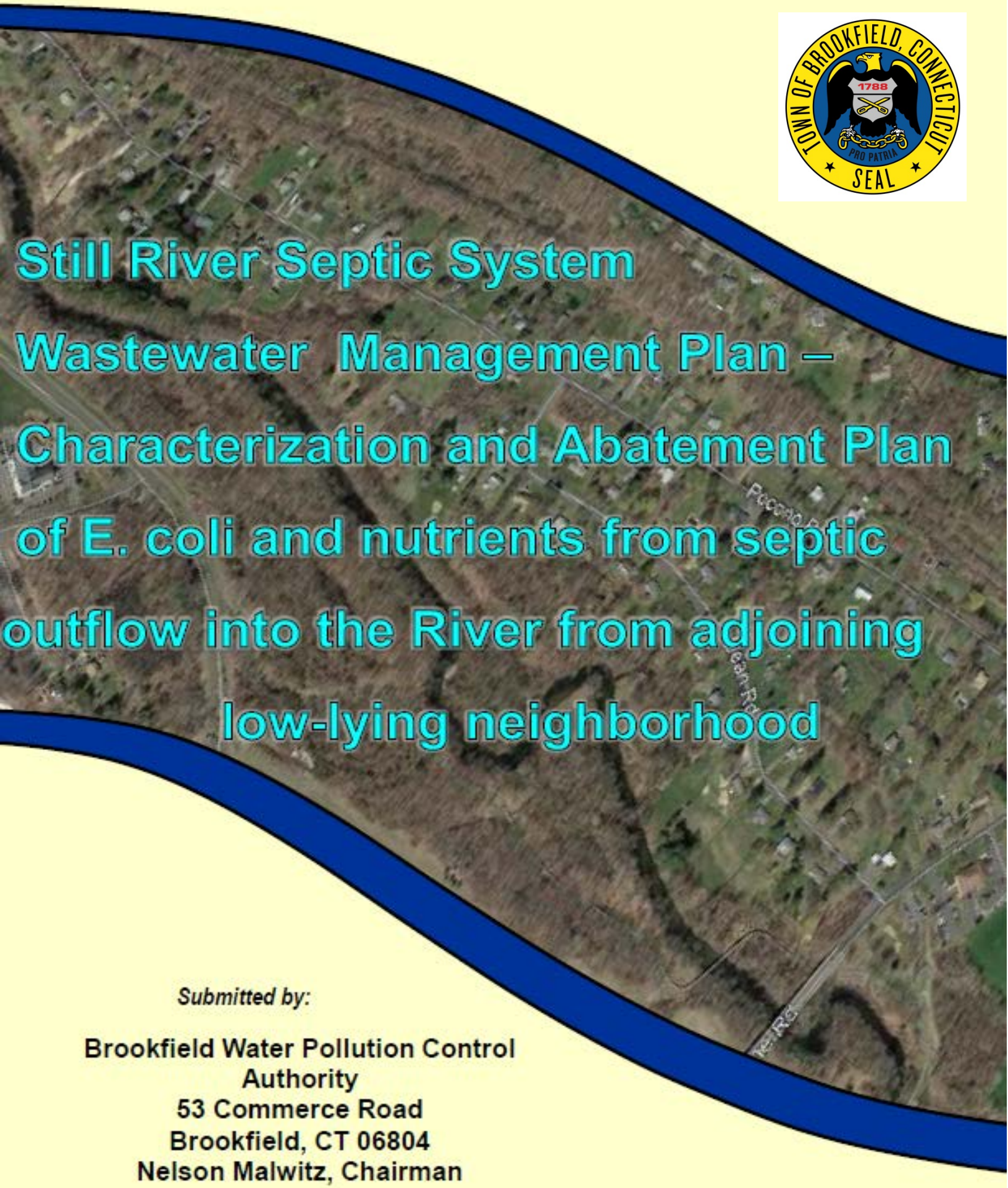

Still River Septic System Wastewater Management Plan – Characterization and Abatement Plan of E. coli and nutrients from septic outflow into the River from adjoining low-lying neighborhood

Submitted by:

Brookfield Water Pollution Control Authority
53 Commerce Road
Brookfield, CT 06804
Nelson Malwitz, Chairman

April 1, 2019

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1 BACKGROUND INFORMATION

1.1 INTRODUCTION AND OBJECTIVES

Following is a summary of Still River conditions as extracted from the August 2018 Still River Watershed Draft Existing Conditions Report as prepared by the Housatonic Valley Association (HVA) in support of the Still River Watershed Action Plan for Nonpoint Source Reduction (CT DEEP Contract #14-03f), CT DEEP Reports and Brookfield Water Pollution Control Authority (BWPCA) documents.

The Still River spans 25.4 miles from the Danbury/New York State border through multiple towns before joining with the Housatonic River in New Milford. The Still River watershed includes portions of the CT communities of Bethel, Brookfield, Danbury, Newtown, New Fairfield, New Milford, Redding, and Ridgefield, Figure 1-1. The Still River is an impaired water body not supporting aquatic life or recreation due to E. coli, per the 2010 CT DEEP Total Maximum Daily Load (TMDL) Analysis for Recreational Uses of the Still River Regional Basin. To support recreational uses the geomean E. coli concentration must be less than 126 col/100 ml, with a single sample maximum of 560 col/100 ml. In addition to bacterial contamination, nitrogen and phosphorus are nutrients of concern throughout the Still River watershed. Excess nitrogen in the Still river contributes to eutrophication in Long Island Sound. Excess phosphorus in the Still River results in eutrophication in freshwater impoundments downstream, such as Lake Lillinonah and Lake Zoar.

The Study Area is along the Still River in the main stem 2 subwatershed that was identified as requiring 87% reduction in E-Coli to meet TMDL reduction requirements (See Figure 1-2). The Study Area includes properties along Pocono Road and Dean Road from Silvermine Road to Station Road on the east side of the Still River (See Figure 1-3). There are 91 single family 1960-era homes with septic systems that are not conforming according to current standards. Many septic system are located in the water table.

The BWPCA has identified the study area as an area of concern for wastewater management and has investigated sewering the area to address study area wastewater management problems. The cost of conventional sewer systems is greater than the properties can sustain by the typical Benefit Assessment approach.

This proposed study will establish the attenuation capability of the soils which are expected to be low given that nearly half if the properties have reported septic failures. If the soils do not remove appreciable amount of septic nitrogen and phosphorus, then the study area properties would be discharging approximately 1,870 lbs. of nitrogen per year (5.1 lbs-N/day) and 208 lbs of phosphorus per year (.57 lbs-P/day) to the Still River. These estimates are based upon each property's wastewater flow of 150 gpd, septic tank effluent of 60 mg/L nitrogen with 25% removal in drainfield and 5 mg/L phosphorus with no drainfield P removal. Bacterial contamination from septic system occurs when there is less than 2 feet between the bottom of the drainfield and groundwater and / or surface breakout of septic effluent.

