carry sanitary sewage at all times and to collect and transport stormwater from streets and other sources."
- b. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- c. Stormwater – water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities, or is conveyed by snow removal equipment.

114-14 Prohibited Conduct:

The spilling, dumping, or disposal of materials other than stormwater to the municipal separate storm sewer system operated by Township of Bridgewater] is prohibited. The spilling, dumping, or disposal of materials other than stormwater in such a manner as to cause the discharge of pollutants to the municipal separate storm sewer system is also prohibited.

114-15 Exceptions to Prohibition:

- a. Water line flushing and discharges from potable water sources.
- b. Uncontaminated ground water (e.g., infiltration, crawl space or basement sump pumps, foundation or footing drains, rising ground waters).
- c. Air conditioning condensate (excluding contact and non-contact cooling water)
- d. Irrigation water (including landscape and lawn watering runoff).
- e. Flows from springs, riparian habitats and wetlands, water reservoir discharges and diverted stream flows.
- f. Residential car washing water, and residential swimming pool discharges.
- g. Sidewalk, driveway and street wash water.
- h. Flows from fire fighting activities.
- i. Flows from rinsing of the following equipment with clean water:
 - Beach maintenance equipment immediately following their use for their intended purposes; and

- Equipment used in the application of salt and de-icing materials immediately following salt and de-icing material applications. Prior to rinsing with clean water, all residual salt and de-icing materials must be removed from equipment and vehicles to the maximum extent practicable using dry cleaning methods (e.g., shoveling and sweeping). Recovered materials are to be returned to storage for reuse or properly discarded. Rinsing of equipment, as noted in the above situation is limited to exterior, undercarriage, and exposed parts and does not apply to engines or other enclosed machinery.

114-16 Enforcement:

This ordinance shall be enforced by the Police Department and/or other Municipal Officials of Township of Bridgewater.

114-17 Penalties:

Any person(s) who continues to be in violation of the provisions of this ordinance, after being duly notified, shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 4 - Wildlife Feeding Ordinance

114-18 Purpose:

An ordinance to prohibit the feeding of unconfined wildlife in any public park or on any other property owned or operated by Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for failure to comply.

114-18 Definitions:

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Feed – to give, place, expose, deposit, distribute or scatter any edible material with the intention of feeding, attracting or enticing wildlife. Feeding does not include baiting in the legal taking of fish and/or game.
- b. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- c. Wildlife – all animals that are neither human nor domesticated.

114-19 Prohibited Conduct:

- a. No person shall feed, in any public park or on any other property owned or operated by Township of Bridgewater, any wildlife, excluding confined wildlife (for example, wildlife confined in zoos, parks or rehabilitation centers, or unconfined wildlife at environmental education centers, or feral cats as part of an approved Trap-Neuter-Release program).

114-20 Enforcement:

- a. This ordinance shall be enforced by the Police Department and/or other Municipal Officials of Township of Bridgewater.
- b. Any person found to be in violation of this ordinance shall be ordered to cease the feeding immediately.

114-21 Violations and Penalties:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 5 - Containerized Yard Waste Ordinance

114-22 Purpose:

An ordinance to establish requirements for the proper handling of yard waste in Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

114-23 Definitions:

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Containerized – means the placement of yard waste in a trash can, bucket, bag or other vessel, such as to prevent the yard waste from spilling or blowing out into the street and coming into contact with stormwater.
- b. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- c. Street - means any street, avenue, boulevard, road, parkway, viaduct, drive, or other way, which is an existing State, county, or municipal roadway, and includes the land between the street lines, whether improved or unimproved, and may comprise pavement, shoulders, gutters, curbs, sidewalks, parking areas, and other areas within the street lines.
- d. Yard Waste – means leaves and grass clippings.

114-24 Prohibited Conduct:

The owner or occupant of any property, or any employee or contractor of such owner or occupant engaged to provide lawn care or landscaping services, shall not sweep, rake, blow or otherwise place yard waste, unless the yard waste is containerized, in the street. If yard waste that is not containerized is placed in the street, the party responsible for placement of yard waste must remove the yard waste from the street or said party shall be deemed in violation of this ordinance.

114-25 Enforcement:

The provisions of this ordinance shall be enforced by Police Department and/or other Municipal Officials of Township of Bridgewater.

114-26 Violations and Penalties:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 6 - Yard Waste Collection Program Ordinance

114-227 Purpose:

An ordinance to establish a yard waste collection and disposal program in Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

114-28 Definitions:

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- a. Containerized – means the placement of yard waste in a trash can, bucket, bag or other vessel, such as to prevent the yard waste from spilling or blowing out into the street and coming into contact with stormwater.
- b. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- c. Street – means any street, avenue, boulevard, road, parkway, viaduct, drive, or other way, which is an existing State, county, or municipal roadway, and includes the land between the street lines, whether improved or unimproved, and may comprise pavement, shoulders, gutters, curbs, sidewalks, parking areas, and other areas within the street lines.
- d. Yard Waste – means leaves and grass clippings.

