

Section 7

Town of West Bridgewater - Wastewater Needs

7.1 Background

The Town of West Bridgewater is located in Plymouth County approximately 26 miles south of Boston. US Route 24 runs along a portion of the western border of West Bridgewater, providing good highway access. West Bridgewater is bounded by Easton to the west; Brockton to the north; East Bridgewater to the east; Bridgewater to the south; Raynham to the southwest. From 2010 census data, the population of West Bridgewater is 6,916 – one of the smaller towns in the region.

West Bridgewater lies completely within the boundaries of the Taunton River Basin. West Bridgewater has three major rivers; Town River, Salisbury Plain River, Hockomock River; and six brooks; Black Betty Brook, Bragas Brook, West Meadow Brook, Willow Brook, One Mile Brook, Coweaset Brook. All of the streams eventually flow to the south and feed the Taunton River.

Population:	6,916 (2010 census)
Land Area:	15.74 square miles
Location:	Northeast Quadrant of the Upper Taunton River Basin
RPA:	Old Colony Planning Council

There are currently very few sewerage parcels in West Bridgewater – they are limited to two manufactured home parks in the northeast area of the town on North Main Street (Route 28), and a few other businesses along that section of road. More than 95% of the developed parcels in West Bridgewater have an on-site wastewater disposal (septic) system for wastewater management and nearly 99% of developed properties in West Bridgewater receive municipal water service. West Bridgewater is located within the Old Colony Planning Council (OCPC) District.

7.2 Previous Studies

7.2.1 Town of West Bridgewater Master Plan (November 2001)

A Comprehensive Plan was developed in 2001 by Larry Koff & Associates to identify growth patterns and projections for West Bridgewater. The Comprehensive Plan identified two major areas for economic development in West Bridgewater:

- Central Square/Rte 106
- Manley Street Industrial area

The study cites poor soils and lack of a municipal sewer system as limiting factors for development.

7.2.2 Project Evaluation Report

A Project Evaluation Report (PER) was developed by SEA Consultants for the Town of West Bridgewater in 2004. The PER outlined the town's historical development and natural characteristics, wastewater management systems, water supply and distribution, stormwater management systems, and future conditions. The report closes with the areas of town that need to be investigated further, but specifically focuses on the solutions available for the then current surface water discharges at the Howard School and Rose MacDonald School. The report presented some possible solutions but recommended further study to develop conclusive solutions.

According to the report the Town of West Bridgewater is located in a low area in the watershed and, as a result, it is subject to considerable flooding during the 100-year flood event. The surficial geology consists of mostly poorly drained soils and deposits, which are not well suited for subsurface disposal of effluent. Data used to determine surficial geology is approximate at best, according to the geology source, MassGIS. A town-wide account of soils was also given (referenced to the Open Space plan and the town Comprehensive Plan).

There are about 2,300 residences in the Town of West Bridgewater that use on-site disposal (septic) systems. Most of these systems are conventional septic systems (septic tank and absorption field). The board of health estimated that as many as 25 percent of the existing on-site wastewater management systems were cesspools. A cesspool is single stage disposal solution, which consists of a "tank" with an influent line that receives wastewater and holes along the periphery that allows it to leach into the soil, most times with inadequate treatment. Because of the lack of environmental awareness when these systems were installed, very often, systems were installed in, at, or below the seasonal high water table, which does not allow for proper treatment of the discharged wastewater prior to contacting the groundwater, thus resulting in groundwater contamination.

According to the report, there were 8-10 tight tanks in town. Tight tanks do not discharge any wastewater to the surrounding soil. The only way wastewater is

disposed from a tight tank is through regular pump-outs. Hair salons and other “high chemical load” businesses are connected to tight tanks.

The report listed four large disposal systems in operation. United Liquors and Chadwicks of Boston both had design flows in excess of 9,000 gallons per day (GPD), and Shawmut Mills and Trucchi Supermarket had flows less than 5,000 GPD.

The study focused on the two municipally operated disposal systems, the 9,800 GPD Howard School System and the Rose L MacDonald Septic System, which at the time of the report were operating under an Administrative Consent Order (ACO) from Massachusetts Department of Environmental Protection (DEP) and National Pollution Discharge Elimination System (NPDES) Permits for each system.