The Brookfield WPCA identified the Study Area as an Area of Concern in its Wastewater Management Map of the Town, with Figure 1-4 illustrating the boundaries of the area. Figure 1-5, presents Study Area Property by Property Septic System Failure Characterization. The characterization and statistics are:

1. 47 % of the properties were designated as Failure Recorded / Special Flood Area;
2. 39 % of the properties were designated as Possible Failure / Flood Area;
3. 14 % of the properties required additional information

Odors attributed to failing septic systems and conditions indicative of septic surface breakouts in the Study Area have been reported to the WPCA.

The Project is to develop creative solutions to the cluster of inadequate septic systems by performance of these major activities described in the proposed Scope of Work:

1. Determine, using latest scientific techniques, impact of Study Area properties on the bacterial (E. coli), nitrogen (N), phosphorus (P) and PFAS water quality of the Still River. The determinations will be the design bases for any needed corrective actions to reduce the constituents to acceptable levels.
2. Identify creative wastewater management solutions to eliminate the negative septic water quality impacts. Emphasize use of passive, simple to operate and maintain solutions.
3. Prepare preliminary engineering layouts and budgets for each of the 91 properties.
4. Prepare Executive Level Management / Financing Plans, and Implementation Schedule.

The project goals include:

a. Determining types of solutions that are technically reliable and more cost effective than conventional and low-pressure sewering,
b. Develop an Implementable Plan to reduce impacts septic impacts on Still River using decentralized wastewater management techniques,
c. Serve as a model for other river and lakefront communities

Examples of creative solutions that are expected to be applicable in the Study Area include, but are not limited to:

- Innovative drainfield products that enable the drainfield to be higher in the soils horizon and thereby achieve the required drainfield to groundwater separation – such as drip irrigation and Eljen geotextile sand filter,
- Use of Permeable Reactive Barriers (PRB) for nitrogen and phosphorous removal, see Figure 1-6 from US EPA
- Passive filter that achieves 90% phosphorus and 50+ % BOD / TSS removal. Filter could be used for sites that have undersized drainfields and no additional space for expansion.
- Adding media to drainfield to achieve N and P removal – such as Passive nitrogen reduction (PNR) technology as described in CT Health Dept. Septic System Code

The creative solutions will be compared to conventional solutions such as gravity and pressure sewers to illustrate technical and cost competitiveness.

The project is being coordinated with the Housatonic Valley Association (HVA) in its preparation of the Still River Watershed Action Plan for Nonpoint Source Reduction. As detailed in the Scope of Work, HVA will perform the data collection for characterizing Still River water quality during the summer of 2019 with the Brookfield WPCA paying the additional labor and lab costs associated with a sampling program to address the study areas' water quality impact on the River.