114-29 Yard Waste Collection

Sweeping, raking, blowing or otherwise placing yard waste that is not containerized at the curb or along the street is only allowed during the seven (7) days prior to a scheduled and announced collection, and shall not be placed closer than 10 feet from any storm drain inlet. Placement of such yard waste at the curb or along the street at any other time or in any other manner is a violation of this ordinance. If such placement of yard waste occurs, the party responsible for placement of the yard waste must remove the yard waste from the street or said party shall be deemed in violation of this ordinance.

114-30 Enforcement:

The provisions of this ordinance shall be enforced by Police Department and/or other Municipal Officials of Township of Bridgewater.

114-31 Violations and Penalties:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

Part 7 - Illicit Connection Ordinance

114-32 Purpose:

An ordinance to prohibit illicit connections to the municipal separate storm sewer system(s) operated by the Township of Bridgewater, so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

114-33 Definitions:

For the purpose of this ordinance, the following terms, phrases, words, and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory. The definitions below are the same as or based on corresponding definitions in the New Jersey Pollutant Discharge Elimination System (NJPDES) rules at N.J.A.C. 7:14A-1.2.

- a. Domestic sewage - waste and wastewater from humans or household operations.
- b. Illicit connection – any physical or non-physical connection that discharges domestic sewage, non-contact cooling water, process wastewater, or other industrial waste (other than stormwater) to the municipal separate storm sewer system operated by the [insert name of municipality], unless that discharge is authorized under a NJPDES permit other than the Tier A Municipal Stormwater General Permit (NJPDES Permit Number NJ0141852). Non-physical connections may include, but are not limited to, leaks, flows, or overflows into the municipal separate storm sewer system.
- c. Industrial waste - non-domestic waste, including, but not limited to, those pollutants regulated under Section 307(a), (b), or (c) of the Federal Clean Water Act (33 U.S.C. §1317(a), (b), or (c)).
- d. Municipal separate storm sewer system (MS4)– a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that is owned or operated by Township of Bridgewater or other public body, and is designed and used for collecting and conveying stormwater.
NOTE: In municipalities with combined sewer systems, add the following: "MS4s do not include combined sewer systems, which are

sewer systems that are designed to carry sanitary sewage at all times and to collect and transport stormwater from streets and other sources.”

- e. NJPDES permit – a permit issued by the New Jersey Department of Environmental Protection to implement the New Jersey Pollutant Discharge Elimination System (NJPDES) rules at N.J.A.C. 7:14A.
- f. Non-contact cooling water - water used to reduce temperature for the purpose of cooling. Such waters do not come into direct contact with any raw material, intermediate product (other than heat) or finished product. Non-contact cooling water may however contain algacides, or biocides to control fouling of equipment such as heat exchangers, and/or corrosion inhibitors.
- g. Person – any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.
- h. Process wastewater - any water, which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Process wastewater includes, but is not limited to, leachate and cooling water other than non-contact cooling water.
- i. Stormwater – water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities, or is conveyed by snow removal equipment.

114-34 Prohibited Conduct:

No person shall discharge or cause to be discharged through an illicit connection to the municipal separate storm sewer system operated by the Township of Bridgewater any domestic sewage, non-contact cooling water, process wastewater, or other industrial waste (other than stormwater).

114-35 Enforcement:

This ordinance shall be enforced by the Police Department and/or other Municipal Officials of Township of Bridgewater.

114-36 Penalties:

Any person(s) who is found to be in violation of the provisions of this ordinance shall be subject to a fine not to exceed \$500.00 or 90 days imprisonment, or both.

SECTION II

If any part of this ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of the ordinance.

SECTION III

Should any section, paragraph, sentence or clause of this ordinance be declared unconstitutional or invalid, for any reason, the remaining portions of this ordinance shall not be affected thereby and shall remain in full force and effect and, to this end, the provisions of this Ordinance are hereby declared severable.

SECTION IV

The within ordinance shall take effect in the time and manner provided by law and, in particular, the procedure delineated in the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

