ASHBY VILLAGE PUBLIC SEWER FEASIBILITY STUDY

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and
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INTRODUCTION

The Town of Ashby has been working to develop more sustainable land use practices and the Ashby Village Public Sewer Feasibility Study will assist with this effort. The Town of Ashby has a strong vision to maintain its rural and agricultural character by moving away from a suburban sprawl model of development to a more dense village center. This will take the pressure off building in the outlying areas of Town, however, to compact development in the Town Center there must be infrastructure to handle the wastewater discharge. According to the Town's 2004 Community Development Plan, the plan recommends to "study wastewater management options for Ashby Center that would permit more development". The Ashby Village Public Sewer Feasibility Study will complete this objective and the Town of Ashby has asked the Montachusett Regional Planning Commission (MRPC) to assist with this study.

On March 22, 2010, The Town of Ashby submitted a request for District Local Technical Assistance (DLTA) service from the Montachusett Regional Planning Commission (MRPC). MRPC awarded DLTA to the Town of Ashby on March 30, 2010 to perform an Ashby Village Public Sewer Feasibility Study. The DLTA program provides technical assistance at no cost to the Town of Ashby and is funded through the Massachusetts Department of Housing and Community Development (DHCD). The DLTA program was established by Chapter 205 of the Acts of 2006, which enables staff of Regional Planning Agencies (RPAs) such as MRPC to provide technical assistance to communities for "any subject within regional planning expertise".

The Ashby Village Public Sewer Feasibility Study funded through the DLTA program provides the Town of Ashby with guidance for design, costs and funding sources for appropriate wastewater treatment in their village center. Suitable wastewater treatment will allow for public buildings in the Town Center to be fully utilized and will permit further business development. Even without additional development, the current on-site wastewater disposal is no longer practical in the village center due to its generally small sized lots. Some of the existing septic systems are failing in the village center including the Town Hall. This study will present options to solve Ashby's wastewater treatment issues.

Public Outreach

Montachusett Regional Planning Commission held an initial public kick-off meeting for the Ashby Village Public Sewer Feasibility Study Project on June 15th, 2010 at 7 PM at Ashby Town Hall. There were additional phone and email contact with town officials regarding this study. A public meeting will be held on October 13, 2010 at 7 PM at Ashby Town Hall to discuss the draft report. (See appendix for full list of scope of services including tasks and meetings.)

Consultant Hiring Process

In order for the Montachusett Regional Planning Commission (MRPC) to complete the Ashby Village Public Sewer Feasibility Study, it required assistance from an engineering consultant. On June 24, 2010, MRPC issued a Request for Quotations (RFQ) for consultant services for the Ashby Village Public Sewer Feasibility Study. The RFQ invited consultants to submit proposals by 1:00 PM on July 2, 2010, and included information on the project background, scope of services, specifications, evaluation criteria, general conditions that needed to be met, the contract period, price proposal requirements, and other miscellaneous articles. A map of the proposed sewer district area, parcel tax assessor information for that same area and general GIS soil data for the Town was also attached. The RFQ was sent out by email to a list of 18 engineering firms. This list was compiled from CommPass, the State's Procurement Access and Solicitation System, a list of minority-owned and women-owned engineering business directory and from engineers who previously worked with MRPC.

RFQs were received by MRPC until 1:00 PM on Friday, July 2, 2010. Four proposals were received, opened and disseminated to MRPC staff for review. The following consultants submitted proposals:

- Weston & Sampson, 5 Centennial Drive, Peabody, MA 01960-7985
- Vaidya Consultants, Inc., 226 Lowell Street, Wilmington, MA 01887
- Lenard Engineering, Inc., 19 Midstate Dr., Auburn, MA 01501
- Vanasse Hangen Brustlin, Inc., 2 Washington Square, Worcester, MA 01604

MRPC staff completed the evaluation, using pre-established criteria, on Wednesday, July 14th, 2010. After evaluating all four consulting firms and opening their sealed bids, the hiring committee endorsed Weston & Sampson. Weston and Sampson has substantial experience with sewer feasibility projects plus a high degree of familiarity with the Montachusett Region especially with inter-municipal agreements relating to Fitchburg; it followed all written procedures in the RFQ, received excellent recommendations and illustrated in written form the necessary skills to best complete the tasks in the RFQ.

MRPC hired Weston and Sampson of Peabody, Massachusetts for consulting services described in the RFQ dated June 24, 2010 for the Ashby Village Public Sewer Feasibility Study. The project is funded by the MA Department of Housing and Community Development (DHCD) District Local Technical Assistance (DLTA) Program. The consultants started work on July 23, 2010 and will continue through October 31, 2010 at a fee not to exceed $4,000.

PROJECT AREA

The project area and parcels to be studied for potential sewer treatment for the feasibility study were chosen by the Town of Ashby. The proposed sewered area contains a core and extended area. The size of the core area is approximately 11 acres. It is situated in the center of Town and its parcels have frontage on New Ipswich Road, Common Road and Main Street. The area includes one single-family home, three two-family homes, the Ashby Market & Hardware, an office building, the Ashby Free Public Library, two churches, Ashby Grange Hall and a historical building. The town commons, a cemetery and a horse and carriage shed is also included as well as three vacant undevelopable parcels owned by the Town.

The extended area expands out from the core location to the West and East along Main Street. All the parcels have frontage on Main Street except one single-family home has frontage on Allen Road. This area adds an additional 68 acres to be sewered. This extended area contains 24 single-family homes, one multiple-use residential building, one three-family house, an office, the Lyman Building, the Ashby Police Department and the Ashby Elementary School plus two parcels of developable vacant land.

A map of the core and extended areas can be viewed in Figure 1.

FLOW ANALYSIS

To determine which wastewater treatment options can be used in the project area, an estimate of existing and future wastewater flows for the project area was determined, in gallons per day (gpd). The following explains how the estimates and projections were calculated.

Existing Flows

Based on available information pertaining to the existing properties within the project area and using Title 5 regulations, the Department of Environmental Protection (DEP) State Environmental Code regulating septic systems (310 CMR 15.000), estimated flows for the existing properties have been established (see Table 1). Based on these estimates, current wastewater flows for the core area are approximately 6,344 gallons per day (gpd) and current wastewater flows for the extended area are approximately 15,959 gpd, for a total project area wastewater flow of 22,303 gpd.