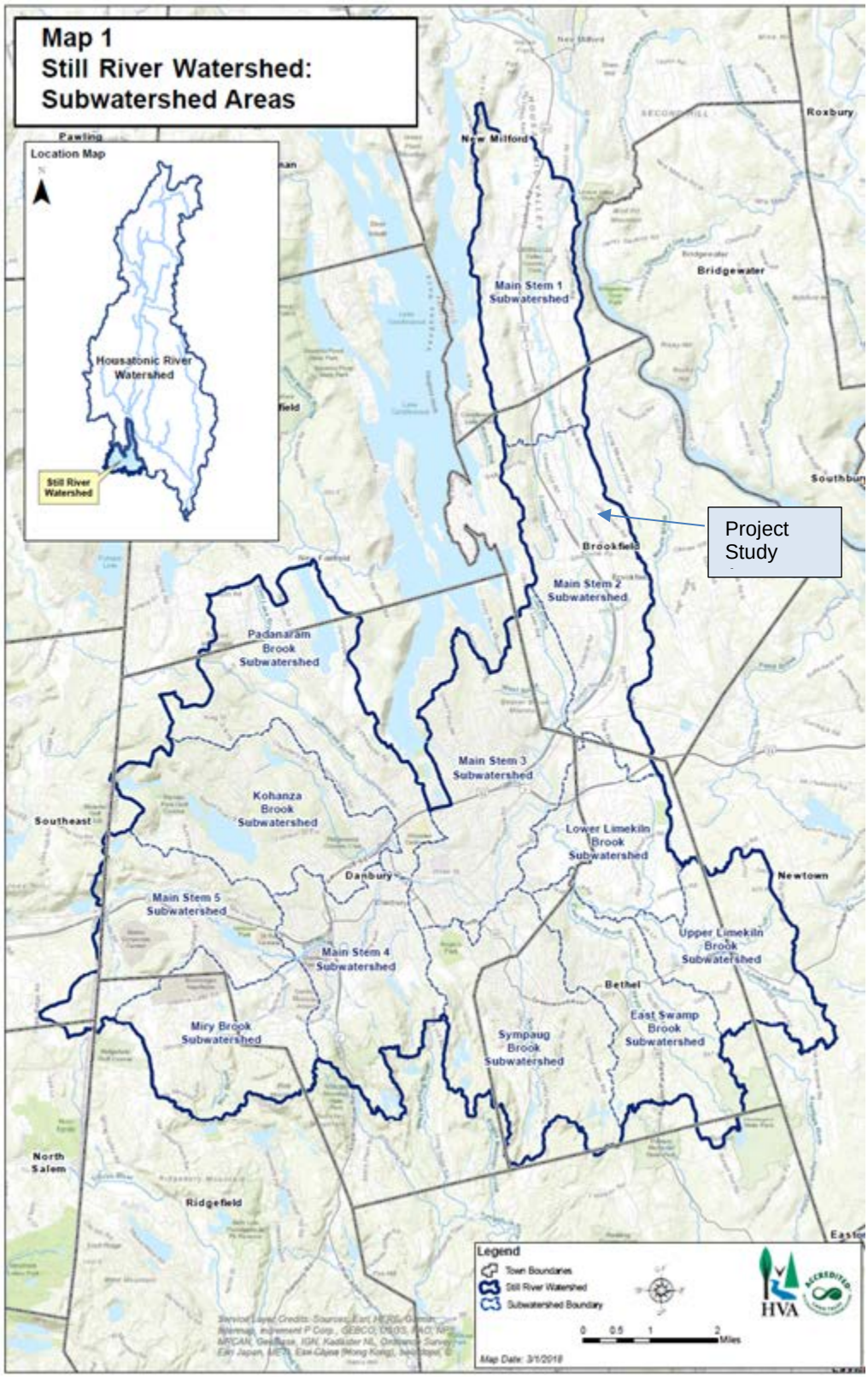

Figure 1-1 Still River Watershed & Study Area Location

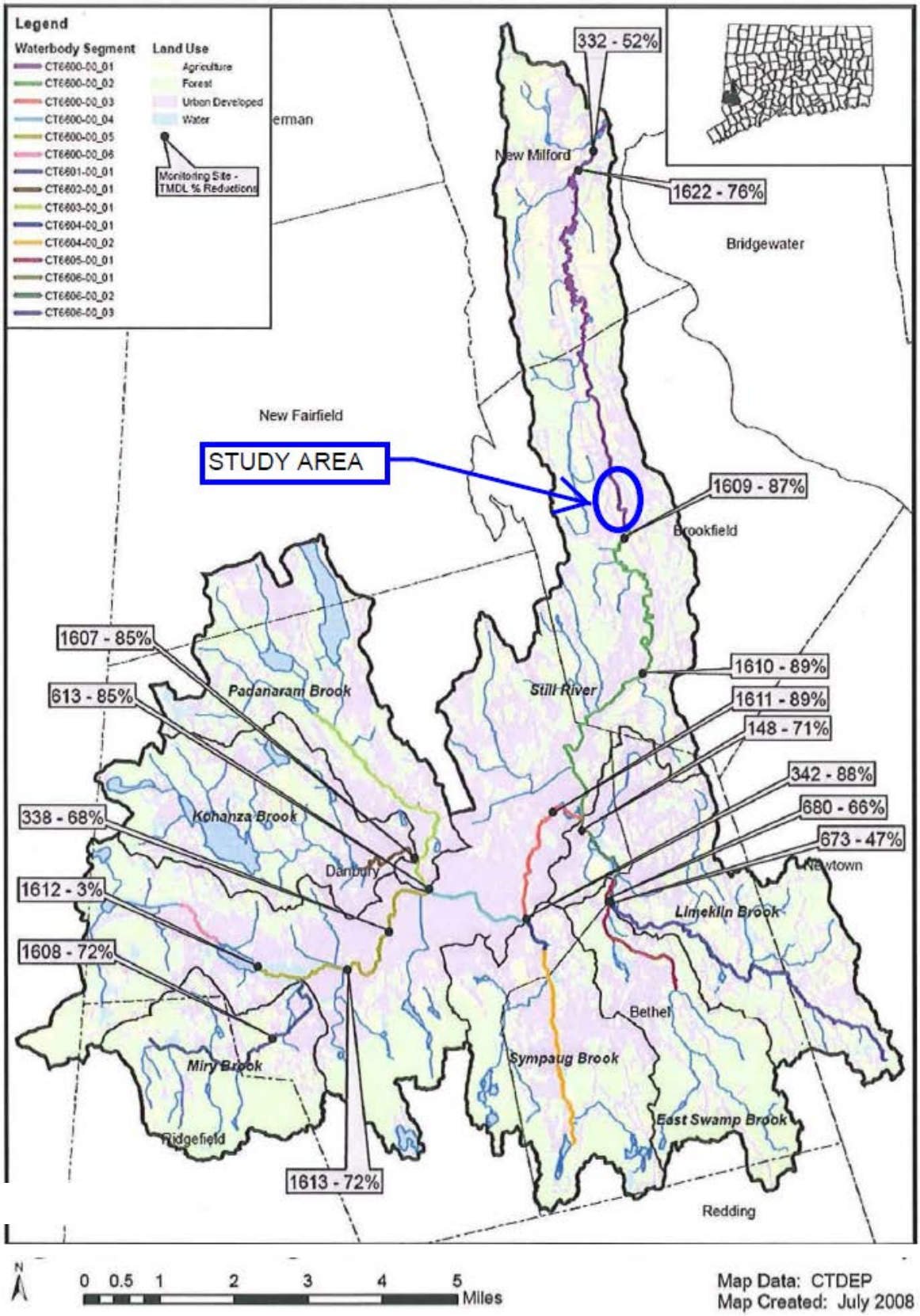

Figure 1-2 Still River Watershed and E.coli TMDL Reduction Requirements

1

Figure 1-3 Still River Study Area Aerial Photo

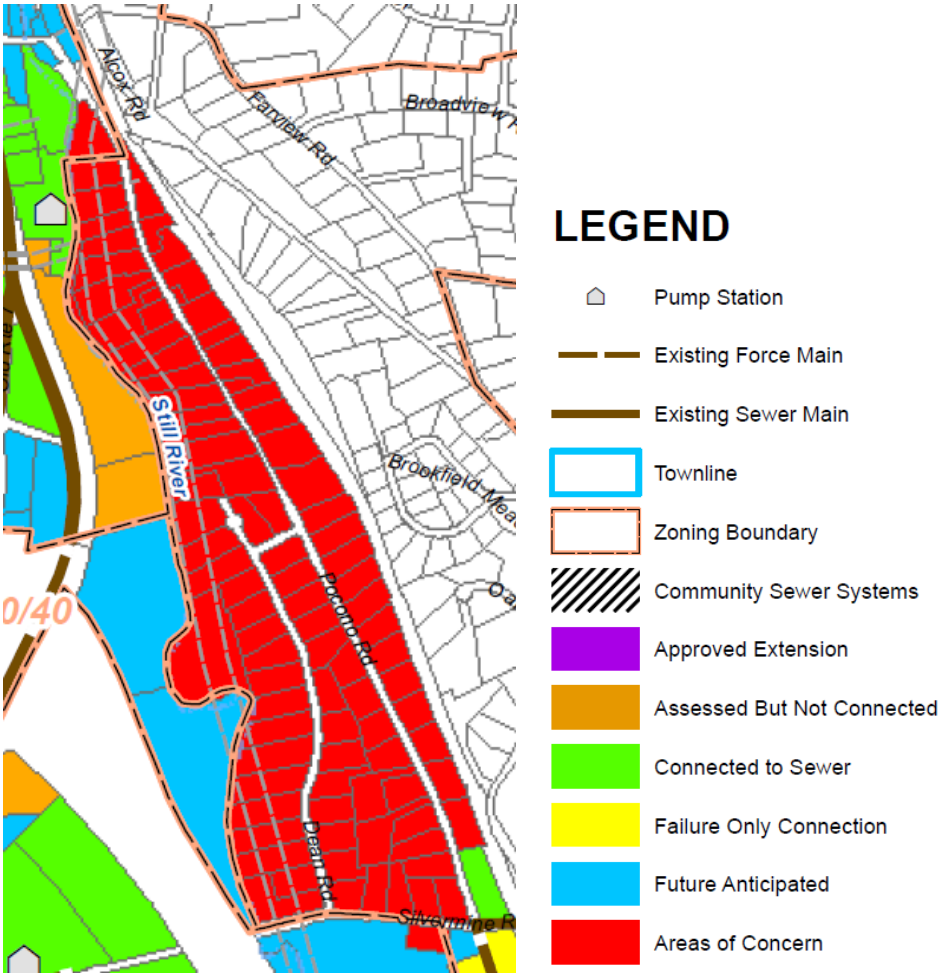

Figure 1-4 Study Area Characterization by Brookfield WPCA

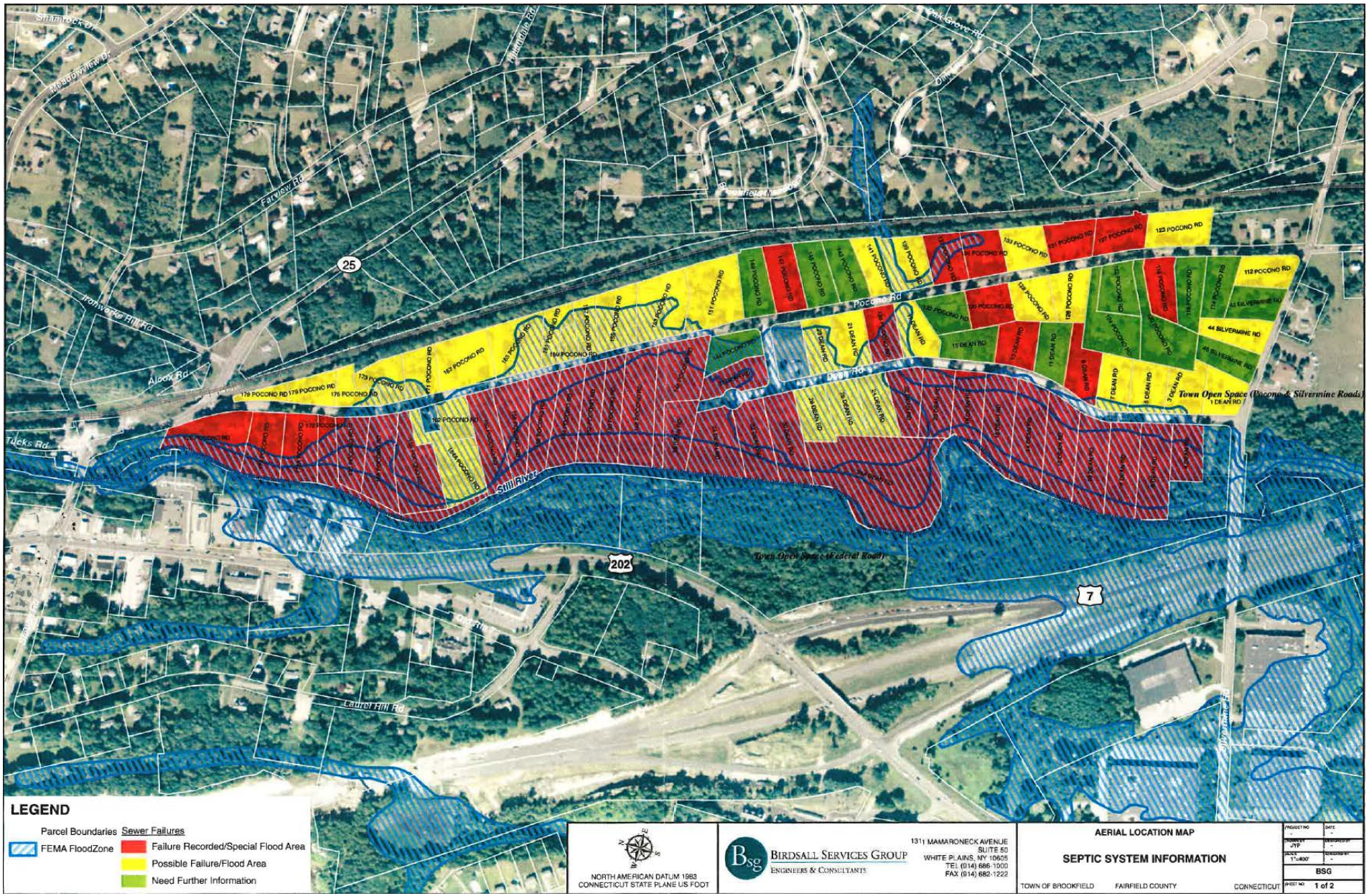

Figure 1-5 Study Area Property by Property Septic System Failure Characterization

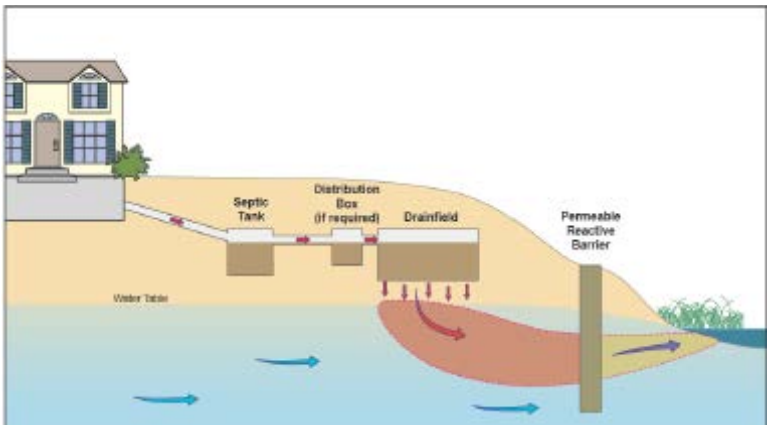

Figure 1-6 PRB for Septic Effluent Treatment

1.2 ENVIRONMENTAL CONDITIONS IN THE STUDY AREA

Still River Hydrology & Water Quality

The proposed project benefits from the USGS gaging station being located at the southern and upgradient end of the Study area and the proposed HVA sampling location at the northern and downgradient end at 777 Federal Road, Brookfield. The USGS gauging station monitors 10 parameters at the site including flow and dissolved oxygen. March 2018 – March 2019 data is presented on Figures 1-6 and 1-7. Flood Hazard Area Map for the Study Area is presented on Figure 1-8.

