Bordentown City
UTILITIES PLAN ELEMENT

INTRODUCTION

The master planning of wastewater, water supply, and stormwater management facilities is necessary for cost-effective development and maintenance of these public utility systems. The planning of these utility systems is predicated on the land development which municipal zoning ordinances allow. As land development proceeds under many societal, economic, and environmental influences and/or zoning changes, the planning of the utility systems must also be revisited.

Extensions of these utility systems in the City have been constructed primarily by public interests to serve land development projects. The utility construction has been in conformance to the City's technical standards and, to the greatest practical extent, in conformance with the City's Master Plan. The ownership, operation, and maintenance of all portions of the water and stormwater utility systems are the responsibility of the municipal government. The ownership, operation, and maintenance of all portions of the wastewater system are the responsibility of the Bordentown Sewerage Authority. While all portions of the current stormwater system remain with the City, a recent development has filed litigation regarding the City's intent to make that new development responsible for the stormwater system that is on their site. That litigation also includes the potential to not provide sewering due to wetlands on the site. The ownership, operations, and maintenance of water for consumption and fire service are the responsibility of the City. Solid waste pickup including trash collection, leaf and brush collection, metals, etc., are done by the City Public Works Department. The County is responsible for recycling activities.

Power (electric and natural gas) for the City and residents is provided by PSE&G. The City is concerned about the visual impacts of above ground utilities. However, since the City is primarily built out there has been little opportunity for relocation of existing above ground utilities. Recently an ordinance was passed that no new above ground utilities are permitted on Farnsworth Avenue between Burlington and Park Streets. The lines will now be located behind the buildings rather than in front of them. Relocation of existing above ground utilities should also be promoted, particularly in redevelopment areas.

GOAL/POLICY STATEMENT

A. Goal. Insure the provision of adequate and appropriate wastewater treatment, potable water systems and stormwater systems to protect the public health, welfare and the natural environment in a cost-effective manner.

Ensure that all development areas are adequately served by public water, sewer, storm drainage, and other utility systems in an economic and coordinated manner and in a manner consistent with the City's 201 Wastewater Management Plan.

1. The City would encourage clustering, where appropriate, as a design technique to help preserve open space, protect environmentally sensitive areas, and reduce infrastructure and maintenance costs. Encourage efficiencies in the design of new residential development that will minimize public service costs.

2. Utilize best management practices for: efficient conveyance of wastewater; efficient distribution of potable water; stormwater flood control, erosion control, groundwater quality, surface water quality and groundwater recharge; and environmental protection.

3. Maintain master utility plans and ordinances, which will provide cost-effective service for current and future City needs.

4. Coordinate the construction and installation of improvements to ensure that utility services are available when needed.

5. Municipal policy has been, and continues to be, extension of utilities; developers or individual property owners must extend the utilities at their own cost.

6. Promote utility construction and relocation to be more unobtrusive or underground including existing aboveground telephone and electric lines in selected, developed areas like downtown sections of Farnsworth Avenue.

7. Coordinate utility services with other private and public agencies where beneficial.

8. Maintain the adequacy of existing and proposed: culverts and bridges, dams and other structures.

9. Promote groundwater recharge where favorable geological conditions exist.

10. Decrease non-point source pollution, to the greatest extent feasible.

11. Maintain the integrity of stream channels for their natural functions, including drainage and ecological purposes.

WASTEWATER MANAGEMENT

201 Plan

Local government wastewater management planning is controlled by the NJDEP through review and approval of regional Water Quality Management Plans. Burlington County is the regional agency responsible to NJDEP for City of Bordentown's Water Quality Management Plan (a.k.a. the "201 Plan" from its legislative authorization). Water quality planning includes protective measures for both surface waters and groundwater. The conveyance, treatment,

and re-entry of treated wastewater to the environment are addressed regionally by the Water Quality Planning process, and locally in the City's approved 201 Plan.
The initial 201 Water Quality Management Plan for the region was revised in 1983 and focused on Bordentown City and the Township of Bordentown. The Plan proposed the construction of a new wastewater treatment plant (WWTP) at the site of the existing City facility to handle flows from both municipalities. Since the proposed construction was confined to the City and Township, it was agreed that a new authority appointed by the two impacted municipalities would best serve the interest of the communities. On April 22, 1986, the Local Finance Board of the New Jersey Department of Community Affairs approved the creation of the Bordentown Sewerage Authority (BSA). BSA is the implementing agency responsible for the recommendations of the 201 Plan. The newly constructed WWTP startup and training were completed by the end of July 1991.