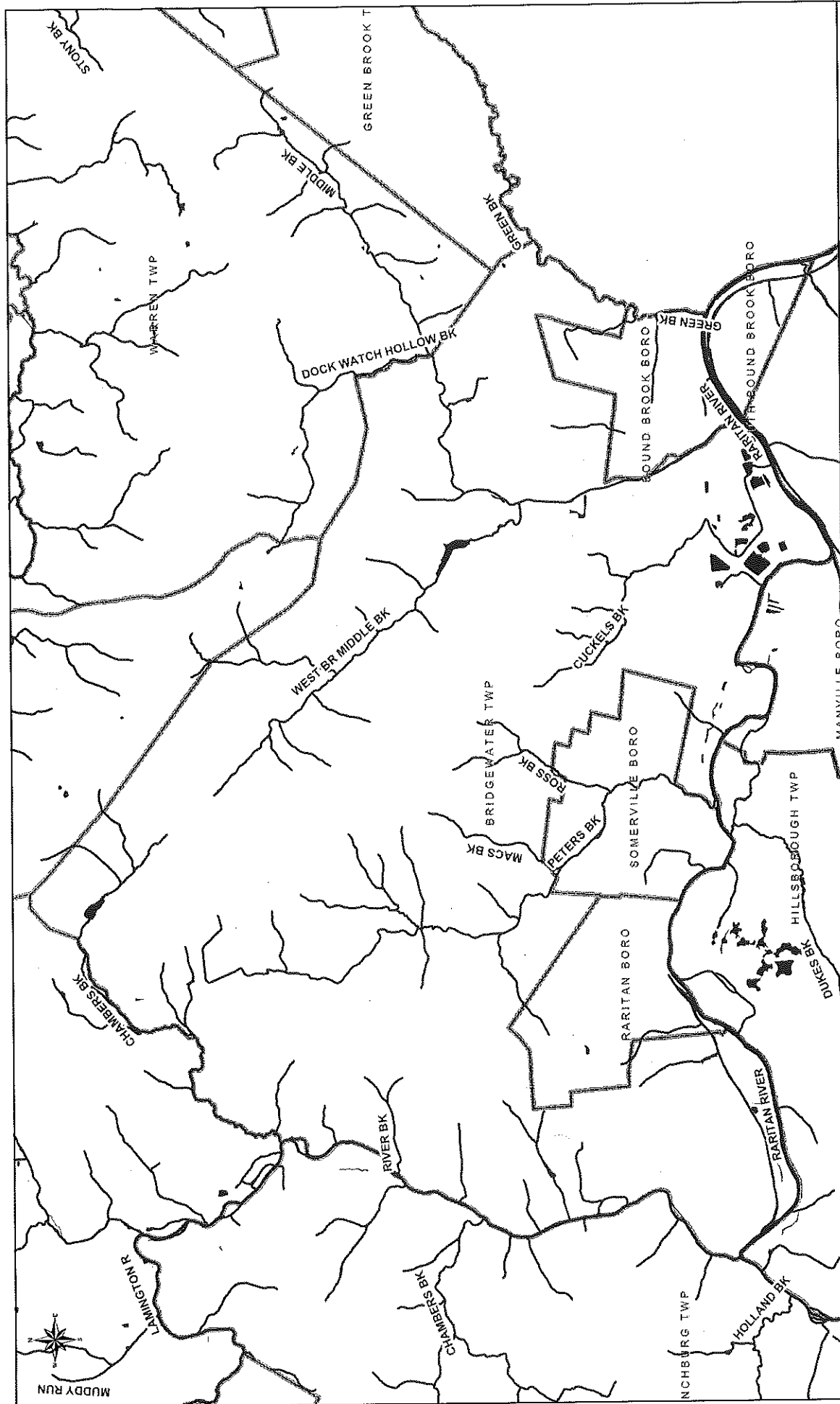
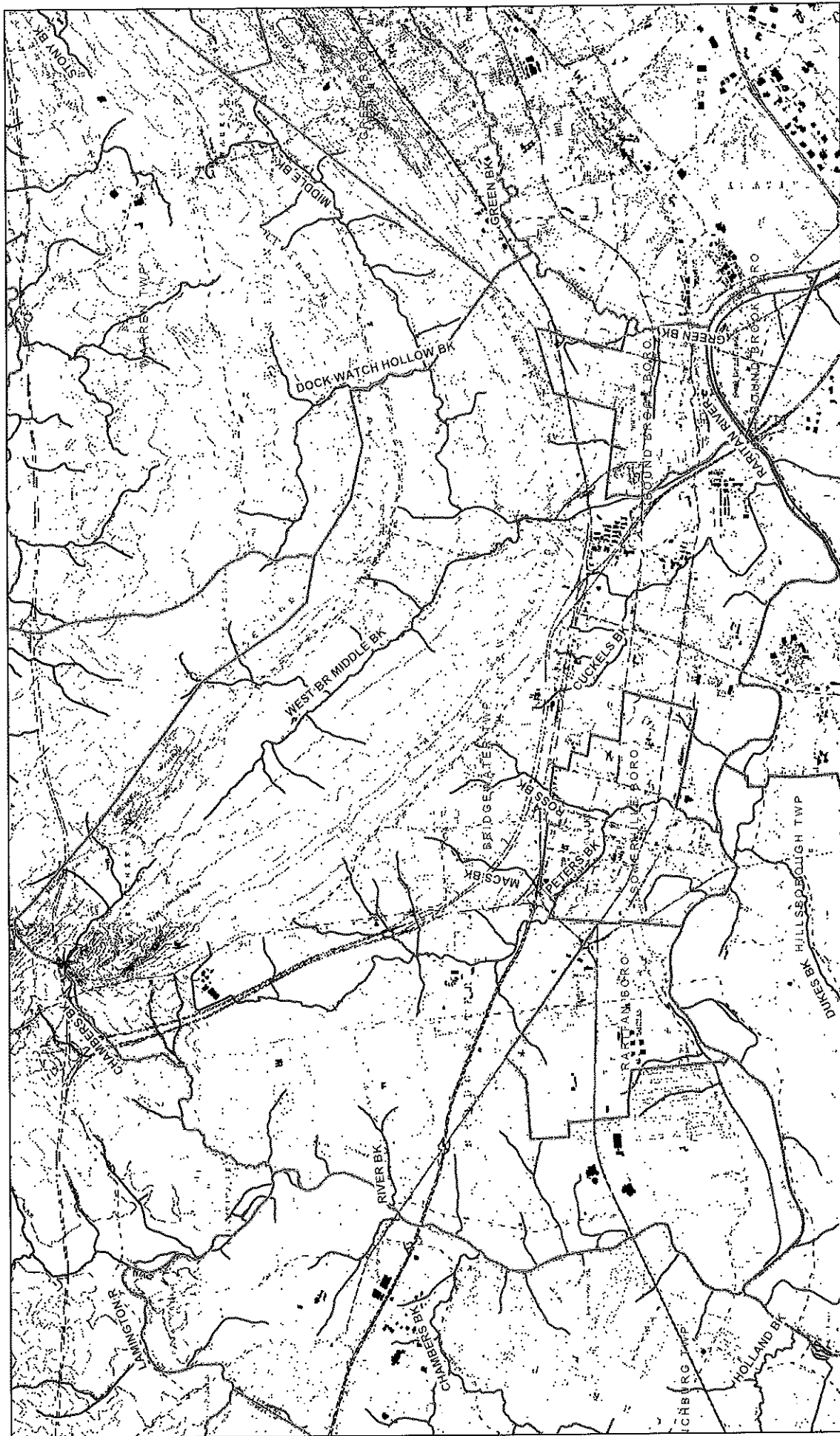