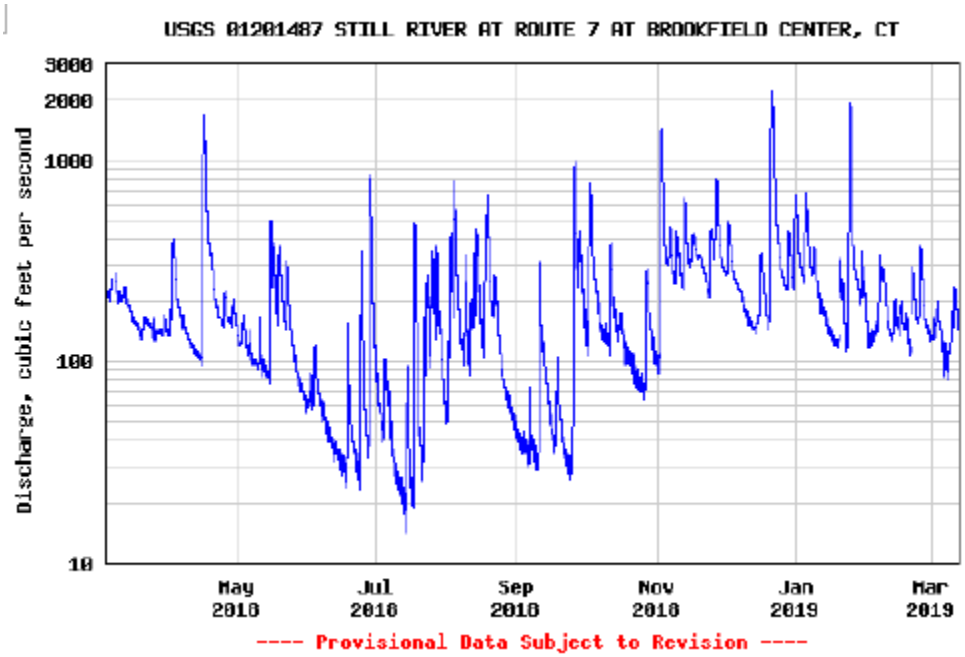

Figure 1-6 Still River at Route 7 Flow data March 2018 – March 2019

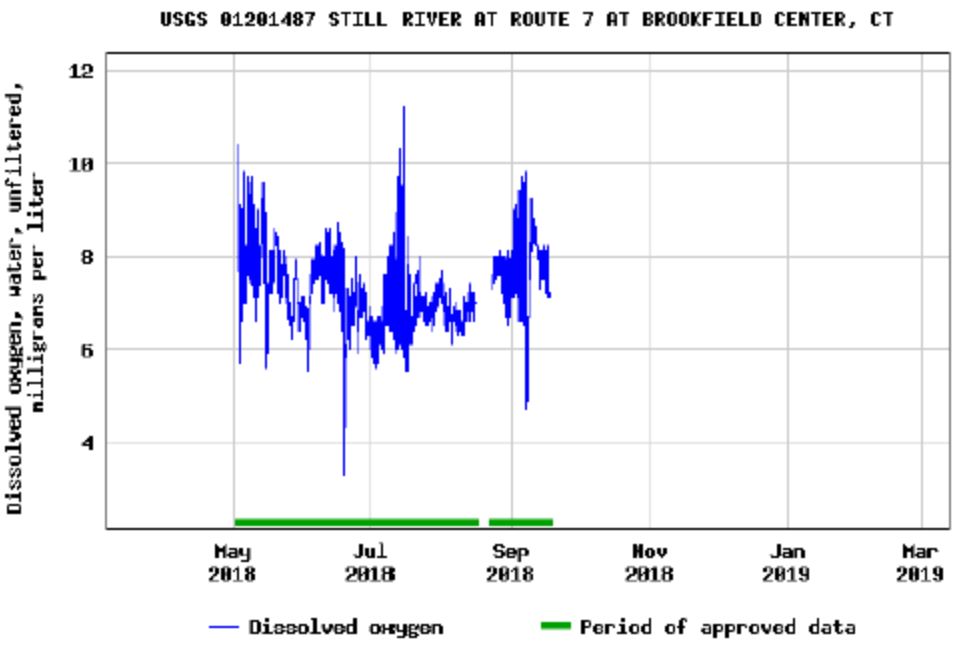

Figure 1-7 Still River at Route 7 Dissolved Oxygen Data

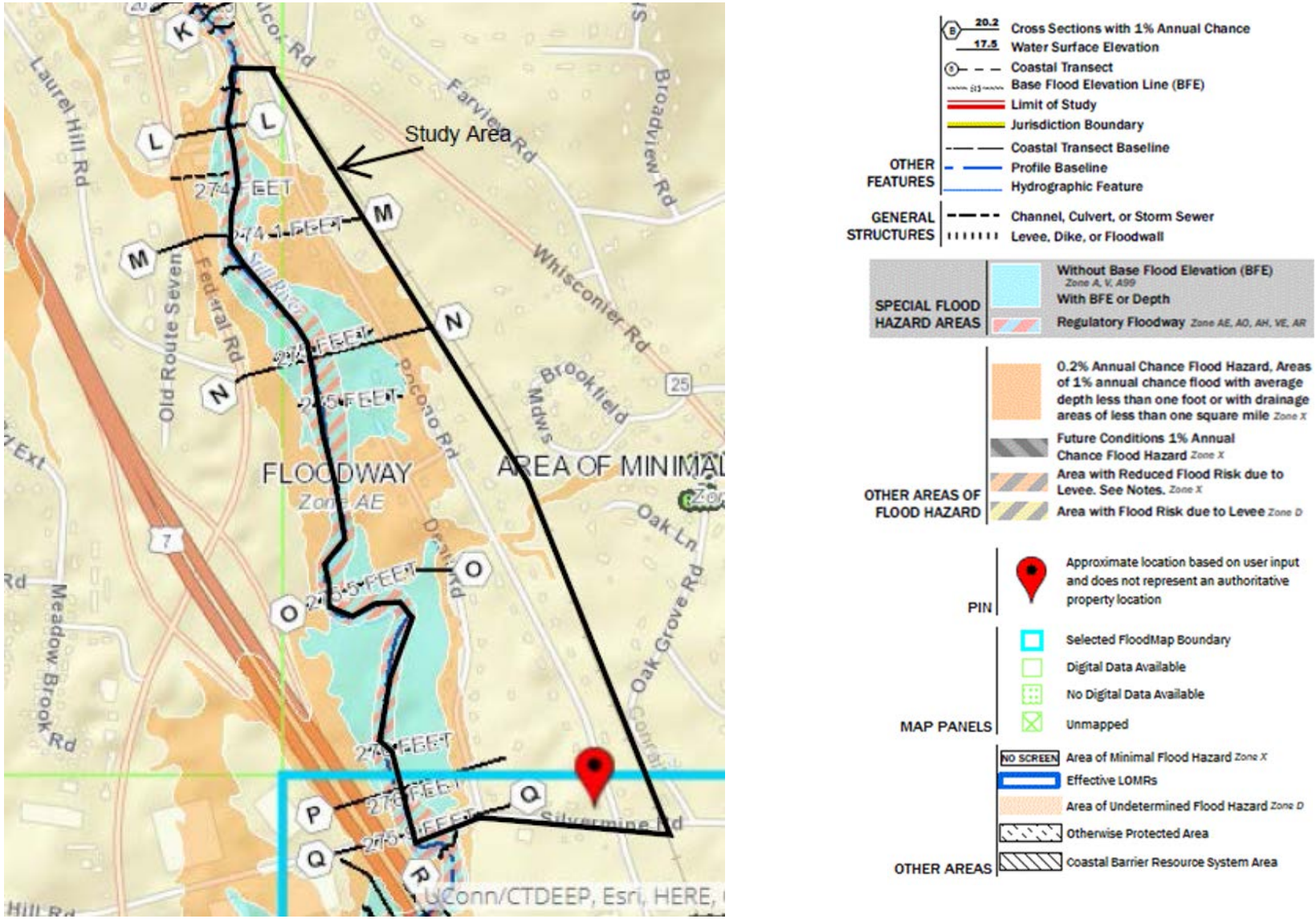

Figure 1-8 Study Area Flood Hazard Area Map

1.3 PROJECT OUTCOMES

- Reduce the bacteria and nutrient impact on the Still River Water shed and downstream aquatic communities. The impact will be not only in the Still River but in receiving waters including Lake Lillanonah and Lake Zoar, which are distressed.
- The is a high likelihood of success to reduce E-coli to assist in meeting HVA goals, since it is hoped that this River can be rendered useful for recreation. This project will have a particular focus on bacteria reduction and control.
- LAI, serving as an experienced wastewater consultant with specialization in decentralized solutions for 40+ years, has the experience to postulate credible creative solutions for dealing with clusters of inadequate septic systems, which is the instant case of these aged low-lying septic installations.
- A goal of the proposal is to result in an outline of creative approaches that will result in cost effective alternatives to conventional gravity and low-pressure force main systems.
- This proposal is specifically tailored to deliver an impact that is smart and promises to offer real appropriate solutions that have been effective elsewhere in the US. In this case, it is about 91 properties in a low-lying area contributing E-coli and P, N and maybe PFAS to the environment. The work product is to answer the question as to "What kind of system(s) can deliver an effective solution at lower cost than conventional sewer systems?"
- Please notice that this proposal provides examples of what might be creative alternatives that would result out of such a study.
- These solutions(s) will be useful to serve as a model for other river and lake front communities in Connecticut and other States.
- While the State of Connecticut provides the local 40% funding match, the Brookfield WPCA will provide the local 40% match and thereby demonstrate its commitment to develop and implement alternatives to conventional sewering. Additionally, BWPCA proposes to implement the anticipated decentralized solutions within a sustainable utility framework.