The report also proposed some suggestions for further study – the further investigation of the two NPDES permitted wastewater disposal sites, and possible groundwater recharge options for flows less than 10,000 GPD at each of these two sites.

7.2.3 Water Asset Study

Earth Tech conducted a Water Asset Study (WAS) for the Town of West Bridgewater through the Executive Office of Environmental Affairs (EOEA) in 2004. The WAS used results of a buildout analysis (2001), conducted by Applied Geographics using GIS. One goal of the study was to identify existing and future water supplies in order to provide information that would allow the town to take further steps to protect current and future public water supplies. The WAS reported that West Bridgewater’s 5-year average daily demand was 0.68 million gallons per day (MGD), with a peak year average daily demand of 0.76 MGD. According to the WAS, West Bridgewater’s approved daily volume is not computed, because not all of the town’s wells have been assigned an individual approved daily volume (Zone II) limit. The WAS reported that West Bridgewater’s buildout water demand, based on EOEA growth projections, was 3.15 MGD, a demand far exceeding the town’s current capacity (represents 256% of the total WMA regulated annual withdrawal of 1.23 MGD). The WAS reported that the Town is seeking a bedrock supply well as a solution to augment current supply and meet the projected future demand.

Mapping conducted in conjunction with the WAS identified potential “Water Supply Protection Areas” (WSPA). Approximately 28% of West Bridgewater’s land area is a potential WSPA; 65% of that area is potentially developable based on the existing town zoning (12% industrial, 1% Commercial, 52% residential, and 36% protected or otherwise constrained land). *(Percentages add to greater than 100% due to rounding error).*

7.3 Existing Infrastructure

The following sections summarize and discuss updates to the factors evaluated during the PER process.

7.3.1 Current Land Use

Based on information in Section 1.2 of the PER, the total developed land area in the Town of West Bridgewater is 2,372 acres, which is divided among residential, commercial, industrial and public/utility zoning districts:

Table 7-1. West Bridgewater Zoning Coverage and Developed Areas

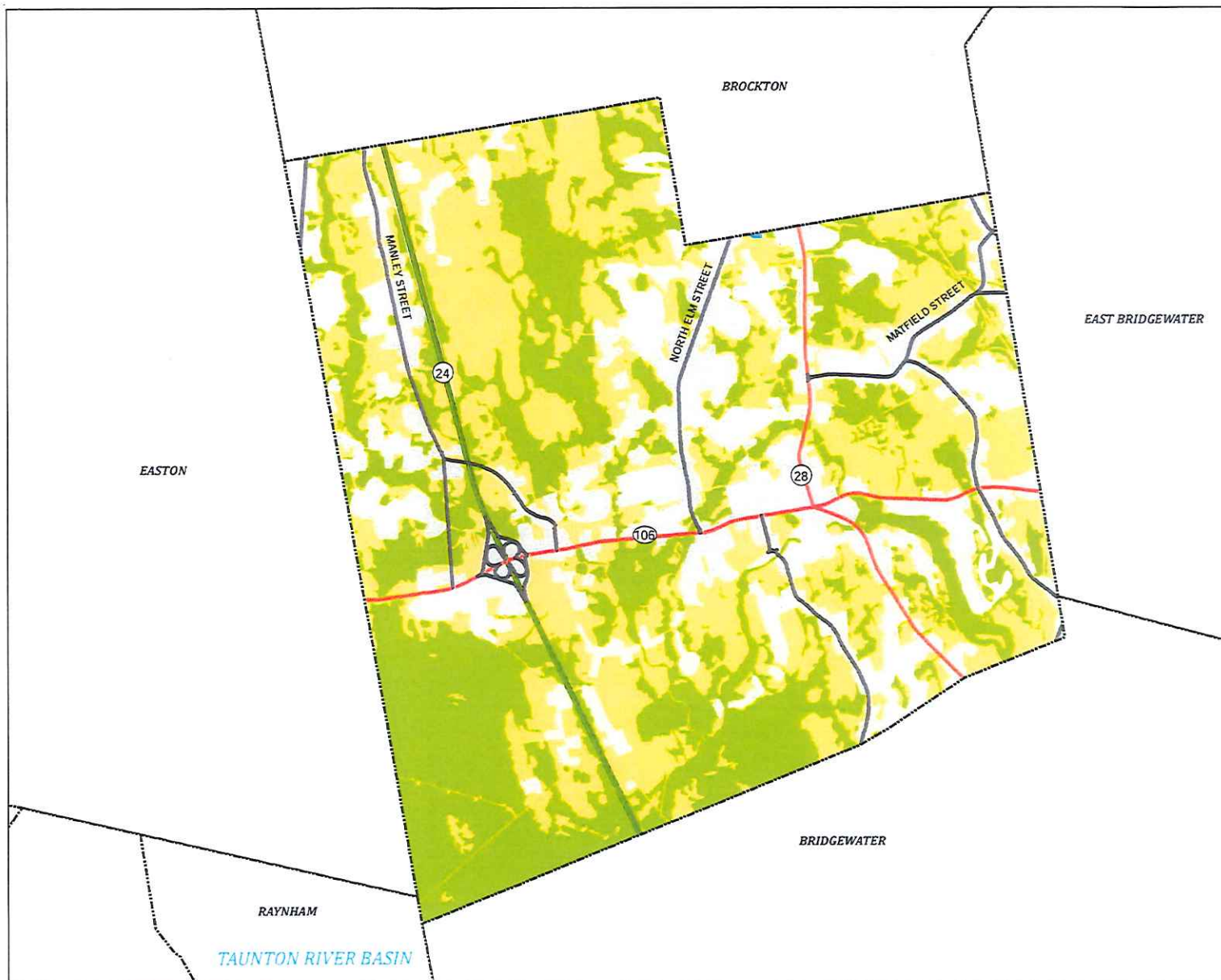
District	Percent of Town Coverage	Zoning Coverage Acres	Percent of Developed Area
Residential	16.2%	1,564	65.9 %
Commercial	1.8%	170	7.2 %
Industrial	2.6%	251	10.6 %
Public/Utility	4.0%	387	16.3 %
Total	24.6 %	2,372	100 %