Figure 1 – Proposed Sewered Area for the Town of Ashby

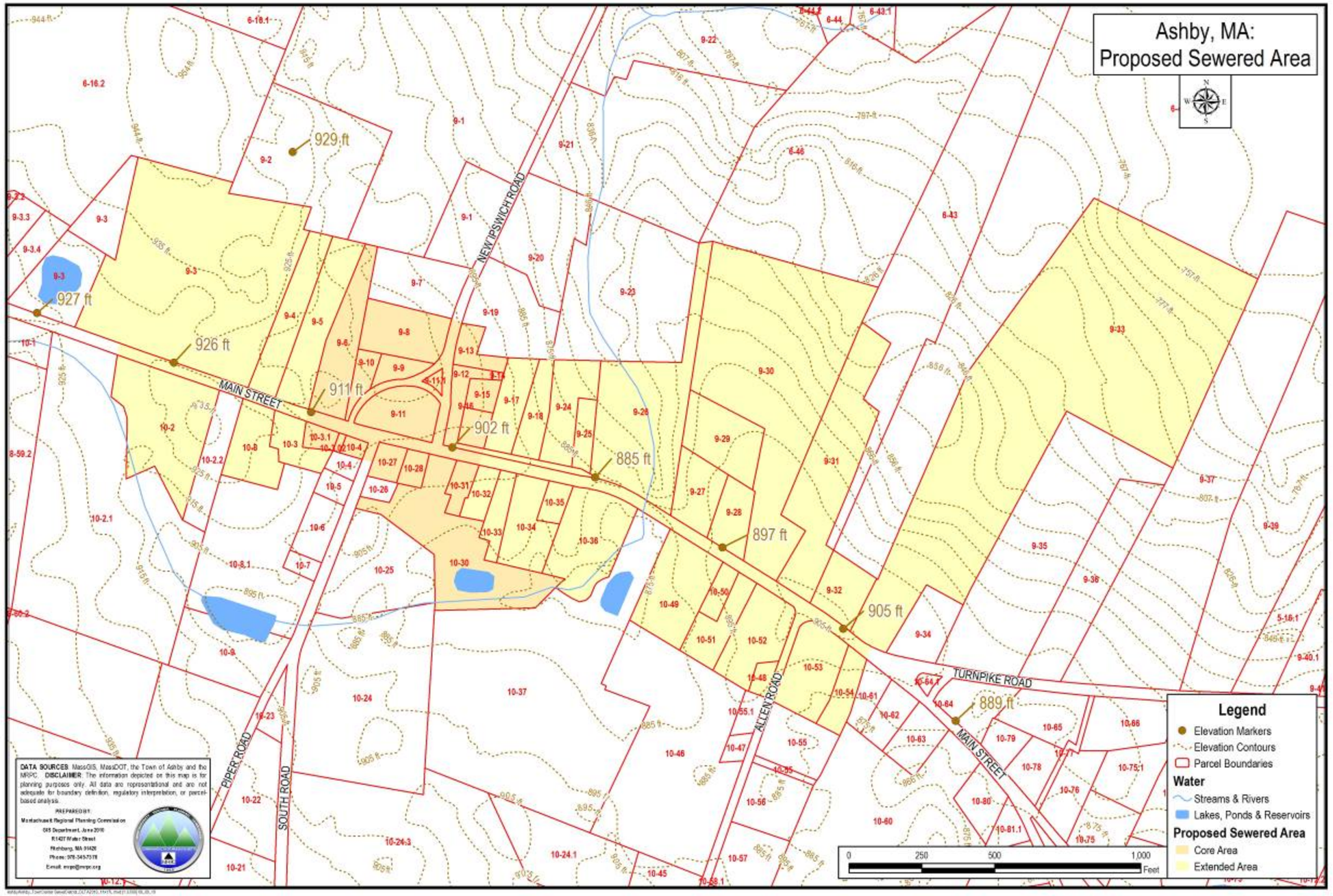


Table 1
Town of Ashby, Massachusetts
Sewer Feasibility Study
Estimated Wastewater Flows

Area	Map	Lot	Assessor Code	Property Address	Property Description	Building Size (s.f.) (if applicable)	Misc. Title V Flow Information	Title V Flow Criteria Type	Title V Flow Criteria (gal. per day)	Estimated Title V Flows (gal. per day)	Future Wastewater Flows (gal. per day)
Core	9	13	905	35 New Ipswich Road	Ashby Grange Hall	3,910		Office	75 gpd/1,000 s.f.	293	333
Core	9	9	906	20 Common Road	First Parish Church Unitarian Universalist		220 pews	Institutional	3 gpd/seat	660	749
Core	9	15	906	21 New Ipswich Road	Ashby Congregational Church		220 pews	Institutional	3 gpd/seat	660	749
Core	9	6	340	10 Common Road	General Office Building	6,493		Office	75 gpd/1,000 s.f.	487	553
Core	9	10	903	Common Road	Town Horse and Carriage Shed					0	0
Core	9	11	903	Main Street	Town Common					0	0
Core	9	11.1	903	Main Street	Vacant (Undevelopable)					0	0
Core	9	12	903	Main Street	Vacant (Undevelopable)					0	0
Core	10	3.1	903	846 Main Street	Historical Building - Old Engine House	2,756		Office	75 gpd/1,000 s.f.	207	235
Core	10	3.2	903	Main Street	Historical Building - Old Engine House					0	0
Core	10	30	903	812 Main Street	Library	9,910		Office	75 gpd/1,000 s.f.	743	844
Core	9	8	903	3 New Ipswich Road	Cemetery					0	0
Core	9	14	903	New Ipswich Road	Vacant (Undevelopable)					0	0
Core	10	27	101	830 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Core	10	4	325	840 Main Street	Ashby Market & Hardware	4,270		Retail	50 gpd/1,000 s.f.	214	242
Core	9	16	104	801 Main Street	Two-Family House			Residential	110 gpd/bedroom	880	999
Core	10	28	104	818 Main Street	Two-Family House			Residential	110 gpd/bedroom	880	999
Core	10	31	104	804 Main Street	Two-Family House			Residential	110 gpd/bedroom	880	999
									Core Area Subtotal (gpd)	6,344	7,200

Table 1 (continued)

Area	Map	Lot	Assessor Code	Property Address	Property Description	Size (s.f.) (if applicable)	Title V Flow Information	Criteria Type	Criteria (gal. per day)	Title V Flows (gal. per day)	Wastewater Flows (gal. per day)
Extended	9	26.1	131	Main Street	Developable Land		1.637 Acre parcel			0	440
Extended	9	4	340	873 Main Street	Office Building	3,012		Office	75 gpd/1,000 s.f.	226	256
Extended	10	53	13	662 Main Street	Multi-use Residental Use	2,838		Office	75 gpd/1,000 s.f.	213	242
Extended	9	3	903	911 Main Street	Lyman Building (Town Offices)	10,004		Office	75 gpd/1,000 s.f.	750	852
					Police Department	1,776		Office	75 gpd/1,000 s.f.	200	227
					Ashby Elementary School	27,220	269 student/faculty w/caf & gym	Elementary School	10 gpd/person	2,690	3,053
Extended	10	48	101	27 Allen Road	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	17	101	791 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	18	101	783 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	24	101	773 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	25	101	763 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	26	101	751 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	27	101	719 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	28	101	703 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	30	101	699 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	31	101	679 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	32	101	665 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	2	101	896 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	3	101	860 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	8	101	876 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	32	101	796 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	33	101	790 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	34	101	782 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	35	101	772 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	36	101	762 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	49	101	708 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	50	101	704 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	51	101	692 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	52	101	676 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	10	54	101	650 Main Street	Single Family House			Residential	110 gpd/bedroom	440	499
Extended	9	33	105	649 Main Street	Three-Family House			Residential	110 gpd/bedroom	1,320	1,498
Extended	9	29	132	Main Street	Undevelopable Land					0	0
									Extended Area Subtotal (gpd)	15,959	18,554
									Core & Extended Area Total (gpd)	22,303	25,754
									Total (gpm)	15.5	17.9

Notes/Assumptions:
1. Assume that all single-family homes are 4-bedrooms
2. Assume that all multi-family homes are multiples of 4-bedroom homes
3. Future wastewater flows for developable land parcels are based on one 4-bedroom home per acre of parcel size

Based on these flows, a conventional Title 5 on-site wastewater disposal system is still a feasible alternative to provide wastewater treatment for the core area, however the system would have limited capacity for future flows or expansion. A Title 5 on-site wastewater disposal system to treat wastewater flows for the entire project area is no longer feasible, therefore the only potential alternatives for providing wastewater treatment for the entire project area is connection to an existing sewer system (if possible) or a wastewater treatment facility discharging to groundwater. Any facility discharging effluent greater than or equal to 10,000 gpd to the ground from a sewage treatment facility is subject to the DEP Massachusetts Clean Waters Act regulations (314 CMR 5.00).

Future Flows (Developable Land)

Based on available parcel information, there is no developable vacant land within the core area and only two developable parcels within the extended area (Parcel 9-5 and Parcel 9-26.1). These parcels are 1.4 acres and 1.637 acres and they are both split into two different zoning districts (Residential-Residential/Commercial and Residential-Residential/Agricultural, respectively). Since no bylaw in Ashby exists that prescribe the development of split lots, an assumption was made that the development of one single-family home per acre would be allowed. This would result in one 4-bedroom home per parcel. The future wastewater flows based on this assumption are approximately 440 gpd per parcel using Title 5 regulations for residential single-family dwellings (see Table 1).

Future Flows (Growth Projections)

In order to estimate potential future wastewater flow to be generated by build-out of the entire project area, available growth projections were utilized. Based on the 2007 Montachusett Regional Transportation Plan, the estimated current population for the Town of Ashby is 3,075 and the projected population in 2030 is 3,490, resulting in a growth rate of 13.5% over the next 20 years. For the general purpose of this feasibility study, future wastewater flows will be calculated based on this 13.5% growth rate.

Using the current wastewater flows calculated above and the 13.5% growth rate, future wastewater flows for the core area are approximately 7,200 gpd and future wastewater flows for the extended area are approximately 18,994 gpd, for a total project area wastewater flow of 26,194 gpd.

WASTEWATER MANAGEMENT ALTERNATIVES

This section identifies potential long-term wastewater management alternatives for the properties within the project area. The alternatives investigated include: 1) Title 5 repairs/upgrades; 2) shared septic systems; 3) decentralized wastewater collection, treatment, and disposal; and 4) connection to a centralized wastewater collection system. This section includes a preliminary screening of the identified alternatives as well as a screening of potential wastewater treatment facility and effluent disposal locations.