This work plan is consistent with the Still River Watershed plan which is underdevelopment. The Brookfield WPCA is participating on the HVA ad hoc group to be sure the efforts are coordinated. That plan is in the formative stages and due to be completed in September 2019.

HVA's letter of Support is attached in the Appendix.

2 PROJECT APPROACH & SCOPE OF WORK

The proposed project approach consists of the following Tasks to develop creative solution(s) to the cluster of inadequate septic systems in the Study Area:

1. Study Areas Data Gathering and Review
2. Data Gathering
    a. Still River and drainage ditch/brook monitoring
    b. Septic Survey to Property Owners
    c. Septic Plume monitoring at 3 properties & soils analysis to determine soils P removal, if any
    d. Soil characterization and Depth to Groundwater
    e. Groundwater characterization (N, P and E. coli)
3. Initial Determination of Needed Wastewater Management Improvements – each 91 property
4. Identification & Evaluation of Wastewater Management Options
    a. On-site system upgrades
    b. Innovative, passive low O&M required options
    c. If needed, small group of homes
5. Proposed Wastewater Management Plan – for all study area properties
6. Engineering Layout and Capital/Annual O&M Budgets of Proposed Plan
7. Management and Financing Plans and Implementation Schedule

We propose to scientifically determine the ability of Study Area soils to remove septic E. coli, nitrogen and phosphorus and PFAS. PFAS will be analyzed by the Isotope Dilution Method which captures 28 analytes. The project proposes issuance of Task Reports that will then become chapters, as refined and integrated, of the Final Report.

Scope of Work

Task 0 QAPP

LAI will prepare a Quality Assurance Project Plan (QAPP) that must be approved by CT DEEP/US EPA prior to the commencement of the project work. The QAPP shall be written according to the US EPA guidance documents.

Task 1 Existing Conditions Data Gathering and Review

LAI will gather and review existing information for the Still River study area parcels. Information to be gathered will include:

- Town and County Planning Departments GIS shape files on the Study Area's natural resources, topography, soils, wetlands, flood plain, aerial photography, etc.
- Board of Health files on wastewater design and any complaints / reported failures
- Town property information (i.e. assessor's database and tax maps that can be integrated with the County's shape files) – which is to be provided by the Town
- Water use data by property
- Field review of study area

A Task 1 Report/Technical Memorandum (TM) will be prepared on the results of these efforts.

Task 2 Data Gathering – Septic Impact Assessment

2.1 Still River sampling

The Still River water quality will be sampled at the two sites (see Figure 1-3) of:

- ✓ Silvermine Road crossing (i.e. USGS gauging station 01201487 at Route 7-Brookfield Center) and
- ✓ HVA sampling site S02 at 777 Federal Road Brookfield and drainage areas discharging to the Still River.

in an attempt to assess the impact of the 91 septic systems on the River's quality.

Frequency and Duration of sampling is every 2 weeks, from June 5 thru August 14, 2019 – i.e. 6 events, at 2 locations. This work will be performed by HVA and paid for by Brookfield WPCA during summer 2019.

Constituents

E. coli
Total Phosphorus
Soluble phosphorus
TKN
Ammonia
NO_2+NO_3

As this work will be performed prior to any potential grant award, the Brookfield WPCA will pay for the work and thereby demonstrate its commitment to the project. As discussed with HVA, as part of their watershed sampling efforts, HVA would perform the data collection with WPCA paying for the lab costs and extra labor costs.

2.2 Drainage Ditches to Still River sampling

For three events at three (3) locations, the drainage ditches and brooks discharging to the Still River will be sampled for

Constituents

E. coli
Total Phosphorus
Soluble phosphorus
TKN
Ammonia
NO_2+NO_3
PFAS – only 1st sampling event

2.3 Septic Survey to Property Owners

A survey will be sent to each property owner requesting information on the performance and reliability of their septic system and identification of any septic related problems on their property and/or the study area.

2.4 Septic Plume monitoring at 3 Properties & Soils Analysis for P Removal

LAI will identify desirable locations to determine soils removal of septic N, P and E. coli. WPCA will create a list of willing property owners within the Study Area. Following a field review, LAI will select at least three (3) sites from the willing property owners' list and develop a field sampling plan for each site. LAI and WPCA will meet with the property owners and describe the proposed testing plan details. WPCA to then obtain access agreement from property owner based upon the LAI provided recommended Access Agreement.

At each of the three (3) sites, soil samples below the septic drainfield will be taken at 3 locations within the drainfield and at 3 depths per location and analyzed for phosphorus removal.

LAI will install three multi-level bundle piezometers at each site and obtain groundwater samples for 2 events at 3 depths and sample for TP (only 1 event), Soluble Reactive Phosphorus (SRP), nitrate-N, Cl- and the artificial sweetener acesulfame (ACE) (only 1 event). Approximately 54 samples will be taken and analyzed for the above constituents.

2.5 Soil Borings

Six (6) Soil Borings will be taken throughout the Study Area to characterize study area soils and depth to GW. Soil samples will be collected and sieve analysis performed to estimate hydraulic conductivity. Soils will also be analyzed for total iron, aluminum and calcium.

2.6 Groundwater Quality Characterization

Groundwater monitoring wells will be installed downgradient of the 3 septic systems examined in Task 2.4 and sampled for E. coli, nitrogen and phosphorus at 3 elevations into the groundwater for 2 events. Continuous groundwater elevation measurements will be taken to document GW elevation changes as a function of time of year.

Task 2.7 Task Report

A Task 2 Report will be prepared presenting the findings of Task 2.1 through 2.6.

Task 3 Determination of Needed Wastewater Management Improvements

Based upon the results of Tasks 1 and 2, LAI will perform a Lot by Lot Analysis and characterize their wastewater systems as:

- ✓ Operating satisfactory
- ✓ Functional Problem as septic is not daring properly and/or have breakout.
- ✓ Performance Problem
  - Bacterial due to inadequate removal of bacteria / E. coli. Minimum groundwater separation of 2 feet required
  - Inadequate Nitrogen and/ or Phosphorus removal
- ✓ Insufficient space to correct system when failure occurs

A Task 3 Report/TM will be prepared that presents the results of these efforts.

Task 4 Identification & Evaluation of Wastewater Management Options

LAI will prepare a brief summary of the wastewater management options available to address the needs identified by Task 3. As stated in the Introduction, the project will emphasize creative wastewater management solutions to eliminate the negative septic water quality impacts. We will emphasize use of passive, simple to operate and maintain solutions.

Examples of creative solutions that are expected to be applicable in the Study Area include, but are not limited to:

- Innovative drainfield products that enable the drainfield to be higher in the soils horizon and thereby achieve the required drainfield to groundwater separation – such as drip irrigation and Eljen geotextile sand filter,
- Use of Permeable Reactive Barriers (PRB) for nitrogen and phosphorous removal, see Figure 1-6 from US EPA
- Passive filter that achieves 90% phosphorus and 50+ % BOD / TSS removal. Filter could be used for sites that have undersized drainfields and no additional space for expansion.
- Adding media to drainfield to achieve N and P removal – such as Passive nitrogen reduction (PNR) technology as described in CT Health Dept. Septic System Code

We will screen the options to identify which options are technically feasible / viable for the study area. Furthermore, based upon expected cost competitiveness and ease of operation/reliability, we will perform a preliminary ranking of the viable alternatives. A Task 4 Report/TM will be prepared.