The remainder of land area in West Bridgewater (approximately 7,114 acres) is undeveloped - either agriculture (1,653 acres) or vacant land (5,461 acres), as shown in Figure 1.

7.3.2 Wastewater

A limited number of properties within the Town of West Bridgewater are sewered. The remainder of the developed properties rely on some form of on-site system (typically septic systems) for wastewater management. According to West Bridgewater town officials and the Brockton Sewer Department, sewered parcels in West Bridgewater are billed directly by Brockton using water meter readings provided by the West Bridgewater Water Department. Based on a conversation with the Brockton Sewer Department, sewered parcels include the following:

- The Shaws shopping center on Route 28
- Matfield Woods manufactured housing park near the Brockton city line
- Westbridge Landing manufactured housing park near the Brockton city line
- McDonalds Restaurant on Route 28
- 2-3 residential lots on Samuel Avenue
- 2 other businesses on North Main Street (Route 28)



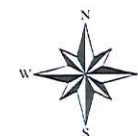
CURRENT LAND USE STATUS

FIGURE 1

**TOWN OF
WEST BRIDGEWATER,
MASSACHUSETTS**

LEGEND

- Water
- Developed Areas
- Undeveloped Areas
- UnDevelopable Areas
- Major Basins



0 0.5 1 Miles

Figure 2 shows the approximate areas that are served by public sewers.