Figure 2

Bridgewater Twp. Waterways

0 2,000 4,000 8,000 Feet
 Prepared By: Somerset County, May 2004
 This map was prepared using data provided by the Department of Environmental Protection and the Department of Transportation. The Department of Environmental Protection is not responsible for any errors or omissions on this map.



**Bridgewater Twp.
USGS Quadrangle Map**

Prepared By: Somerset County, May 2004
 This map was prepared using the latest available data of the National
 Geographic Information System (NGIS) and the National
 Map Accuracy Act of 1966.



Figure 3

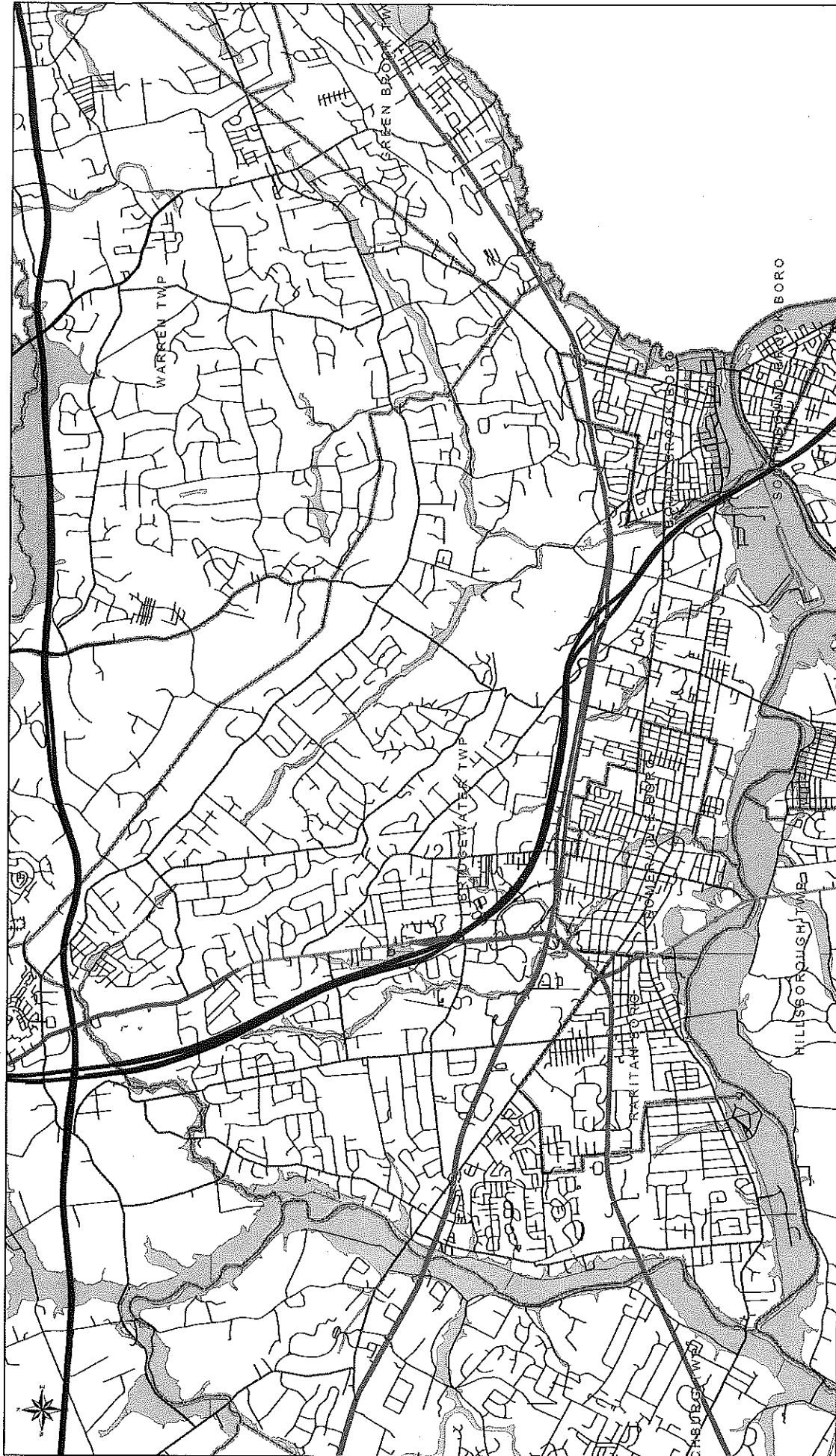


0 2,000 4,000 8,000 Feet

Prepared By: Somerset County, May 2024
 This map was developed using the latest data available from the Somerset County GIS Department. It is not intended to be used for legal purposes. For more information, please contact the Somerset County GIS Department at (609) 426-2000.