Task 5 Wastewater Management Plan

Integrating the Tasks 3 and 4 efforts, LAI will prepare a Study Area Wastewater Management Plan that will describe the proposed solution(s) for each property. The Plan will include:

- ✓ Preliminary Layouts of Engineering Solutions
- ✓ Preliminary Capital and Annual O&M Budgets

Based upon public review of the draft Plan, the Plan will be finalized and incorporate responses to public comments.

A Task 5 Report/TM will be prepared that presents the results of these efforts.

Task 6. Management and Financing Plans and Schedule

Using the Task 5 Plan budgets and potential/expected grants, LAI will prepare a Management and Financing Plan for the Proposed Improvements. Based upon the expected capital and annual O&M costs, potential grants and financing (i.e. bonds for 20 – 30 years), we will estimate required annual user chargers for financial sustainability.

An Implementation Plan (i.e. Gantt Chart) will be prepared to illustrate project components (including permitting) and how they would be phased in over time.

The Management Plan could apply to any WPCA with a history of dealing only with conventional gravity sewers and having a need to address problem septic systems with conventional sewers not being technically or economically viable.

Task 7 Public Meetings & Final Report

A minimum of two (2) Study Area meetings are proposed to be held at the following milestones:

- After completion of Task 3 to review the Needs Definition and initial efforts of Task 4 Solution options.
- After draft Task 5 Report to review the proposed solutions / Plan with the public

Following the Report completion, LAI with HVA will make two (2) public presentations on the project findings to watershed stakeholders.

3 SCHEDULE & BUDGET

Figure 3-1 presents the proposed project schedule.

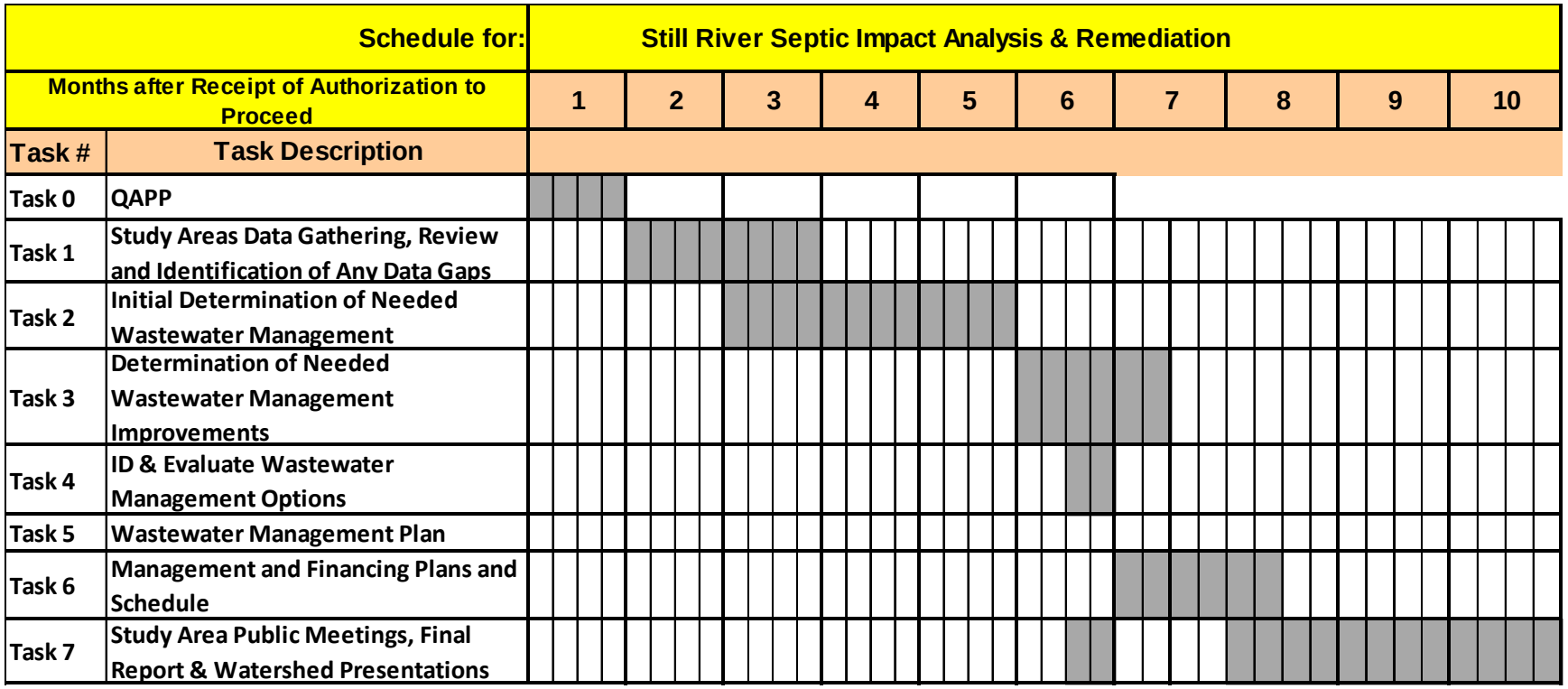

Figure 3-1 Proposed Project Schedule

Table 3-1 presents the budget summary by task.

Table 3-1 Proposed Project Budget – Task Summaries

Task #	Task Description	Budget
0	QAPP	$2,888
1	Study Areas Data Gathering, Review and Identification of Any Data Gaps	$14,249
2	Initial Determination of Needed Wastewater Management Improvements	$59,239
3	Determination of Needed Wastewater Management Improvements	$7,415
4	ID & Evaluate Wastewater Management Options	*$6,357*
5	Wastewater Management Plan	*$4,706*
6	Management and Financing Plans and Schedule	$6,008
7	Study Area Public Meetings, Final Report & Watershed Presentations	$17,788
	Total	$118,651

Table 3-2 presents budget details by task.