Alternative 1 – Title 5 Repairs/Upgrades

The entire project area currently utilizes some type of on-site system for wastewater disposal. Under this alternative, on-site systems designed and maintained under Title 5 will continue to be utilized for the disposal of wastewater throughout the project area. The purpose of Title 5 is to "provide for the protection of public health, safety, welfare and the environment by requiring the proper siting, construction, upgrade, and maintenance of on-site sewage disposal systems and appropriate means for transport and disposal of septage." As detailed above, it is administered and enforced by the Massachusetts DEP in coordination with local approving authorities. In Ashby, the town's Board of Health acts as the local approving authority.

Alternative 2 – Shared Septic Systems

Provisions included in the Title 5 regulations allow for the construction of shared (also known as clustered) treatment and disposal systems. Shared systems require special approval from DEP, as well as legal agreements and documentation regarding ownership, maintenance, and other issues. Shared systems must be pumped once per year. The maximum design flow allowed under Title 5 for a shared system without acquiring a minor groundwater discharge permit is 10,000 gallons per day.

A conventional shared system would include a low-pressure or gravity collection system, a large septic tank, a dosing (pump) chamber, and a large soil absorption system (SAS). Each shared system would require an adequately sized "localized" parcel of land with suitable soil, geologic, and groundwater conditions for effluent disposal. For aggregated design flows over 5,000 gallons per day, leaching trenches are the only type of soil absorption system allowed by DEP. Assuming the use of leaching trenches, the footprint for a 10,000 gpd soil absorption system would be approximately 1 acre or more, including sufficient reserve area.

As discussed above, based on the estimated wastewater flows, a shared system is a feasible alternative for the Core Area only, if a sufficiently sized site that is feasible for effluent disposal could be identified within or near the project area.

Alternative 3 – Decentralized Wastewater Treatment

Large-scale wastewater treatment requires some form of a wastewater collection system to transport wastewater flows to a treatment plant. If wastewater flows in excess of 10,000 gpd are disposed of in one location, they require a groundwater discharge permit and a minimum of secondary treatment prior to discharge to a groundwater.

A package or small wastewater treatment facility refers to the assembly of various individual treatment process equipment into a compact area. Small facilities are found in the design flow range from individual facilities (300 gpd +/-) up to the range of approximately 100,000 gpd. Small facilities can achieve the same level of treatment as larger municipal wastewater treatment facilities; however, they must be monitored effectively by a certified operator. DEP design requirements necessitate redundant equipment for design flows in excess of 40,000 gpd; local regulations may also

necessitate redundant equipment. Redundancy increases the complexity of the facility operation and associated capital and operating cost.

A typical custom wastewater treatment facility may consist of the following components:

- Preliminary treatment.
- Primary treatment.
- Flow equalization.
- Secondary/advanced treatment.
- Sand filtration.
- Disinfection.

The size and type of each of these processes will depend on the discharge permit conditions that will have to be met and the amount of flow to be treated. Disinfection may not be necessary for subsurface discharge. An operations building would typically include the electrical controls, a laboratory, operations office, effluent filtration equipment, solids dewatering equipment, and a utility/equipment storage room.

The amount of land required for the wastewater treatment facility and related site items varies with the hydraulic treatment capacity of the plant. Potential size, cost, and siting of a treatment facility will be discussed in the following section.

Alternative 4 – Centralized Wastewater Treatment

Large-scale public sewer systems (municipal wastewater treatment plants) are centralized systems. Centralized systems generally serve established cities and towns and sometimes provide treatment and disposal services for neighboring sewer districts. Where appropriate, centralized systems are generally preferred to decentralized systems, as one centralized system can take the place of several decentralized systems. This makes the centralized systems more economical, allows for greater control, requires fewer people, and produces only one discharge to monitor instead of several. Although the town of Ashby does not have a centralized wastewater system and likely cannot justify the construction of such a system, a potential alternative is to connect the project area to an adjacent community, such as the city of Fitchburg.

Wastewater Collection Alternatives

This section identifies the wastewater collection alternatives typically utilized to convey wastewater from individual residences and businesses. All of the “off-site” alternatives for wastewater management that have been identified require the conveyance of wastewater from each property to a decentralized or centralized location for further treatment prior to effluent disposal.

The following technologies are typically utilized for wastewater collection and have been evaluated for use in this project:

- Conventional gravity sewers, pump stations, and force mains.

- Grinder pumps and low-pressure sewers.
- A combination of these technologies.

The following sections provide a description of each wastewater collection technology evaluated as part of this plan. Innovative, alternative (I/A) technologies, such as septic tank effluent pump (STEP) systems, vacuum sewer systems, and small diameter variable slope (SDVS) gravity sewer systems, were also considered as part of this study, however they do not lend themselves well to the proposed project and are not recommended.

Conventional Gravity Sewers

A gravity sewer system consists of sewer lines that allow customers to discharge into a sanitary system consisting of gravity pipes, which flow downhill and are not pressurized. Gravity sewer systems operate by collecting the wastewater via continuously sloped pipe, typically eight inches minimum diameter, and transport the wastewater to localized low points in the collection system. The design of a gravity sewer system is dependent on the velocity of the wastewater within the pipes. Minimum velocities (approximately 2 feet per second (fps) are set to assure that suspended matter does not settle out in the conduit, while maximum velocities (typically 8-10 fps) are set to prevent excessive scouring of the pipe. Extremely flat or hilly terrain poses a problem to gravity sewer installations since the gravity sewers must continually slope downward. This results in the sewer becoming increasingly deep or the need for a wastewater pumping station. Pump stations are located at low points to collect and pump the wastewater to the next high point in the collection system, then the process of gravity flow resumes.

This alternative is, typically, the most cost-effective and reliable long-term option and allows for future service area expansion without significant upgrade requirements. Installation costs are impacted by the presence of ledge, high groundwater, poor soils, and severe topography that impacts the depth of excavation.

Grinder Pumps with Low-Pressure Sewers

A low-pressure sewer system has proven to be a viable alternative where implementation of gravity sewer systems is impractical and/or uneconomical. A low-pressure sewer system includes small diameter pressure sewers fed by individual grinder pumps at each source or configured to serve multiple sources. A pressure sewer system makes use of small diameter piping, ranging in size from 1-1/4 to 4 inches in diameter, buried at a shallow depth following the profile of the ground. The pressure main and service pipe are generally manufactured from polyvinyl chloride (PVC) or high-density polyethylene (HDPE). The pressure sewer mains and laterals are buried just below the depth of frost penetration and will follow the contour of the ground.

The pressure sewer system is separated into branches of sewers of different sizes depending on the number of connections to each branch. Standard manholes are not required in a pressure sewer system. Instead, flushing connections/drain manholes are installed at the end of branches and at major changes in direction or changes in pipe diameter. Air relief/vacuum valve manholes are installed at high points in the system to allow trapped air to escape. Each customer utilizes a grinder pump for discharge of

sewerage into the main. Each grinder pump unit is equipped with a grinder pump, check valve, tank, and all necessary controls. The units can be buried outdoors close to each customer's existing septic tank or cesspool, so the connection to the existing service pipe exiting the building can be made easily. The units can also be located inside the building. The grinder pump macerates the solids present in the wastewater, produces slurry, and discharges wastewater to the pressure sewer collection pipes. Depending on design flow, some commercial users may require a larger unit with increased reserve capacity. If a malfunction occurs, a high liquid alarm is activated. This alarm may be a light mounted on the outside of the building or an audible alarm that can be silenced by the customer. The customer will then notify the town or a town-approved technician or contractor to come and make the necessary repair.

A low-pressure sewer system collects and transports the wastewater from each customer located in low points to the nearest gravity sewer or, if appropriate, to the decentralized wastewater treatment facility. Within the right-of-way, air relief manholes with air and vacuum valves would be installed at all high points, and terminal flushing drain manholes would be installed at all low points. In addition, cleanouts would be installed approximately every 500 to 1,000 feet to provide access for periodic maintenance.

Grinder pumps and low-pressure sewers are increasingly prevalent due to the lower capital costs, long history of use, and adaptability in poor subsurface conditions (ledge, groundwater, etc.). Public acceptance may be lower due to the presence of a pump at each home or business. Additionally, pressure sewers rely on a consistent electrical power supply, and negative environmental impacts may occur during extended power failures due to the potential for backups and overflows.