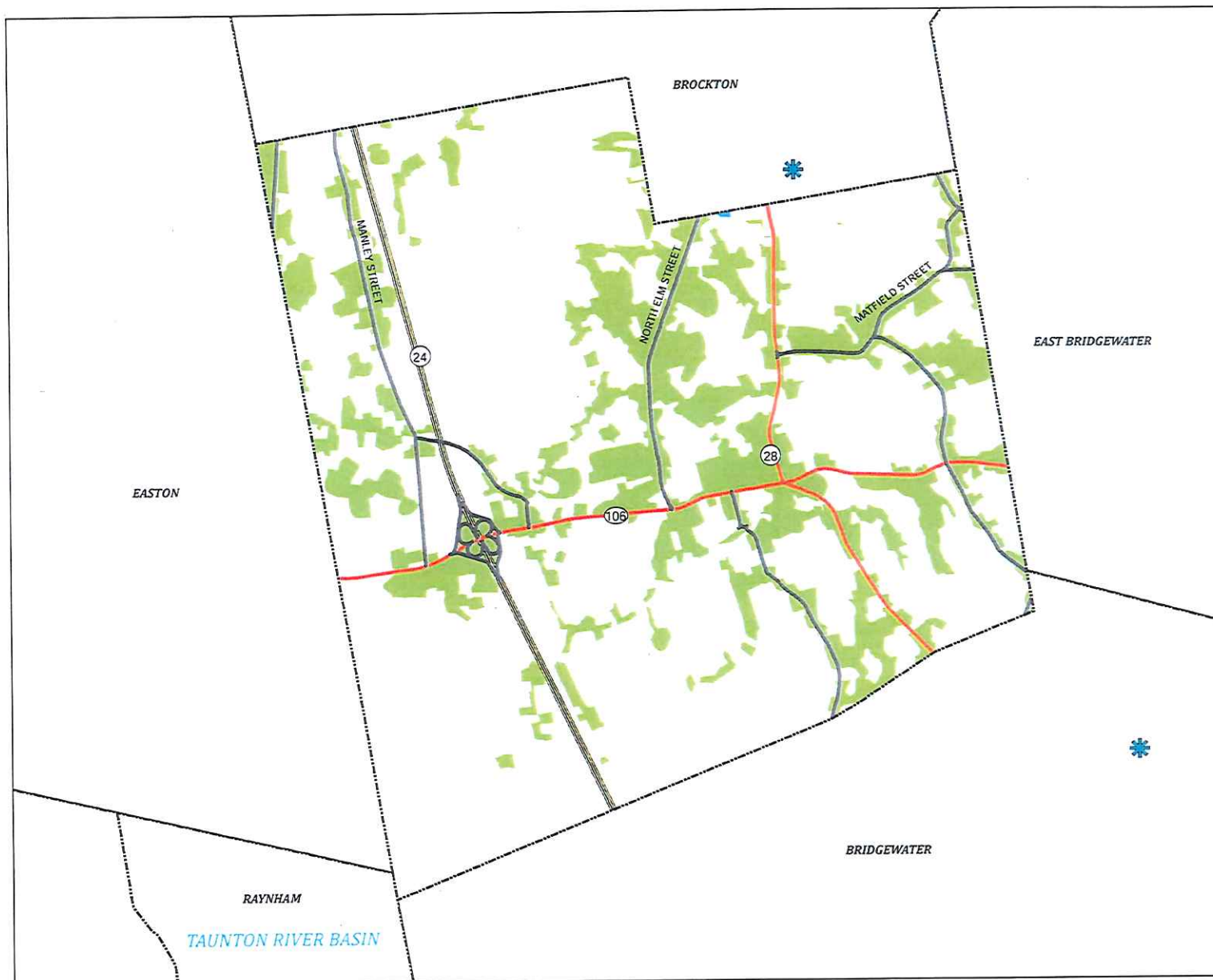
There are five commercial and one residential innovative/alternative (I/A) subsurface disposal systems in the town. The five commercial systems were installed due to their location in the Zone II well protection area (three are in the Manley Street industrial park, and two are located in the northeast part of town in the other Zone II well protection area). The one residential system was installed due to siting issues and low permeability of the receiving soils.

According to the town's consulting engineer and health agent, large disposal systems (greater than 2,000 GPD) can usually be found where there are commercial businesses, especially restaurants. Specifically, some of the largest systems are located in Manley Street industrial park and West Center Street commercial area (west of Rte. 24); Liberty United Drive LLC, (formerly United Liquors) has a large system; the building formerly occupied by Chadwicks of Boston, has a groundwater discharge permit for a flow of 23,500 GPD; and the Shawmut Mills large system referenced in the PER (less than 5,000 GPD) is still in operation. On West Center Street, The Life Care nursing home, strip mall and restaurants located there all have large systems. The Lowes Plaza has multiple systems on that site. A Chili's Restaurant was built on that site in 2009 with a 7,000 GPD system. There is also a restaurant with a 7,000 GPD system planned. Large systems are not limited to that area though. Trucchi's Supermarket on East Center Street (4,100 GPD) had a new soil absorption system installed in 2009 about a ½ mile away from their site, to provide adequate soils for the subsurface leaching system.

The town completed a 9,800 GPD Title V compliant system in 2009 to replace the Howard School System. The new system serves six buildings; The High School, Howard School, Spring Street School, Police/Fire station, Senior Center and the library. The Rose L. MacDonald system pilot study was cancelled in favor of a Title V compliant system and eliminating the NPDES permit, which has been constructed and in operation for two years. A large septic system, similar to the system that was recently completed for the Howard School, has more recently been installed for the Rose MacDonald School, to eliminate the NPDES discharge and permit.