The BSA currently provides wastewater treatment for residents of the City of Bordentown and a large portion of the Township at its Black's Creek WWTP (located at the intersection of Route 206 and Farnsworth Avenue in the Township). A six-member board conducts Authority business. Three members are appointed by the City and three members are appointed by the Township. One key provision in the BSA Charter is that any site that contains wetlands will not be serviced by public sewer.

There is also an additional wastewater treatment facility located in the City. It is the Ocean Spray Cranberries, Inc pretreatment plant located on Park Street in the City. It treats industrial wastewater prior to discharging into the BSA's collection system. The Ocean Spray facility is regulated under NJDEP's indirect industrial discharger regulations and meets the BSA pretreatment standards.

Wastewater Conveyance

The sewerage system within the City was essentially constructed in 1908 with several short extensions added as needed. It is composed of approximately 15 miles of pipe ranging in size from 8-inch to 15-inch, 275 manholes and three pump stations. Almost all of the system is gravity except for a section, which is force main. Almost the entire City is serviced by the BSA with only the following few locations still utilizing septic systems:

- 356 Park Street
- 375 W. Burlington Street
- 200 Lime Kiln Alley
- 215 Lime Kiln Alley
- 216 Lime Kiln Alley
- Water Street (no address)
- 100 Walnut Street (Shipps Coal Yard)
- Bordentown Yacht Club
- Yapewi Yacht Club
- Vacant building between yacht clubs

There are three wastewater pumping stations that convey sewage from the City to the WWTP. They are the Park Street 1 Pumping Station, the Park Street 2 Pumping Station (located at the Ocean Spray Facility) and the Burlington Street Pumping Station.
Currently wastewater conveyance systems in the City are in good condition. When problems occur the BSA takes swift and appropriate actions to rectify those problems.

Wastewater Treatment

The BSA WWTP was fully operational in early 1991. The facility has a hydraulic design of 3.0 MGD. The plant can be expanded to 4.5 MGD (ultimate design capacity) if the need arises. The WWTP has an administration building, which houses the billing office, conference room, laboratory, various administrative and plant offices and a maintenance shop/garage area. The raw sewage enters the facility from the collection system where it is pumped (lifted) up to the treatment units via the screw pump lift station. The forward flow then moves by gravity through the rest of the treatment units which include (in order) bar screen and grit removal process, primary clarifiers (2), oxidation ditch treatment process, secondary clarifiers (2), and the final disinfection and metering process prior to final discharge of effluent to Black's Creek. The sludge processing train includes sludge thickening and dewatering units prior to offsite sludge disposal. The WWTP is operated efficiently and economically. The facility has received the highest USEPA award for operations excellence.

The City of Bordentown's wastewater is conveyed from the City's conveyance piping to a BSA trunk line and then to the WWTP. The BSA wastewater flow is approximately 1,800,000 gallons per day (GPD) and continues to slowly increase as commercial and residential development continues in the approved public sewer service area of the Township. There is very little flow increase attributable to the City since almost all developable land has already been developed. There is no reservation of capacity. Capacity is delegated on a first-come first-served basis.

Current BSA treatment plant capacity values are:

Plant permitted capacity	3,000,000 GPD
Actual flow	1,800,000 GPD

As mentioned previously, the Ocean Spray WWTP provides wastewater treatment for its industrial process and discharges the effluent to the BSA sewer system on Park Street. Ocean Spray's wastewater discharge is regulated by both the NJDEP and BSA.