**Bridgewater Twp.
 Hydrologic Unit Code 14 (HUC14) Areas**

Figure 4



**Bridgewater Twp.
100-Yr Flood Plain**

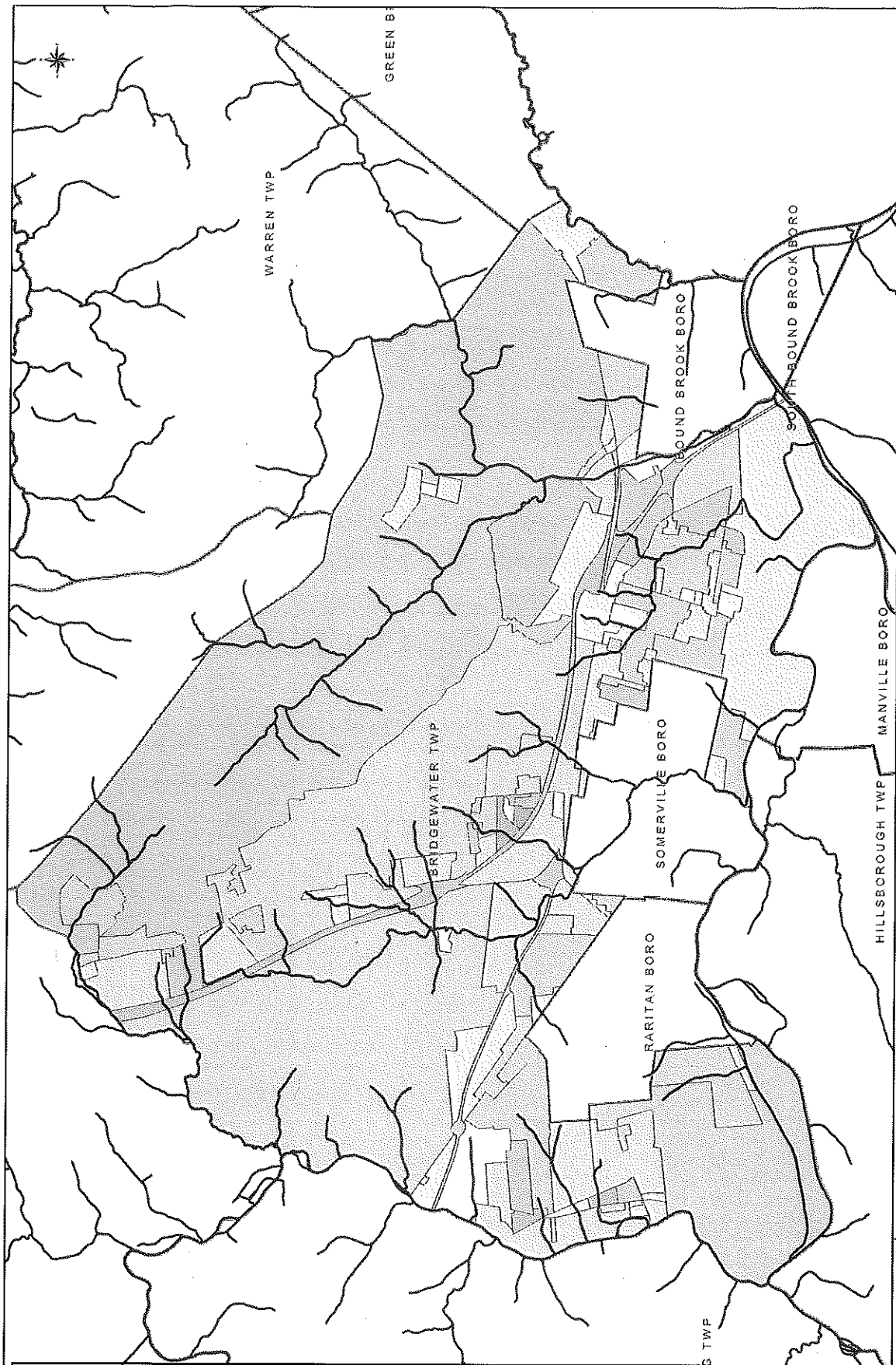
Figure 5

Prepared By: Somerset County, May 2004
 This map was developed using the latest data available from the Somerset County Office of Environmental Planning and Assessment. The map is for informational purposes only and does not constitute a warranty or any other form of liability.