7.3.3 Water

Figure 3 shows the water service areas and Zone II areas in West Bridgewater. The Town's water supply is obtained from five active wells:



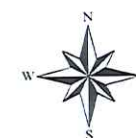
CURRENT WASTEWATER MANAGEMENT STATUS

FIGURE 2

**TOWN OF
WEST BRIDGEWATER,
MASSACHUSETTS**

LEGEND

- WWTF
- Water
- Sewer Service Areas
- On Site Systems
- Major Basins



0 0.5 1 Miles

- Cyr Street #1
- Norman Ave #2
- Manley Street #3
- Cyr Street #4
- Cyr Street #5

According to the Project Evaluation Report (PER), West Bridgewater's WMA permit is regulated at an annual withdrawal of 1.53 MGD (increased from 1.23 MGD in 2005 according to the town's DEP Water Withdrawal Permit #9P-4-25-322.01). The Town of West Bridgewater owns the former Robbery Farm located east of North Elm Street where a possible new town water supply well could be located when needed.

The town has approximately 65 miles of water main and about 2,600 connections. Discussions with the Town of West Bridgewater's Water Superintendent confirmed that nearly 99% of the developed parcels in town receive public water supply. Known large water users are as follows:

Table 7-2. West Bridgewater Large Water Users

Location	Water Usage (GPD)
McDonalds Restaurant	1,369
Liberty United Drive LLC (formerly United Liquors)	1,809
Trucchi's Supermarket	4,100
Shawmut Mills	4,907
Charlie Horse Restaurant	5,753
Westbridge Landing manufactured housing park	7,156
Shaw's Supermarket	8,508
Matfield Woods MHP	12,469
Life Care - West Center St Nursing home	16,504

Note: Flow data is the average of the last three years usage where available

7.4 Natural Resources

7.4.1 Massachusetts GIS Mapping

Figure 4 was developed from MassGIS mapping for the natural resources discussed below.