WATER SUPPLY

Potable water for consumption and fire fighting is provided in the City by an underground piping system which is owned, operated, and maintained by City of Bordentown Water Department. The potable water is supplied by the City of Bordentown Water Filtration Plant

located just off Route 206 in Hamilton Township. One water storage standpipe (capacity 0.8 mg) is located at Guilder Field in the City. There is another storage tank in the Township (capacity 4 mg) behind the Township Public Works garage. The water system serves the City and Bordentown Township directly while the Borough of Fieldsboro purchases water at a bulk rate for sale to its residents. The water distribution system consists of 10, 12, 14, and 16 inch transmission mains with smaller line sizes down to 2 inches. Currently the Water Department owns and maintains about 70 miles of water mains in the City and Township.

In the late 1980s and early 1990s, the Water Department undertook a major cement relining program to restore the carrying capacity of the 10 and 14 inch transmission mains from the water filtration plant into the City and Township. Over 34,000 feet of 8, 10, 12 and 14 inch diameter water distribution mains were relined with cement. The effect of this cement relining program improved flow and available pressure especially in the City and northern portion of the Township.

The City of Bordentown Water Treatment Plant was constructed in 1976 at the site of the original facility. The NJDEP Water Allocation Permit 5156 allows the Water Department to divert up to 90 million gallons per month at a maximum rate not to exceed 4 million gallons per day (MGD). The water supply consists of the following four wells and their maximum capacities:

- Well 1 800 gpm 1.152 MGD
- Well 2 900 gpm 1.296 MGD
- Well 3 1100 gpm 1.584 MGD
- Well 5 740 gpm 1.066 MGD

Well 5 is an emergency well and not normally used. The condition of each of the 4 wells is good to excellent. Wells 1, 2 and 3 have undergone major maintenance upgrades in the last 10 years and Well 5 is only 8 years old. All of the wells are over 100 feet deep and utilize the Magothy-Raritan geological formation for groundwater supply. Average daily water demand is about 2.0 MGD. The maximum daily demand is 2.7 MGD. Water supply is currently adequate for the needs of the City.

STORMWATER

The City of Bordentown is located adjacent to the Delaware River. Topography for the City slopes gently from east to west (towards the Delaware). Precipitation falling in the western and southern portions of the City runs off to water-courses that flow to the Delaware River (Blacks and Thorntown Creeks). The precipitation events generate stormwater which, until 2003, was not required to be permitted. As a result of the United States Environmental Protection Agency's (USEPA) Phase II Rules, the NJDEP has developed the Municipal Stormwater Regulation Program. This program addresses pollutants entering our waters from certain storm drainage systems owned or operated by local, county, state, interstate or federal government agencies. These systems are called "municipal separate storm sewer systems" or

MS4s. The City received its general permit No. NJ0088315 in March 2004. The City is considered a Tier A Municipality.

Under the NJPDES Municipal Stormwater Regulation Program Tier A, the City has the following requirements:

- The City must prepare and implement a written Stormwater Pollution Prevention Plan (SWPP) that describes the city's stormwater program and serves as a mechanism for the implementation of the statewide basic requirements (SBRs). The SWPP is due on April 1, 2005.

- The City is required to adopt a stormwater management (SWM) plan in accordance with N.J.A.C. 7:8-4 by April 1, 2005.

- Within 1 year from the SWM plan adoption, the City must adopt a stormwater control ordinance in accordance with N.J.A.C. 7:8-4.

- The City, in conjunction with the Bordentown City Environmental Commission (BCEC), will copy and distribute an educational brochure (provided by NJDEP) annually to residents and businesses, and conduct a yearly educational event by April 1, 2005.

- Adopt ordinances, by October 1, 2005 for :

    - Pet Waste Ordinance
    - Litter Ordinance
    - Yard Waste Ordinance
    - Wildlife Feeding Ordinance
    - Ordinance prohibiting illicit connections to the MS4.

Stormwater management facilities provide flood protection, promote ground water recharge, prevent soil erosion and enhance the quality of groundwater and surface water.

Flood Control

There are very few areas of the City that are impacted by flooding. Flooding does occur along the Bordentown Beach area (adjacent to the Delaware River). Another area of flooding is at the end of Limekiln Alley along Blacks Creek. There are four residences at the bottom of the street that have been impacted by flooding from Blacks Creek over the years. Those four homes are going to be purchased and the area will be preserved as open space. Other areas of the City, besides the floodplains along Blacks Creek and Thorntown Creek, are not impacted by flooding.