Combination of Gravity Sewers and Grinder Pumps

The utilization of a combination of conventional wastewater collection system components, grinder pumps, and pressure sewers has proven to be a cost-effective approach on many recent projects in Massachusetts. These combined systems are designed to maximize the use of gravity sewers; however, where the topography or subsurface conditions (ledge, groundwater, etc.) warrant, a cost-effective approach is to utilize grinder pumps and low-pressure sewers to reduce capital construction costs. The evaluation of this approach is typically completed during the preliminary design of the collection system, when more detailed information (topographic mapping and borings) is available.

Effluent Disposal Alternatives

Wastewater treatment processes typically include effluent discharge facilities designed to minimize the impacts to nearby surface or ground waters. Potential impacts include groundwater mounding or increasing pollutant loads to a receiving water body. The following sections describe the available effluent disposal methods.

Surface Water Discharge
At this time, the DEP is not readily issuing any new surface water discharge permits. Therefore, this option was not considered as an alternative for this project.

Subsurface Discharge to Groundwater
The discharge of treated wastewater to groundwater is the most common option for disposal of treated wastewater currently being permitted in Massachusetts. This disposal option would involve the discharge of highly treated effluent from a wastewater treatment facility into an infiltration bed or subsurface distribution system, designed to handle the design flows. For purposes of this discussion, the location of the discharge is considered independent of the location of the treatment facility since the treated effluent could be transmitted by force main to the infiltration bed or subsurface distribution system.

The requirements for groundwater discharge of wastewater are outlined in the Groundwater Discharge Permit Program (314 CMR 5.00 and 6.00). The principal constituent of concern for groundwater discharges is nitrates, a primary component of treated wastewater. Potential sites for use as a groundwater disposal site must be comprised of sandy or gravely soils that exhibit medium infiltration rates. Sites that contain poor soil permeability, high groundwater levels, and ledge, inhibit the downward flow of water and are generally unacceptable. Soil properties can be amended by excavating and amending the soils in the discharge area; this approach may be infeasible for the larger systems designed for large wastewater flows but may be appropriate for small systems.

Wastewater Reuse
Another option is to reuse the wastewater for non-potable needs. With proper treatment, reclaimed wastewater demonstrates few health risks, while providing the community with an alternative water source. Typical methods of reuse include watering landscape and agriculture. The main problem with this option is that a backup system must be in place to handle the wastewater when it cannot be used for irrigation.

Due to New England's climate, the irrigation method cannot be used year round because the water cannot penetrate the frozen ground; therefore, a subsurface disposal system is still required for the entire quantity of effluent disposal. Since this option requires duplication of disposal areas, this option is not advised for use in Ashby.

SCREENING OF ALTERNATIVES

This section provides a screening of the wastewater management alternatives discussed above and analyzes their potential effectiveness in addressing the problems within the project area.

Title 5 Repairs/Upgrades Screening

This alternative relies on the continued use of Title 5 to regulate the design of new systems and repairs/upgrades to all systems throughout the project area. Although this alternative does not provide the same environmental benefit as may be found with alternatives that provide a significantly higher level of treatment prior to discharge to the groundwater, it was used as a "baseline" to evaluate the long-term capital and operations/maintenance costs of other alternatives.

Shared Septic Systems Screening

Shared septic systems can be used for a cluster of businesses where wastewater is collected and treated (conventional Title 5 or I/A technologies) and ultimately discharged using subsurface disposal. This category does not include a treatment plant; therefore, this alternative is for flows less than 10,000 gpd. Each shared system would require a "localized" parcel of land with suitable soil, geologic, and groundwater conditions for effluent disposal.

The current wastewater flow for the core area is 6,344 gpd with an anticipated future flow of 7,200 gpd, therefore a shared system could be a feasible option for this area. The current wastewater flow for the extended area is 15,959 gpd with an anticipated future flow of 18,994, therefore a shared system would not be an option for this area or for the entire project area as a whole (core and extended).

Based on a quick review of tax assessor data, it does not appear that there are any town-owned parcels within the project area that would be feasible sites for effluent disposal. One potential site is the parcel on which the Town Offices, Police Department, and Ashby Elementary School are currently located; however siting of a discharge area on this site may be limited by the existing public groundwater supply well located on this parcel, as well as the soil conditions. Feasible sites for effluent disposal may be available outside of the project area, however since this alternative will only provide a solution for the core area, this alternative is likely not cost effective and, therefore, shared systems were not considered further for this project.

Decentralized Wastewater Treatment Screening

This alternative involves the use of decentralized wastewater treatment. As discussed above, this option requires some form of a wastewater collection system to transport flows to a treatment plant. For the purposes of this study, due to the relatively low flows for the core area alone, it will be assumed that the treatment plant would be designed for the entire project area (core and extended) at a design flow of 26,194 gpd.

Wastewater Treatment Facility Siting

The wastewater treatment facility must be sited to function properly and minimize potential impacts during construction and operations. The purpose of this section is to identify and screen alternative locations to site a treatment facility. Should the town

decide to proceed with this alternative, a more in-depth screening is recommended, including subsurface borings. A general review of the assessor's maps and resource information was performed for the areas immediately surrounding the project area. The investigation was a preliminary screening that did not include soil testing or negotiations for the use of the land. Based on tax assessor data, it does not appear that there are any town-owned parcels within the project area that would be feasible sites for effluent disposal.

One site identified outside the project area is #1093 Main Street, which is the site of the Ashby Fire Station (Map 6 Lot 16.2). The site is located approximately 1,500 feet to the west of the Ashby Elementary School, directly adjacent to the project area. There are some wetland resources within the parcel (see Figure 2), however the parcel encompasses approximately 34.4 acres of land. According to GIS data, the soils in this area consists of till or bedrock (see Figure 3); however existing septic system plans within the project area indicate sandy loams. This site may have enough land area available to accept the projected 26,194 gpd, but the site may require a mound system because of a high groundwater table. Based on the proximity of this facility, and the fact that it is municipally owned, this site should be considered for further evaluation.

If the town is amenable to investigating private property (through easements) for the siting of the wastewater treatment facility, there may be other alternatives available, however the primary focus of this study was on town-owned land. Although much of the area is within an Area of Critical Environmental Concern (ACEC) (see Figure 2), there are improved soil conditions (sand and gravel) to the south and east of the project area (see Figure 3).

The parameters that should be used to evaluate sites for suitability are as follows:

- Land Area – The land area to site a facility would have be a minimum of 1 acre. Larger land areas are preferred because they will allow for reserve/open areas around the site.

- Proximity to Service area – The proximity to the service area is important so the raw wastewater does not have to be conveyed significant distances prior to treatment.

- Proximity to Disposal Site(s) – The proximity to disposal sites is important to minimize the distance that the effluent must be pumped. However, more efficient pumps can be utilized to pump effluent than raw sewage therefore having a location that is closer to disposal is not as significant as the proximity to the service areas.

- Ownership – Town-owned land is preferential. Otherwise, private land or use thereof will have to be obtained by the Town for use as a facility site.