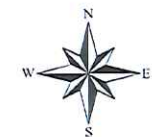
NATURAL RESOURCES IN UNSEWERED AREAS

FIGURE 4

TOWN OF
WEST BRIDGEWATER,
MASSACHUSETTS

LEGEND

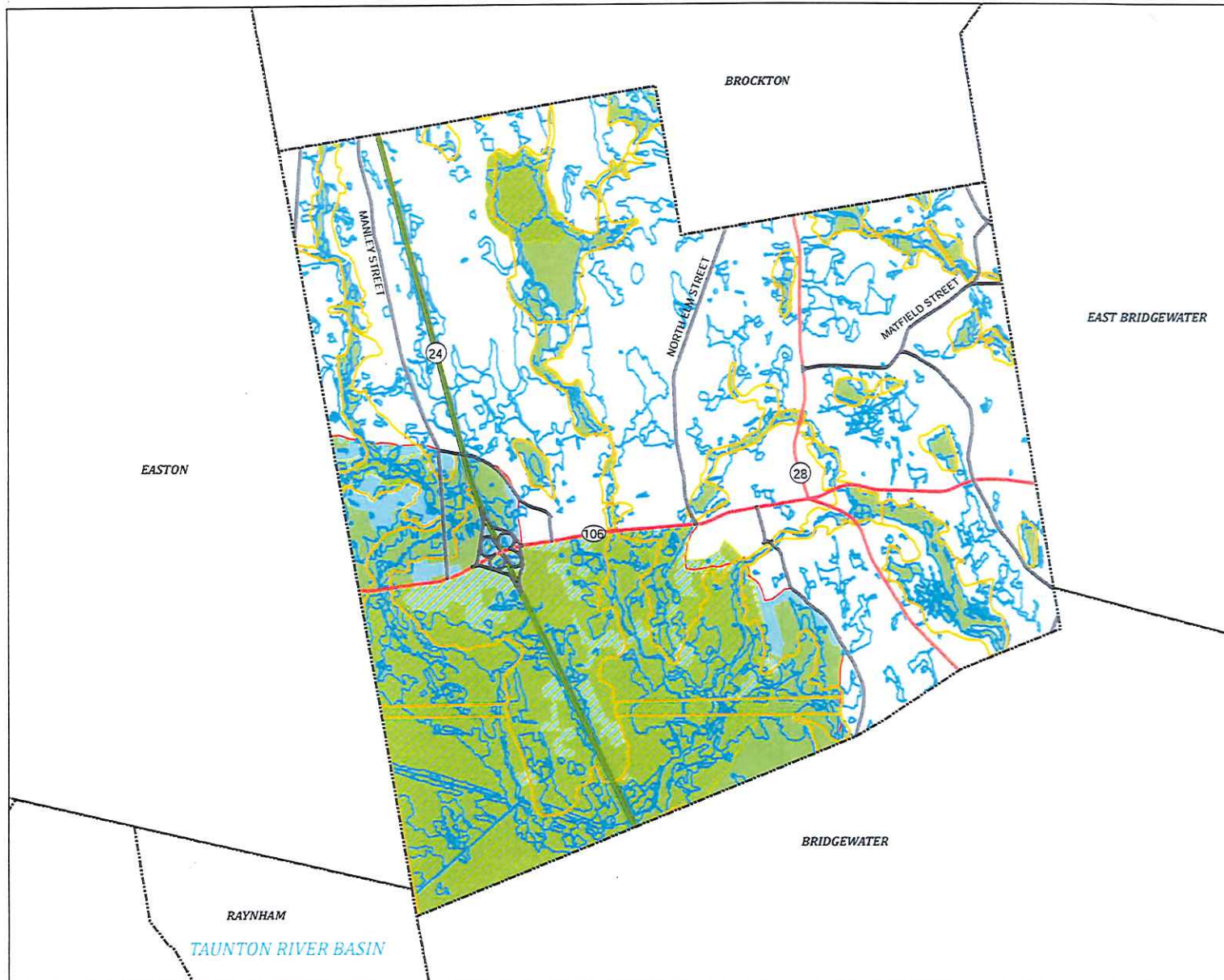
-  Water
-  100 Year Flood Zone
-  DEP Wetlands
-  NHESP Priority Habitats of Rare Species
-  NHESP Estimated Habitats of Rare Species
-  Area of Critical Environmental Concern
-  Developed Areas with One or More Natural Resources Present
-  Undeveloped Areas with One or More Natural Resources Present
-  Major Basins



0 0.5 1 Miles

MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION
OLD COLONY
PLANNING COUNCIL

**CDM
Smith**
Weston & Sampson



\\C:\projects\1\Projects\Town of West Bridgewater\Map\Figure 4_WestBridgewater.mxd

7.4.2 Wetlands

The Town of West Bridgewater has a significant amount of wetlands. A large portion of the southwest corner (1,025 acres) of the town is part of the Hockomock Swamp. At 16,900 acres, the Hockomock Swamp is one of the largest in New England. The swamp is a very important resource in the area because it is an integral part in filtering stormwater runoff prior to recharging the groundwater or flowing into the Taunton River. The swamp area and its adjacent upland area is part of a DEP designated Area of Critical Environmental Concern (ACEC). ACEC areas are not restricted from development, but developments are subject to a strict review process, which includes public comment, prior to any changes being executed. There are various other areas in town with protected wetlands that are either owned by the state or the town. (Figure 4)

7.4.3 Rare and Endangered Species

According to the "Core Habitats of West Bridgewater" report by the Massachusetts Natural Heritage & Endangered Species Program and data from MassGIS, estimated habitats of rare wildlife and priority habitats of rare species occur in two areas of West Bridgewater. The report identifies the two areas as north of the West Meadow Pond and the Hockomock Swamp area. The area north of the West Meadow Pond is an emergent freshwater marsh, which is habitat for the King Rail, a threatened bird species. The Hockomock Swamp area is a critical habitat for several rare species including the blue spotted salamander and spotted turtles. Both of these areas are already protected from development. (Figure 4)

7.5 Wastewater Management Needs

The completed sections of the PER briefly explain the analysis used to identify areas of West Bridgewater where possible treated effluent recharge solutions may exist. Despite the fact that town-wide mapping was used in the formulation of the report, groundwater recharge was only considered as a possible solution for the Howard School and Rose MacDonald systems.