**Bridgewater Twp.
Existing Land Use**

Figure 6

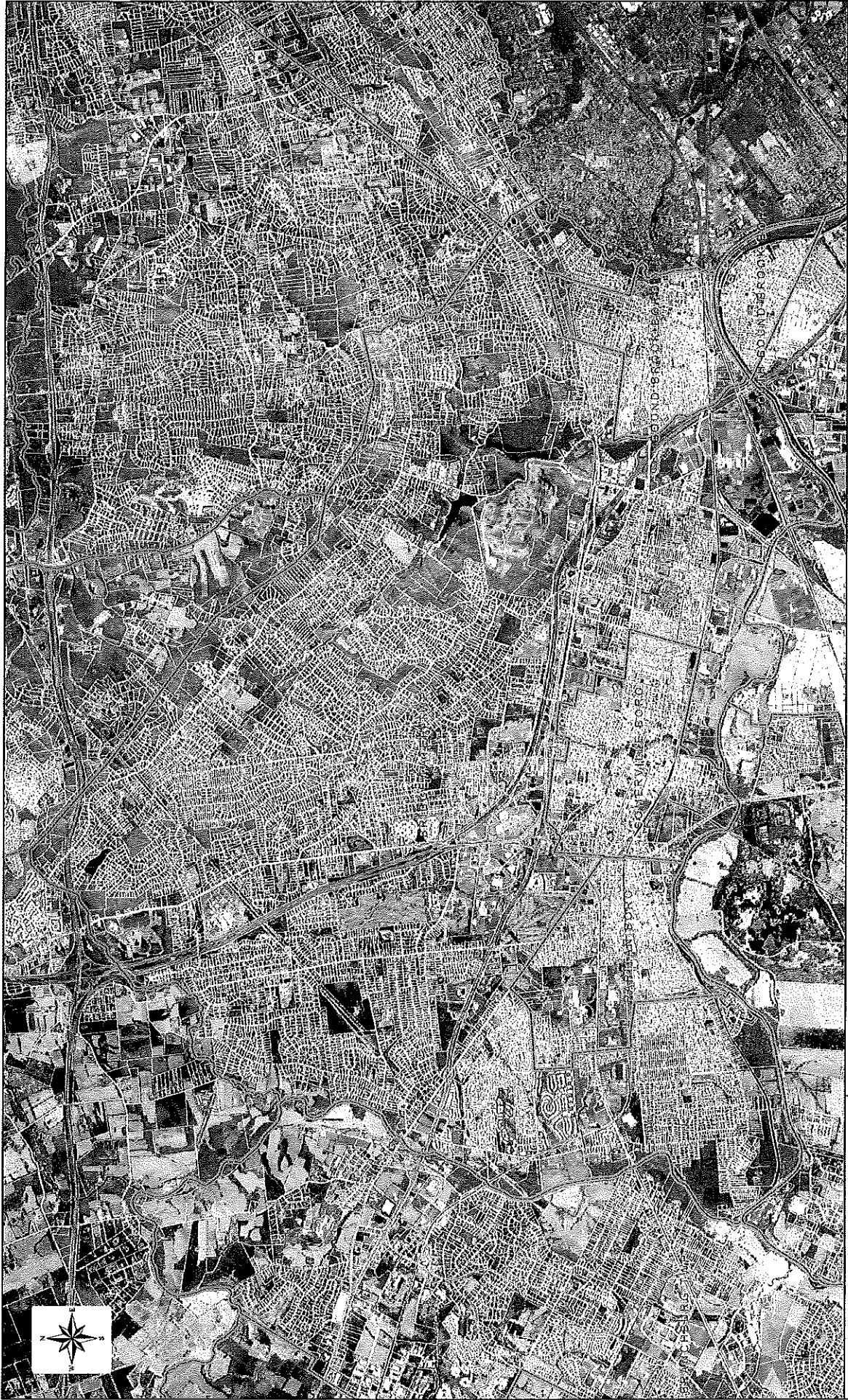


Legend	
	Municipal Boundaries
	Streams and Rivers
Zone Code	
	C-1
	C-1A
	C-2
	C-3
	C-3A
	C-4
	C-5
	C-6
	GCM
	HC
	HC-1
	HC-1A
	HC-1B
	HC-1C
	HC-1D
	HC-1E
	HC-1F
	HC-1G
	HC-1H
	HC-1I
	HC-1J
	HC-1K
	HC-1L
	HC-1M
	HC-1N
	HC-1O
	HC-1P
	HC-1Q
	HC-1R
	HC-1S
	HC-1T
	HC-1U
	HC-1V
	HC-1W
	HC-1X
	HC-1Y
	HC-1Z
	VC
	P
	PRCPD
	R-10
	R-10.1
	R-10A
	R-10B
	R-10C
	R-20
	R-20.1
	R-40
	R-40A
	R-40B
	R-40C
	R-40MDU-1
	R-80
	R-10U-10.5
	R-10U-5
	R-10U-8
	R-10U-9
	ROUTE 287
	SCMD
	SED
	STATE HWY

0 2,000 4,000 8,000 Feet
 Prepared By: Somerset County, May 2004
 This map was prepared using the latest data available from the Somerset County Planning and Zoning Department. The map is for informational purposes only and does not constitute a legal document.

**Bridgewater Twp.
Zoning**

Figure 7



0 200 400 600 Feet
Prepared By: Somerset County, May 2004
This document contains confidential information. All rights reserved.
Produced by the County of Somerset, PA. All rights reserved.