Neither the frequency nor magnitude of flood events in the City of Bordentown has changed to a noticeable degree during the past 20-year period of land development. The use of best

management practices, including prohibition of construction within floodplains, must be continued.

Groundwater Recharge

Groundwater recharge is necessary to resupply the aquifers from which potable water wells draw. All of the groundwater for potable consumption in the City is drawn from the Magothy-Raritan geological formation. The characteristics and magnitude of groundwater recharge is dependent on many factors. Land development (including farming) can substantially impact groundwater recharge. Residential and commercial development thwarts recharge by covering the soil, compacting the soil, and piping away runoff. These negative impacts can be substantially mitigated by appropriate zoning and implementation of NJDEP best management practices. These could include vegetated buffers, appropriate native plantings, preservation of natural areas, filter strips, pervious pavement and minimizing soil disturbance, among others. This Master Plan revision will generate new maximum impervious coverage (MIC) requirements for any new or redevelopment projects. General limitations for MIC are also part of the new MS4 Stormwater regulations.

Water Quality

Unrestricted runoff from developed sites transports contaminants into environmentally sensitive areas and watercourses. Again, negative impacts can be mitigated by best management practices. In new development projects water quality is enhanced by detention basins because the discharge is slowed and silt and oils are settled out before they enter surface water or groundwater. For new or redevelopment projects appropriate stormwater management options should be evaluated.

Solid Waste

The City's Public Works Department collects trash on a twice-per-week schedule. Every Wednesday brush and leaves are picked up. Metal items are picked up by the City separately. Large items such as sofas, mattresses, etc., building materials, trees and household paint can be dropped off by City residents (with appropriate identification) to the Department of Public Works located on Gilder Park Road on Saturdays between the hours of 8 AM to Noon. Burlington County operates all the recycling activities in the County and provides this service to the City as well, including twice-monthly curbside pickup of cans, bottles, paper and cardboard.

Power Supply and Telecommunications

PSE&G is the power company that supplies electricity and natural gas to the City of Bordentown. The power is supplied from the Mercer Generating Station which is located on Duck Island and is 3 miles north of the City. The station uses state-of-the-art environmental control technology, including electrostatic precipitators to remove particulates and selective non-catalytic reduction for nitrogen oxide control. There is also a transformer station on Oliver Street.

If new telecommunications facilities are required they should be co-located on existing towers such as utility towers. If a new tower or monopole is necessary because of radio frequency requirements, it should be capable of accommodating additional carriers so as to limit the number of towers within the City of Bordentown.

RECOMMENDATIONS

General Utility Systems

1. Encourage cost effective extensions of utilities by private property owners through fair share cost reimbursement agreements.

2. Require new development to pay its proportionate share of any off-tract improvements for utility services, to the extent permitted by law.

3. Require existing above ground utilities to be relocated for redevelopment projects to the extent allowed by law.

4. Require co-location of new telecommunications facilities whenever feasible.

5. Evaluate sewering of any unsewered areas of the City which do not have wetlands. Sewer service should be made available to the waterfront area along Crosswicks Creek from the yacht clubs to the River Line crossing of Crosswicks Creek.

6. Require that new development within the sewer service area be served by sewer, and all new development be served by public water.

7. The City should conduct a study to see if wireless internet service (WiFi) is viable within the City.

Wastewater

1. The City should investigate whether it is appropriate to reserve some capacity for future development.

Water Supply

1. Identify water supply demand for any new project and inform the Water Department.

2. The City should continue to own and manage the Water Treatment Plant and distribution system.

Stormwater Management

1. Amend City ordinances to conform to the adopted master plan, NJDEP MS4 Regulations, the RSIS, and require best management practices.

2. Encourage planting in the bottom of stormwater detention basins to enhance water quality and basin appearance.

3. Encourage groundwater recharge through the use of porous pavement, vegetated buffers, reduced impervious coverage, appropriate native plantings, preservation of natural areas, and minimizing soil disturbance, among others.

4. The City should conduct a study to determine if adoption of low impact development techniques would be of benefit to the City. These could include grey-water systems, green roofs, vegetation plantings, etc., among others.

5. Evaluate retrofitting stormwater outfall pipes and reduce and remediate stream scouring from stormwater where appropriate.