Figure 2

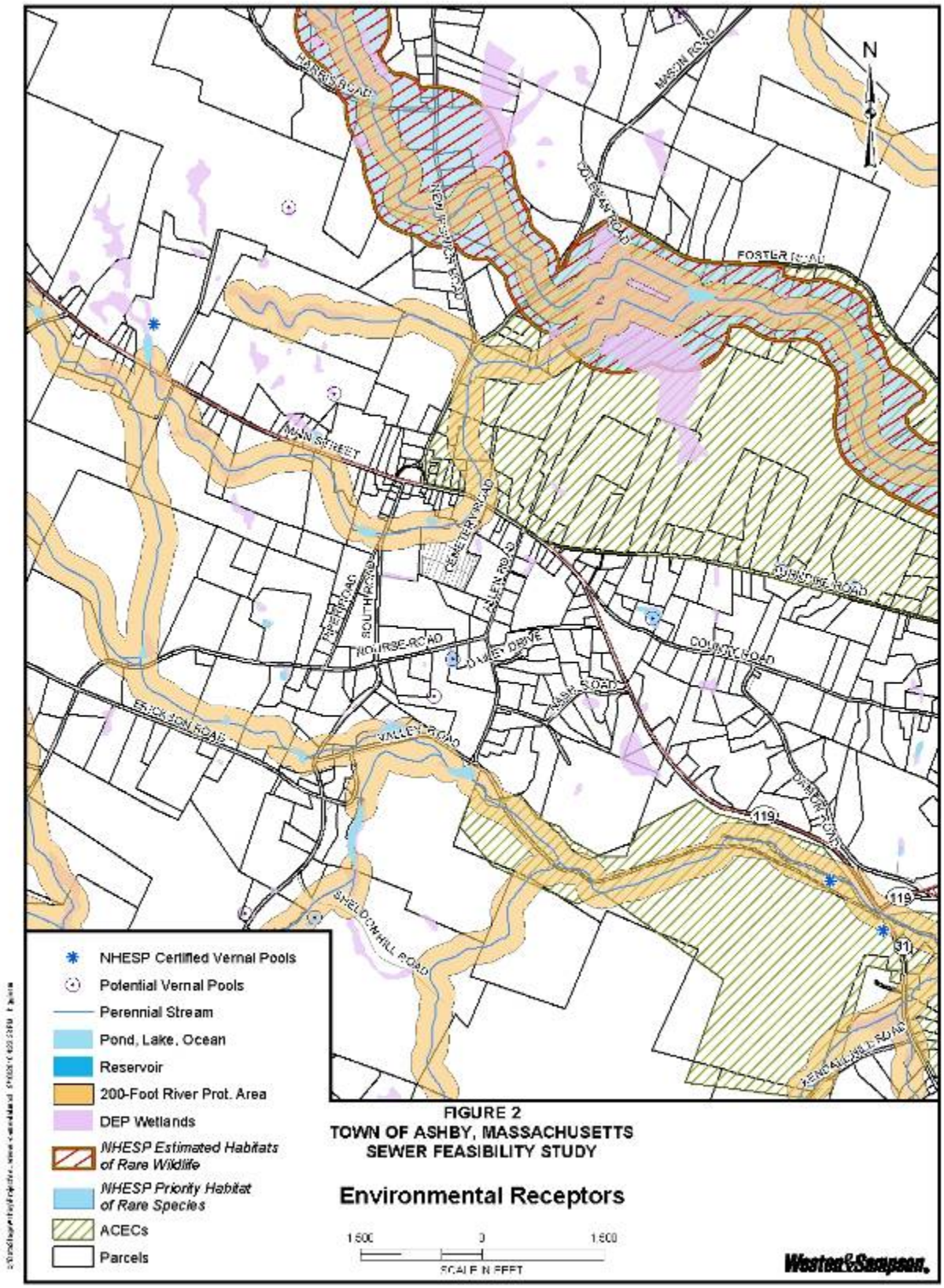
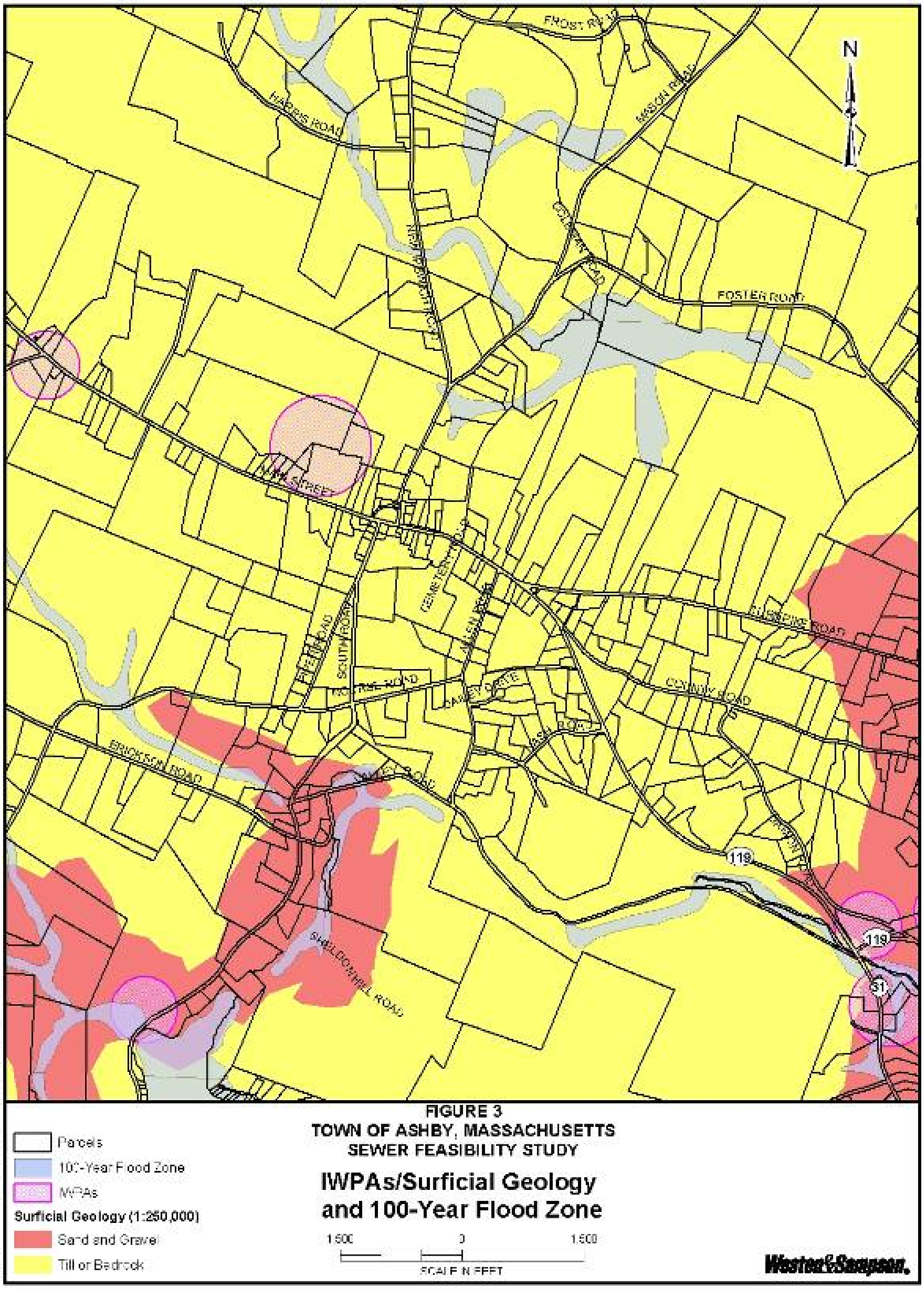

N
MAIN STREET
SOUTH ROAD
CEMETERY ROAD
ALLEN ROAD
NORRIE ROAD
COUNTY ROAD
WEST DRIVE
ASH ROAD
ERICKSON ROAD
VALLEY ROAD
SHELDON HILL ROAD
KENDALLVILLE ROAD
119
91
NHESP Certified Vernal Pools
Potential Vernal Pools
Perennial Stream
Pond, Lake, Ocean
Reservoir
200-Foot River Prot. Area
DEP Wetlands
NHESP Estimated Habitats of Rare Wildlife
NHESP Priority Habitat of Rare Species
ACECs
Parcels
FIGURE 2
TOWN OF ASHBY, MASSACHUSETTS
SEWER FEASIBILITY STUDY
Environmental Receptors
1,500
0
1,500
SCALE IN FEET
Weston & Sampson

Figure 3


N
HARRIS ROAD
MASON ROAD
FOSTER ROAD
MAIN STREET
TURNPIKE ROAD
COUNTY ROAD
ERICKSON ROAD
SOUTH ROAD
SHELDON HILL ROAD
119
31
FIGURE 3
TOWN OF ASHBY, MASSACHUSETTS
SEWER FEASIBILITY STUDY
IWPAs/Surficial Geology
and 100-Year Flood Zone
Parcels
100-Year Flood Zone
IWPAs
Surficial Geology (1:250,000)
Sand and Gravel
Till or Bedrock
1,500
0
1,500
SCALE IN FEET
Weston & Sampson

- Proximity to Residential Areas – The preferred siting of a treatment facility is away from developed residential areas. Even though treatment facilities can be designed and constructed to be aesthetically pleasing and non-odorous, preferential selection would be given to sites that area located away from residential areas.

- Minimal Adverse Construction Impacts – This parameter deals with the impacts that the construction of such a facility would have on the site and streets within the area. Areas that are tightly situated within existing developments would have higher impacts.