**Bridgewater Twp.
Aerial Photo with Parcels**

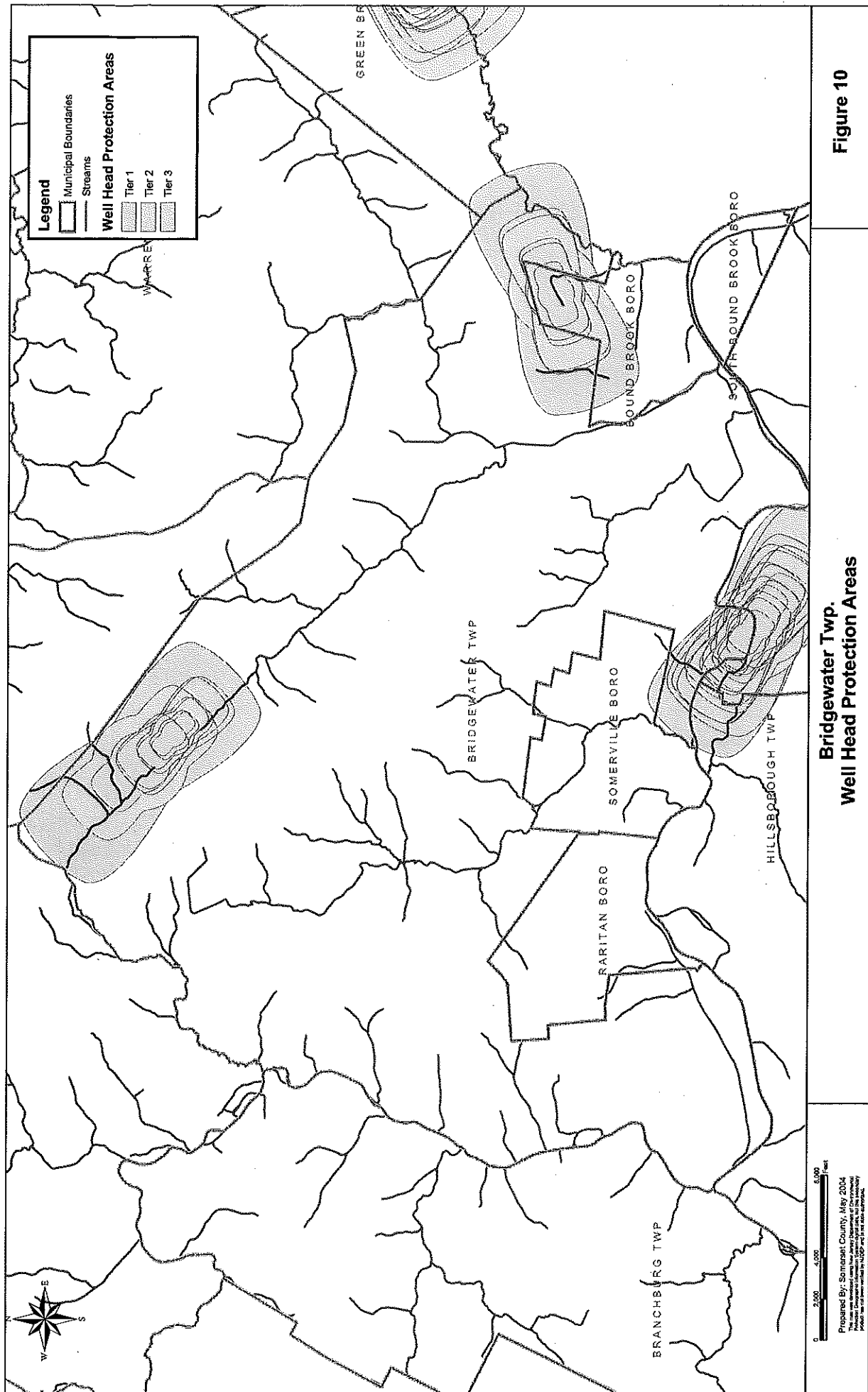
Figure 8

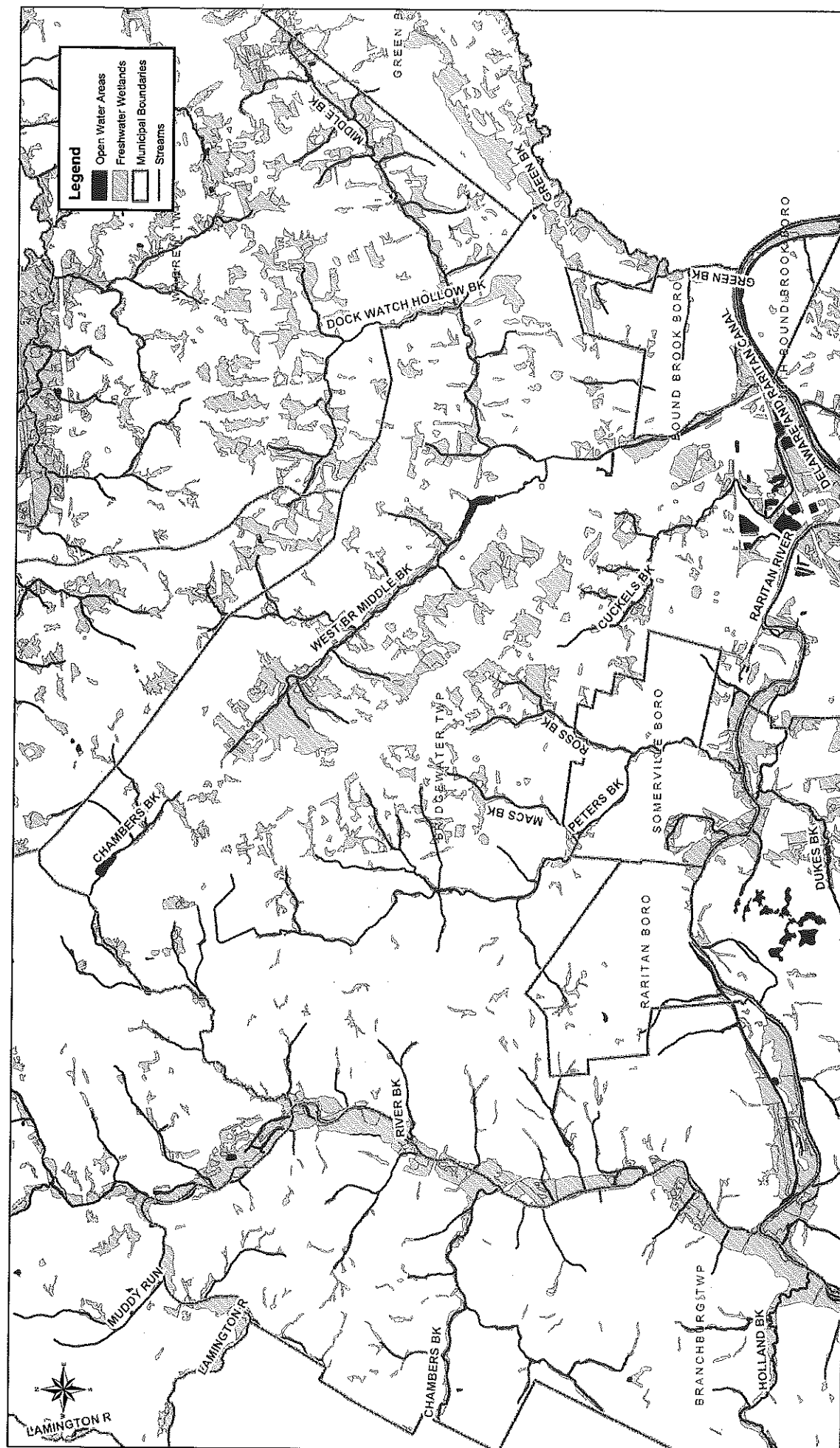


**Bridgewater Twp.
Groundwater Recharge**

Figure 9

0 2,000 4,000 6,000 Feet
 Prepared By: Somerset County, May 2004
 This map was prepared using GIS software and data provided by the Somerset County Department of Planning and Economic Development.





**Bridgewater Twp.
Wetlands and Water**

Figure 11

0 2,000 4,000 8,000 Feet
 Prepared By: Somerset County, May 2004
 This map was prepared using data from the Department of Environmental Protection, dated 2002, and is subject to change without notice.

MEMORIALIZING RESOLUTION OF THE PLANNING BOARD OF THE TOWNSHIP OF BRIDGEWATER AMENDING THE STORMWATER MANAGEMENT PLAN ELEMENT OF THE MASTER PLAN OF THE TOWNSHIP OF BRIDGEWATER

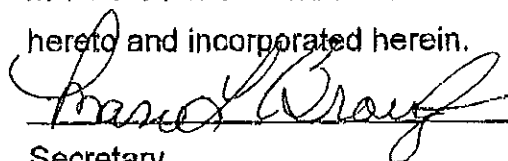
**DECIDED: MARCH 27, 2006
MEMORIALIZED: MAY 9, 2006**

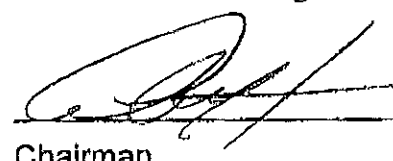
WHEREAS, Maser Consulting has prepared an amendment to the Stormwater Management Plan Element of the Master Plan to incorporate the required build out analysis and other requirements of the New Jersey Department of Environmental Protection (NJDEP), and

WHEREAS, it is the intent of the Board to amend the Master Plan to incorporate the March, 2006 amendment of the Stormwater Management Plan prepared by Maser Consulting, and

WHEREAS, at a public hearing on March 27, 2006, the Board, after opening the matter to the public, approved the amendment to the Stormwater Management Plan Element of the Master Plan of the Township of Bridgewater.

NOW, THEREFORE, BE IT RESOLVED by the Planning Board of the Township of Bridgewater, County of Somerset, State of New Jersey that the Board hereby approves the Master Plan Amendment including the Stormwater Management Plan Element attached hereto and incorporated herein.


Secretary


Chairman

The undersigned Secretary of the Bridgewater Township Planning Board hereby certifies that the within resolution memorialized the action taken by this Board pursuant to N.J.S.A. 40:55D-10(g) at its meeting on Tuesday, May 9, 2006.


MARIE BROUGHMAN, SECRETARY