The Town of West Bridgewater began to log septic system inspection results in 2007. Hand-written records for system installation permits were kept until 2004, when they began entering the information on an Excel spreadsheet. The records do not specify whether the system was new construction or replacement of a failed system. The Board of Health records are being added into the town-wide GIS maintained by the water department. During our meetings with town representatives, they indicated

that there is no one specific area that has been more susceptible to failure. Failures have occurred sporadically in various sections of the town rather than concentrated in one or only a few locations.

Based on the PER and soil properties from available soil maps, the soils in the town are generally not well suited for on-site disposal systems. Many areas have slow to very slow permeability in the subsoil. One such area is the River Bend Country Club, which has mostly silt-loam deposits and a high water table. Exceptions to this are the Manley Street/Walnut Street and northern portions of Pleasant Street, Matfield Street/East Street area. These areas have good permeability and are well suited for subsurface absorption systems. However, much of this suitable soil is located in the Zone II wellhead protection zone and the well protection overlay district. There are currently no restrictions to locating a soil absorption system within the overlay district, but that may be subject to change. This is a major limiting factor for on-site disposal system siting and may be an obstacle for further development in the town.

The Salisbury Plain River is listed as an "impaired" waterway (MA62-06). This is due primarily to receiving effluent from the Brockton Advanced Wastewater Treatment Facility (WWTF). Interviews with town officials confirmed that there has been a very serious problem with flooding at one of the mobile home parks in the Salisbury Plain River area (North Main Street) during significant wet weather events. The town has incurred significant expense to temporarily relocate the residents to area hotels while the mobile home park area is cleaned. The owner of the park completed measures to mitigate future flooding impacts between 2008 - 2011. There has been no flooding since.

Based on this review, areas of need were identified in West Bridgewater which primarily include industrial and commercial areas. Town officials have indicated that they would be interested in a sewer connection alternative if it were available and cost effective.

The Manley Street industrial park is very limited in its development capabilities without an area-wide wastewater disposal plan. In addition to the industrial area being located within the Zone II well protection area, there are also considerable wetland areas located along Manley Street, which further constrains development options.

The municipal buildings complex in the Howard Street area will be well served by the new disposal system constructed in 2009. The NPDES permit for this discharge was eliminated by construction of a Title V compliant system.

During the meeting with town officials, they expressed a desire to only provide sewer service to industrial and commercial areas. The total buildable area was taken from the EOEA WAS (referenced to the EOEA buildout study) of 6,935 acres (72% of the total town area). The West Bridgewater Comprehensive Plan (Larry Koff & Associates) was careful to point out that much of the "buildable" area referenced in the EOEA buildout analysis is constrained from development because of restrictive soils (with respect to on site sanitary disposal systems). Since soils are less of a restriction to development when sewer is available, the entire area was considered for the projected needs calculation. Of the 6,935 acres, 1,038 acres is commercial and industrial, the remaining 5,897 acres is residential. The total developable acreage does not include areas restricted from development such as open space and wetlands.

An average projected flow of 600 GPD per acre was used for the commercial/industrial area. This value was derived by assuming a building floor area ratio of 0.35 with two employees per 1,000 square foot of building and 20 gallons per day per employee (per Title 5) estimated flow. The estimated wastewater flow results for the anticipated future development would be approximately 620,000 GPD for the 1,038 acres of area identified for wastewater needs in the commercial/industrial/municipal zone.

7.6 Interviews with Town Officials

On April 18th, 2008, representatives from the Project Team and the Massachusetts Department of Environmental Protection met with representatives from the Town of West Bridgewater to discuss the Upper Taunton River Watershed Regional Wastewater Evaluation Project. Town representatives who participated in the meeting included the Town Administrator, the Chairman of the Board of Health, Town Selectman/Chairman of the CWMP Committee, and the town's consulting engineer.

The main concerns with wastewater management discussed during this meeting included:

- A desire for economic growth in the existing Manley Street industrial area of West Bridgewater.
- A desire to keep the town population at current levels.
- Keep the residential areas with on-site subsurface disposal systems.
- Lack of availability of funds.

Town representatives are generally supportive of expanding the number of sewer connections to the Brockton sewer system for the North Main Street (Rte 28) business district and the Manley Street area. It is generally viewed, however, that overcoming challenges that exist for that option is highly unlikely at any point in the near future.