- Environmental Impacts – This parameter deals with the impacts that construction and operation of the facility would have on the surrounding environment.

Additional field investigations will be necessary to confirm the optimum area for subsurface disposal. For the time being, the Fire Station site will be considered for effluent disposal based on the assumption that an adequate effluent disposal site of sufficient size can be sited.

Centralized Wastewater Treatment Screening

This alternative involves the connection to a centralized wastewater treatment system. As with a decentralized system, this option requires some form of a wastewater collection system to transport flows to a treatment plant. As discussed above, this alternative would involve conveying flows from the project area to the city of Fitchburg. The nearest connection to the Fitchburg sewer collection system is just over three miles from the eastern portion of the project area. Due to the topography and the length of this potential connection, a pump station would be required within the project area to convey flows to the nearest existing gravity sewers in Fitchburg. This alternative would eliminate the need for a local treatment plant and discharge site, however it would require a significant length of force main and an Inter-Municipal Agreement (IMA) with the City.

COLLECTION SYSTEM LAYOUT ALTERNATIVES

As discussed above, all of the "off-site" alternatives for wastewater management that have been identified require the conveyance of wastewater from each property to a decentralized or centralized location for further treatment prior to effluent disposal. This section of the report compares the various layout alternatives for conveying flows from the project area.

The major factors affecting collection system design are topography and, as always, cost. A conventional gravity sewer relies on a steady decrease in elevation to convey wastewater from a higher elevation to a lower elevation. When grades or excavation depths become excessive or cost prohibitive, mechanical means are typically introduced to lift wastewater flows from a lower elevation to a higher one. As detailed above, this

can be accomplished by 1) running gravity sewers to a central pumping station at a common low point and discharging through a dedicated force main or 2) through the use of multiple pumps at various elevations and locations, pumping into a common low-pressure sewer.

As part of this study, no topographic survey or soil explorations have been performed. Preliminary estimated costs have been developed for all viable alternatives for purposes of comparison and for use in making final recommendations.

Gravity Sewer

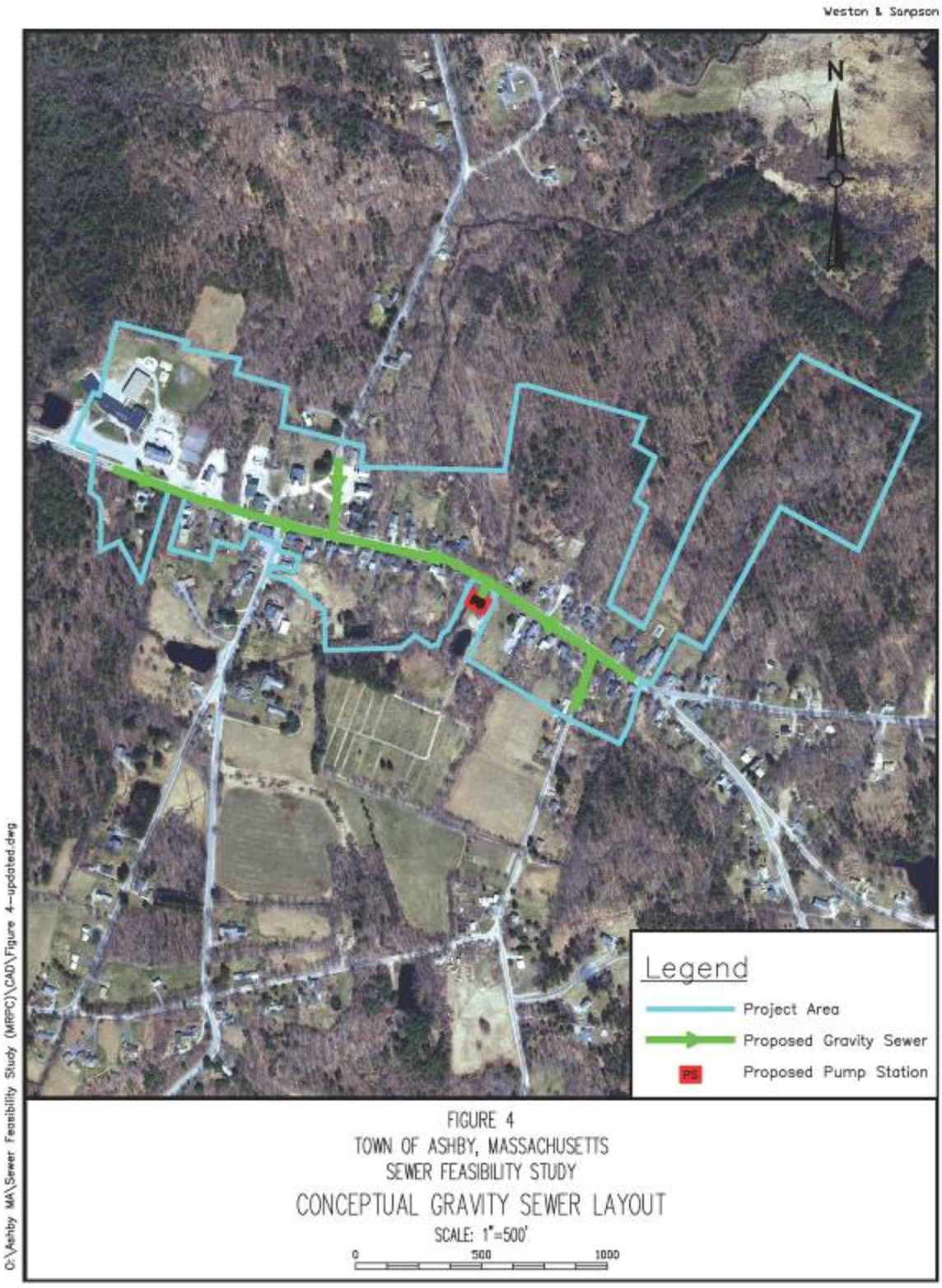
Typically, the first exercise performed in determining the most appropriate sewer technology is to develop a profile of the proposed sewer route. Since no topographic survey has been performed for the project area, available USGS data (10-foot contours) has been utilized to estimate the direction of flow. There are no existing gravity sewers in the vicinity of the project area, therefore any potential gravity alternatives would convey flows directly to a local treatment facility and groundwater discharge site. Based on a quick review of tax assessor data, it does not appear that there are any town-owned parcels within the project area that would be feasible wastewater discharge sites. For this reason, and based on the general topography within the project area, installing gravity sewers entirely within the public way to convey flows to a local treatment facility and groundwater discharge site is not feasible. The only feasible alternatives for providing sewers to this area would involve the use of a municipal pump station, low-pressure sewers with individual on-lot grinder pump units, or a combination of pump stations and low-pressure sewers.

Gravity Sewer with Central Pump Station

Based on the topography within the project area, flow will be collected at a relative low point near a stream crossing adjacent to the Glenwood Cemetery entrance on Main Street (see Figure 4). A pump station will be required to convey the sewage for the entire project area from this location to a local treatment facility or to existing sewers in Fitchburg. It does not appear that there are any town-owned parcels in the vicinity of the low point that would be feasible pump station sites, therefore a land taking on private property will be required. Assuming that a friendly land taking can be negotiated with the owner, the most obvious location for the proposed pump station is on the Glenwood Cemetery parcel (Map 10 Lot 37). The site is located at the relative low point on Main Street and appears to have available land adjacent to the access driveway. The slope drops off significantly on the opposite side of Main Street, therefore there do not appear to be any feasible locations in this area.

The stream crossing at the relative low point consists of a rectangular stone culvert, approximately 4 feet by 3 feet; however the culvert appears to be approximately 15-20

Figure 4


Weston & Sampson
N
Legend
Project Area
Proposed Gravity Sewer
PS
Proposed Pump Station
FIGURE 4
TOWN OF ASHBY, MASSACHUSETTS
SEWER FEASIBILITY STUDY
CONCEPTUAL GRAVITY SEWER LAYOUT
SCALE: 1"=500'
0
500
1000
C:\Ashby MA\Sewer Feasibility Study (MRPC)\CAD\Figure 4-updated.dwg

feet beneath the existing road elevation in this area, therefore any proposed sewers could likely be installed above the top of the existing culvert.

Low-Pressure Sewer with Grinder Pumps

The low-pressure sewer alternative would consist of providing each property within the project area an individual grinder pump unit, which would then convey flows through a small diameter low-pressure sewer to a local treatment facility. A low-pressure sewer connection to the existing sewers in Fitchburg is not likely feasible, due to the length of the potential connection.

COST SUMMARY AND FUNDING OPTIONS

This section of the report includes planning level costs for each of the investigated alternatives: (1) Title 5 repairs/upgrades, (2) decentralized wastewater treatment, and (3) centralized wastewater treatment.

Title 5 Repairs/Upgrades

Historic repair costs have been utilized to develop the planning period costs for Title 5 repairs/upgrades. As discussed earlier in this report, this alternative was used as a "baseline" to evaluate the long-term capital and operations/maintenance costs of other alternatives.

Case Studies – Title 5 Repairs and Upgrades
The following is a list of addresses in Ashby with septic systems that were repaired/upgraded in 2005, including design, installation and total costs.

818 Main St. (in core area)
design $9,225
installation $28,783.12
total $38,008.12

1337 Greenville Road
design $8152.50
installation $26,847.50
total $ 35,000

181 Locke Road
design $9,483.12
installation $29,153.75
total $ 38,636.87

994 Turnpike Rd

design	$9,245
installation	$29,342.50
total	$38,587.5

For the purposes of this analysis, it was assumed that every property within the project area would require a conventional Title 5 repair at an average cost of $35,000. It is estimated that, if the entire project area were left to rely on Title 5 systems (51 properties), the overall capital cost to bring these systems into compliance would be approximately $1,785,000. For the purposes of this report, an annual maintenance cost of $500 will be assumed, therefore the total annual operation and maintenance costs borne by the individual property owners would be approximately $25,500.

Decentralized Wastewater Treatment

In order to prepare a preliminary, budget level opinion of probable construction and operation and maintenance costs for the decentralized wastewater treatment alternative, the following assumptions were made:

- The collection system will be comprised of gravity sewers located in Main Street, with one pump station required to convey flows from the project area
- The project area requires approximately 3,500 feet of collection system pipeline to front all 51 properties
- The proposed pump station will be sited in the vicinity of the Glenwood Cemetery entrance on Main Street
- The flows will be conveyed approximately 3,500 feet from the pump station site to a wastewater treatment facility and effluent disposal site at #1093 Main Street (Ashby Fire Station)

The cost for construction of the collection system has been estimated at $125 per foot of gravity sewer, $60 per foot of force main sewer, and $200,000 for the pump station. Based on the assumed quantities detailed above, the collection system will consist of approximately 3,500 linear feet of gravity sewer, 3,500 linear feet of force main sewer, and one pump station, resulting in an estimated collection system construction cost of $850,000.

The cost of a 26,000 gpd packaged wastewater treatment plant permitted, designed and constructed under current local and DEP requirements, in accordance with requirements for municipally designed and constructed facilities, has been estimated at $900,000, not including any land acquisition costs.

Cost of additional required services were assumed as a percentage of the estimated construction cost as follows:

- Limited additional wastewater planning for MEPA approval, final design (including detailed hydrogeological investigations, groundwater modeling, and permitting in addition to typical design services) at 15%.
- Construction services at 15%.
- Contingency at 10%.

This information is summarized as follows:

Construction costs	
Collection system:	$ 850,000
Treatment facility with groundwater discharge:	$ 900,000
Construction Subtotal:	$ 1,750,000
Additional services (40% of subtotal)	$ 700,000
TOTAL	$ 2,450,000

It should be noted that additional planning will likely be required for DEP and MEPA approval.

Operation and maintenance costs will be the responsibility of the users. Based on similar wastewater treatment facilities and collection systems in Massachusetts similar to the system identified above, it is estimated that the total annual operation and maintenance costs will be approximately $50,000 per year. These costs assume privatization of the wastewater treatment and collection system operation and maintenance. The costs also assume that state and local regulations apply.

Centralized Wastewater Treatment

In order to prepare a preliminary, budget level opinion of probable construction and operation and maintenance costs for the centralized wastewater treatment alternative, the following assumptions were made:

- As with the decentralized alternative above, the collection system will be comprised of gravity sewers located in Main Street, with one pump station required to convey flows from the project area (the collection system will again consist of approximately 3,500 feet of collection system pipeline and a pump station near the Glenwood Cemetery entrance)
- The flows will be conveyed approximately 18,000 feet from the pump station site to the existing gravity sewer system in Fitchburg

Once again, the cost for construction of the collection system has been estimated at $125 per foot of gravity sewer, $60 per foot of force main sewer, and $200,000 for the pump station. Based on the assumed quantities detailed above, the collection system will consist of approximately 3,500 linear feet of gravity sewer, 18,000 linear feet of force main sewer, and one pump station, resulting in an estimated collection system construction cost of $1,720,000.

Under this option, capital costs associated with the Inter-Municipal Agreement with the city of Fitchburg must be considered. Typically, there is an up front capital cost to secure capacity within the treatment plant. Based on our experience with Fitchburg, this cost is estimated at approximately $6 per gallon of anticipated flow for a total capital expenditure of approximately $156,000, to be paid as flow is introduced.

As with the decentralized alternative, the cost of additional required services were assumed as a percentage of the estimated construction cost as follows:

- Limited additional wastewater planning for DEP approval, final design (including capacity analysis on Fitchburg sewer system and permitting in addition to typical design services) at 15%.
- Construction services at 15%.
- Contingency at 10%.

This information is summarized as follows:

Construction costs	
Collection system:	$ 1,720,000
Inter-Municipal Agreement:	$ 156,000
Additional services (40% of construction)	$ 687,000
TOTAL	$ 2,563,000

The majority of the operation and maintenance costs for this scenario will be the user fees paid to Fitchburg. These fees are currently $5.80 per 100 cubic feet and expected to increase significantly over the next few years based on major capital improvements scheduled for the Fitchburg sewer system. Assuming average flows of 27,000 gpd over the course of the year and a fee of $6 per 100 cubic feet of wastewater treated over the course of the year, the annual user fee to Fitchburg is estimated at $75,000 per year. Assuming another $25,000 per year in O&M on the local Ashby collection system brings the total estimated annual O&M to $100,000.

Cost Summary Table

	Capital	Annual O&M
Title 5 Repairs/Upgrades:	$ 1,785,000	$ 25,500
Decentralized Wastewater Treatment:	$ 2,450,000	$ 50,000
Centralized Wastewater Treatment:	$ 2,563,000	$ 100,000

Funding Options

There are several ways that the Town of Ashby can fund wastewater infrastructure projects. One way is through the Massachusetts State Revolving Loan Fund (SRF) sometimes called the Clean Water State Revolving Fund (SRF) Loan program which is administered by the Division of Municipal Services of the Department of Environmental Protection (MassDEP). This program provides subsidized loans to municipalities for various wastewater management projects including all the alternatives previously discussed in this report. The current interest of the subsidized loans are 2% for a term of 20 years. A Project Engineering Report (PER) is required to be considered for this program. The PER is discussed in more detail in the recommendations section of the report.

The Community Development Block Grant (CDBG) program can be another option to fund wastewater management in Ashby. It is a federally funded, very competitive grant program through the Department of Housing and Urban Development (HUD). It is designed to help small cities and towns meet a broad range of community development needs including construction or repair of sewer lines. Municipalities such as Ashby with a population of under 50,000 that do not receive CDBG funds directly from the HUD can apply for this funding. For a sewer construction project to be eligible for funding, it would need to benefit low and moderate-income persons. The town would need to conduct an income survey of the homes that will be affected by the infrastructure project to show that more than 51% of the residents are income eligible. CDBG grants range from $100,000 to $800,000 for infrastructure projects and can take at least several months to prepare (often times longer). The very earliest the town could apply for funds would be December 2011.

In addition to these funding options for municipalities, there is also a program called the MassHousing Septic Repair Loan which is for individual home owners to pay for sewage disposal systems repairs or sewer connections. The loan program is only available for income eligible owner-occupied homes with failing septic systems. Depending on the household income the rates can be as low as 0% interest rate.