As part of this continuing project, a follow-up meeting was held with West Bridgewater representatives on March 23, 2011. Representatives from Weston & Sampson Engineers, Inc., the Massachusetts Department of Environmental Protection and the Old Colony Planning Council attended this meeting with the Town Administrator and representatives of the Department of Public Works. Progress on the Upper Taunton River Watershed Regional Wastewater Evaluation Project was discussed as well as changes in the community that may be of importance to the regional perspective of this project. West Bridgewater's wastewater management situation remains relatively unchanged since our initial meeting, with the exception that the extent of the potential future wastewater needs area have been reduced. Topics discussed include the following:

- The Rose MacDonald School septic system and the Howard School septic system are operating well.
- Development rate is down due to the slow economy and the limitations associated with siting commercial/industrial uses and on-site septic systems on the same lot.
- Manley Street area (west of Route 24) remains the highest priority for future sewerage. Extents would likely be focused from the intersection with Route 106 to the town line in Brockton.
- The previously projected wastewater needs value is likely high for this industrial-zoned area. If industrial uses were not restricted by on-site septic systems, the 200± acres of existing industrial development may increase to around 400± acres (based on undeveloped land in this area). Based on development in surrounding communities with sewer access available, a lower density of development would be expected and therefore, the flows would be reduced to approximately 500 GPD/acre and total flows on the order of those shown in Table 7-3, below.

Table 7-3. West Bridgewater Projected Wastewater Needs- Revised

Area Description	Land Area (acres)	Est. Wastewater Flow (MGD)
Industrial- Existing Development	200	0.10
Industrial- Future Re-development	400	0.20

7.7 Alternatives Analysis Information

Wastewater alternatives considered in the West Bridgewater report are:

- Regional disposal alternatives
- Wetlands augmentation
- Centralized sewer system alternatives

Significant areas of West Bridgewater are within the Flood Plain Overlay District and/or the Water Supply Protection District, which limits development potential of the undeveloped parcels. Additionally, subsurface soil and groundwater conditions are less than desirable for septic system siting, which limits both development and redevelopment potential in West Bridgewater.

Wastewater collection system extension into West Bridgewater from abutting municipalities may be an option in the future depending upon the political and financial climate at the time. It may be advantageous to explore a regional alternative to the Manley Street industrial area, and the possibility of extending sewer service on North Main Street when and if the need arises. Development in those areas may be limited without a centralized collection system due to restrictive soils and well zone protection areas.

It is clear through discussions with the town representatives and after studying the available areas in town, there is little need or desire to provide centralized wastewater collection and processing outside of the two identified commercial and industrial areas. OCPC's Coweaset Brook study examined ways to cooperatively draw on local communities' assets (Brockton's sewers and West Bridgewater's and Easton's water supplies) to develop a three-community economic development area.

7.8 Conclusion and Recommendations

Based on the study of the West Bridgewater's needs (and wants), it seems that no one solution may be the answer. The town officials' desire to maintain a "small town" feel, and their desire to expand their industrial area brings its own challenges. West Bridgewater's extensive poor subsoil greatly limits the subsurface discharge options. No viable sites have been identified.

The Sewer needs areas discussed in Section 7.5 have been revised to include a focused industrial area along Manley Street west of Route 24. The needs area previously

included the commercial strip between the Town Center and the Brockton line along Route 28, several of which are currently connected to the Brockton system; and between the Town Center and Route 24 along Route 106 (West Center Street), which is no longer seen to be a priority area for sewerage.

Based on our earlier discussions with West Bridgewater Officials, the Manley Street area is a much higher priority area for sewer service, since the other commercial corridors are not as developed. Similarly, since much of the municipal building complex is served by a relatively new shared septic system, the needs for "public" sewers in the Town Center are not nearly as important from an economic development standpoint.

Extending sewers further south along Route 28 and then to the west along Route 106 may not be needed for many years to come. Therefore, the near-term sewer needs for the Town should be limited to redevelopment of an estimated 200 acres of predominately industrial zoned land along Manley Street, west of Route 24, as depicted in **Figure 5**. Near term wastewater flow from this potential re-development may be as much as 0.10 MGD.

It is estimated that this area, when fully developed, could encompass approximately 400 acres of predominantly industrial-zoned uses and could generate approximately 0.20 MGD of average daily flow. There is no site that can handle 100,000 GPD discharge in West Bridgewater. There are no sites that could handle discharge from a major development site on Manley Street.