Table 2: MassHousing Septic Repair Loan Interest Rates for Ashby

Household income FAMILY SIZE	Household income 1-2 PERSONS	Household income 3 OR MORE
0% LOAN	$23,000	$26,000
3% LOAN	$46,000	$52,000
5% LOAN	$92,000	$104,000

*Source MassHousing "Homeowner Septic Repair Loan Program" December 2009

RECOMMENDATIONS

The recommended alternative to wastewater collection, treatment, and disposal in the center of town is a decentralized wastewater treatment system as detailed above. As shown above, this alternative is the most cost-effective and technologically sound collection system for conveying wastewater from the properties located within the project area. Several assumptions have been made as part of this initial Sewer Feasibility Study, which should be further confirmed with field investigations and a more detailed report, such as a PER.

Before moving forward with the following plan of action, additional input from residents in the proposed project area should be collected. Some residents in the core area and extended area have recently upgraded their septic systems and they do not need a public wastewater treatment system. Some residents have expressed concern about additional costs for a public wastewater treatment system that they do not need. The Town of Ashby should solicit the residents in the core and extended area to see which residents need new upgraded systems and which residents would be open to having a public wastewater treatment system. Gauging the residents interest will help understand whether funding for the next step in this project will pass a town meeting vote. To come to an agreement for additional funding, the boundaries of the project area might need to be refined (parcels added or subtracted).

Recommended Plan of Action

The primary focus for moving this project forward remains finding a site that can accept and treat a sufficient volume of treated wastewater effluent. The conceptual layout outlined previously assumes that the Fire Station site is a viable site, but this still needs to be confirmed through additional hydrogeologic investigations. Understanding that the project is currently in the conceptual stage and any projections of schedule and timeframe are subject to wide variations, the remaining tasks to be considered in bringing the project to completion, with anticipated schedules and timeframes, are as follows:

- Town Meeting Authorization of Planning Funding - April 2011
- Site Screening/Hydrogeologic Investigations – Summer 2011
- Project Engineering Report (PER) – Fall 2011
- Town Meeting Authorization of Design Funding – April 2012

- MEPA Process – April thru July 2012
- Final Design and Permitting – July 2012 thru July 2013
- Submittal of Project Evaluation Form (PEF) – August 2012
- Groundwater Discharge Permit – September 2012 thru September 2013
- SRF Application (if necessary) – October 2013
- Town Meeting Authorization of Construction Funding – April 2013
- Public Bid/Award Process – January thru April 2014
- Construction – May 2014 thru December 2015

Town Meeting Authorizations

In order to move forward with the project, town meeting authorization will be required for additional wastewater planning. The town will need to appropriate money at the 2011 Annual Town Meeting for the site screening, hydrogeologic investigations, and Project Engineering Report (PER) tasks. In order to move beyond the PER phase of the project, additional town meeting authorizations will be required. With the conceptual design completed through the PER process, the town will be equipped with the information they need to appropriate monies for design and permitting of the project, including the MEPA process and the ground water discharge permit, at the 2012 Annual Town Meeting. Subsequent to that, sufficient progress should be made during 2012 such that anticipated construction costs will be available for consideration at the 2013 Annual Town Meeting.

Site Screening/Hydrogeologic Investigations

As discussed herein, no site screening or soil explorations have been performed as part of this study. Once a site or sites have been identified, preliminary borings should be performed to determine the feasibility of subsurface conditions for the disposal of treated wastewater effluent. The next step is to perform additional hydrogeological investigations to define the final design capacity that can be permitted under DEP's Ground Water Discharge permit process.

The initial step in this process is the development and submittal of a hydrogeologic work plan for DEP approval. This work plan will include test pits, percolation tests, shallow and deep observation wells, and a load scale test. Results of this testing will allow the development of a ground water flow model to predict final design flows and potential mounding impacts. All findings will be documented in a summary report.

PER Completion

In order to be considered for SRF funding and/or to navigate the MEPA process, some form of a Project Engineering Report (PER) is required. The hydrogeologic investigations discussed above also provide critical information for the final PER. The major tasks under the PER are as follows:

- Wastewater needs analysis
- Further evaluation of possible regional solutions (Fitchburg)

- Wastewater System Conceptual Design (based on results of hydrogeological investigations) & Estimated Costs
- Cost Allocation/Financing Alternatives
- Identification of Regulatory Issues
- Meetings/Public Participation

MEPA Process

With the PER complete and funding in place for final design and permitting of the project, the next step in getting authorization to construct the project is the Massachusetts Environmental Policy Act (MEPA) process. Based on the MEPA thresholds (see MEPA Regulations Section 11.03) it appears as though the best approach for this project is to submit an expanded Environmental Notification Form (ENF). Hopefully, an Environmental Impact Report (EIR) will not be required but if it is, it is assumed that it will be a single EIR.

It is anticipated that the MEPA process would commence in May 2012, upon completion of the PER and appropriation of necessary funding. The expanded ENF process can take anywhere from two to six months to navigate. If an EIR is determined to be required, this could add another six months or more to the process.

Final Design and Permitting

Assuming the MEPA process proceeds at a reasonable pace, initial comments from the MEPA unit could be secured as early as July 2012 and the project could proceed to final design and permitting at that time. Final permits would be secured by the Summer of 2013.

PEF Submittal

Understanding that the town might seek financial assistance for construction of the project through the State Revolving Fund (SRF) loan program of the DEP, a PEF submittal is the first step in that process. The PEF basically provides criteria to justify the environmental need for the project. PEF applications are typically due by August 31st of each year. For more information on the PEF process, see the following link: http://www.mass.gov/dep/water/approvals/srfforms.htm.

SRF Application

If the project were to qualify for SRF funding, the anticipation would be to have the final design (plans and specifications) ready for submittal with the SRF application in October 2013. SRF approval would be secured by the end of 2013.

Groundwater Discharge Permit

Submittal of a groundwater discharge permit requires completion of a significant portion of the treatment process design, including a detailed site plan, the actual infiltration system, a hydraulic profile of the process, and process flow diagram. Assuming that the design commences in July 2012 as discussed above, it is possible that the groundwater discharge permit process could commence in September 2012, with the hope of securing the actual permit by September 2013.

Bidding & Construction

It is not uncommon for projects of this nature to be divided into two separate construction contracts, one for the collection system and the other for the treatment system. Based on timeframes discussed above, it is anticipated that the advertising and bidding process could commence in January 2014 and continue through April 2014. Construction would commence in the spring of 2014 and continue through the end of 2015.

Preliminary/Conceptual Estimated Costs

Below is a further breakdown of the preliminary costs for a decentralized wastewater system. Please note that at the current conceptual stage of this project, there are a multitude of assumptions that could ultimately result in a wide variation in the cost of the project. At this time, based on the information discussed herein, our initial conceptual cost estimate is as follows:

Preliminary/Final Design & Permitting	
Hydrogeologic Investigations	$20,000
PER	$25,000
MEPA (not including EIR if required)	$20,000
Groundwater Discharge Permit	$40,000
Final Contract Documents (including permits & SRF)	$200,000 to 300,000
Subtotal	Say $350,000
Construction	
Collection & Transmission System	$850,000
WWTF/SAS System	$900,000
Engineering Construction Services	$250,000
Police Details	$ 50,000
Land/Legal/Other	$ 50,000
Subtotal	$2,100,000
Total Estimated Cost to Complete	**$2,450,000**

Conclusions

The Town of Ashby has various options for wastewater management in its Town Center. These options are 1) Title 5 repairs/upgrades; 2) shared septic systems; 3) decentralized wastewater collection, treatment, and disposal; and 4) connection to a centralized wastewater collection system. If the town chooses to proceed with the suggested decentralized wastewater system, a wastewater treatment and effluent disposal site will need to be selected. The Town of Ashby will also need to decide on funding alternatives to pursue. Once these decisions are made and the Town sets forth to solve its wastewater treatment problems, Ashby will be able to compact development in the village center and thus maintain its New England Town feel and rural character.

APPENDIX

Scope of Services

Project Goal: Professional planning and technical assistance to develop a Town Village Sewer Feasibility Study

Tasks

A. Continue reviewing previous proposed village sewers districts for viability of public sewer services.
B. Research methods and models of providing public sewer to all relevant village centers.
C. Continue to review previous locations and methods for storage and delivery and waste water treatment appropriate to Ashby's resources.
D. Investigate relative costs of the methods and models available to the community.
E. Complete a 90% draft report encompassing the findings of the above tasks for a 30-day-review by the Community.
F. Complete a final report including improvements and edits as provided by the Community by the contract's deadline.

Meetings

1) Consultant will have a kick-off meeting with local town officials to discuss the previous project's progress.
2) Consultant's staff will present its final report at one public meeting in the community prior to the projects deadline.