Table 3-2 Proposed Project Budget – Task Details

Still River Septic Impact Analysis & Remediation			Labor Budget						Date:	3/31/2019	
Task #		Description	Princ ipal	Sr. Engr	Proj. Engr	GIS Spec	Proj. Asst.	Total Hours	Labor ($)	Expense	SubTask Fee
Task 0	**QAPP**										
	0.1	Plan Preparation	**4**		**12**		**2**	18	$ 2,707	$ 181	$ 2,888
Task 1	**Study Areas Data Gathering, Review and Identification of Any Data Gaps**										
	1.1	Assessor/Other Electronic Data Consolidation	4.00		12.00	12.00	2.00	30	$ 3,847	$ 1,415	$ 5,263
	1.2	Parcel Shape Files & Nat'l Resource Data	2.00		4.00	8.00	2.00	16	$ 1,937	$ 158	$ 2,095
	1.3	Merge Digital Data bOh with GIS Parcel Data	1.00		4.00	2.00	16.00	23	$ 2,609	$ 178	$ 2,787
	1.4	Creation of Data Summary by Parcel	2.00		8.00	2.00		12	$ 1,720	$ 152	$ 1,872
	1.5	Task 1 Report	6.00		6.00			12	$ 2,070	$ 162	$ 2,232
		Subtotal	***15.00***	***0.00***	***34.00***	***24.00***	***20.00***	***93***	***$ 12,184***	***$ 2,066***	***$ 14,249***
Task 2	**Initial Determination of Needed Wastewater Management Improvements**										
	2.1	Still River sampling						0	$ -	$ -	$ -
	2.2	Drainage to Still River sampling	6.00		6.00			12	$ 2,070	$ 8,332	$ 10,402
	2.3	Septic Survey to Property Owners	2.00		2.00		4.00	8	$ 1,103	$ 1,033	$ 2,137
	2.4	Septic Plume monitoring & Soils Analysis	8.00	24.00	4.00		4.00	40	$ 6,823	$ 18,425	$ 25,248
	2.5	Soil Borings	8.00		2.00		2.00	12	$ 2,127	$ 1,864	$ 3,991
	2.6	Groundwater Quality Characterization	8.00	20.00	2.00		4.00	34	$ 5,841	$ 7,831	$ 13,671
	2.7	Task 2 Report	12.00		6.00	4.00		22	$ 3,680	$ 110	$ 3,791
		Subtotal	***44.00***	***44.00***	***22.00***	***4.00***	***14.00***	***128***	***$ 21,645***	***$ 37,595***	***$ 59,239***
Task 3	**Determination of Needed Wastewater Management Improvements**										
	3.1	Lot by Lot Analysis	4.00		16.00	4.00	8.00	32	$ 4,267	$ 328	$ 4,595
	3.2	Task 3 Report	4.00		8.00	2.00	4.00	18	$ 2,544	$ 276	$ 2,820
		Subtotal	***8.00***	***0.00***	***24.00***	***6.00***	***12.00***	***50***	***$ 6,811***	***$ 604***	***$ 7,415***
Task 4	**ID & Evaluate Wastewater Management Options**										
	4.1	Draft Report	12.00		8.00		2.00	22	$ 3,787	$ 314	$ 4,101
	4.2	Task 4 report	6.00		4.00		2.00	12	$ 1,997	$ 260	$ 2,257
		Subtotal	***18.00***	***0.00***	***12.00***	***0.00***	***4.00***	***34***	***$ 5,784***	***$ 574***	***$ 6,357***
Task 5	**Wastewater Management Plan**										
	5.1	Draft Report	6.00		4.00			10	$ 1,790	$ 254	$ 2,044
	5.2	Task 5 Report	8.00		4.00	2.00		14	$ 2,390	$ 272	$ 2,662
		Subtotal	***14.00***	***0.00***	***8.00***	***2.00***	***0.00***	***24***	***$ 4,180***	***$ 525***	***$ 4,706***
Task 6	**Management and Financing Plans and Schedule**										
	6.1	Management Plan	6.00		4.00	2.00		12	$ 1,980	$ 259	$ 2,240
	6.2	Implementation Plan	6.00		4.00	2.00		12	$ 1,980	$ 259	$ 2,240
	6.3	Task 6 Report	4.00		2.00	2.00		8	$ 1,290	$ 239	$ 1,529
		Subtotal	***16.00***	***0.00***	***10.00***	***6.00***	***0.00***	***32***	***$ 5,251***	***$ 758***	***$ 6,008***
Task 7	**Study Area Public Meetings, Final Report & Watershed Presentations**										
	7.1	Public Meet # 1	8.00		8.00	2.00		18	$ 2,950	$ 1,489	$ 4,439
	7.2	Public Meet # 2	8.00		8.00	2.00		18	$ 2,950	$ 1,489	$ 4,439
	7.3	Final Report	8.00		10.00			18	$ 3,040	$ 291	$ 3,331
	7.4	Presentations with HVA	16.00					16	$ 3,280	$ 2,298	$ 5,579
		Subtotal	***40.00***	***0.00***	***26.00***	***4.00***	***0.00***	***70***	***$ 12,221***	***$ 5,567***	***$ 17,788***
		GRAND TOTAL	**159.00**	**44.00**	**148.00**	**46.00**	**52.00**	**449.00**	**$ 70,783**	**$ 47,869**	**$ 118,651**

Still River Septic Impact Analysis & Remediation - Expenses Budget												
	Task No.	Task Description	Travel Trips	Travel Dollars	Lab Analysis	Drilling Expendables				Misc Other		Expenses Total
Task 0	***QAPP***											
	0.1	*Plan Preparation*						$81		**$ 100**	$	181
Task 1	***Study Areas Data Gathering, Review and Identification of Any Data Gaps***											
	1.1	*Assessor/Other Electronic Data Consolidation*	**2**	$1,200				$115		$100	$	1,415
	1.2	*Parcel Shape Files & Nat'l Resource Data*		$0				$58		$100	$	158
	1.3	*Merge Digital Data bOh with GIS Parcel Data*		$0				$78		$100	$	178
	1.4	*Creation of Data Summary by Parcel*		$0				$52		$100	$	152
	1.5	*Task 1 Report*		$0				$62		$100	$	162
		Subtotal	**2**	**$1,200**	**$0**	**$0**	**$0**	**$366**	**$0**	**$500**	**$**	**2,066**
Task 2	***Initial Determination of Needed Wastewater Management Improvements***											
	2.1	*Still River sampling*		$0				$0			$	-
	2.2	*Drainage to Still River sampling*	**3**	$1,800	$5,970			$62		$500	$	8,332
	2.3	*Septic Survey to Property Owners*		$0				$33		$1,000	$	1,033
	2.4	*Septic Plume monitoring & Soils Analysis*	**6**	$3,600	$12,420	$2,000		$205		$200	$	18,425
	2.5	*Soil Borings*	**1**	$600	$1,000			$64		$200	$	1,864
	2.6	*Groundwater Quality Characterization*	**2**	$1,200	$6,256			$175		$200	$	7,831
	2.7	*Task 2 Report*		$0				$110			$	110
		Subtotal	**12**	**$7,200**	**$25,645**	**$2,000**	**$0**	**$649**	**$0**	**$2,100**	**$**	**37,595**
Task 3	***Determination of Needed Wastewater Management Improvements***											
	3.1	*Lot by Lot Analysis*		$0				$128		$200	$	328
	3.2	*Task 3 Report*		$0				$76		$200	$	276
		Subtotal	**-**	**$0**	**$0**	**$0**	**$0**	**$204**	**$0**	**$400**	**$**	**604**
Task 4	***ID & Evaluate Wastewater Management Options***											
	4.1	*Draft Report*		$0				$114		$200	$	314
	4.2	*Task 4 report*		$0				$60		$200	$	260
		Subtotal	**-**	**$0**	**$0**	**$0**	**$0**	**$174**	**$0**	**$400**	**$**	**574**
Task 5	***Wastewater Management Plan***											
	5.1	*Draft Report*		$0				$54		$200	$	254
	5.2	*Task 5 Report*		$0				$72		$200	$	272
		Subtotal	**-**	**$0**	**$0**	**$0**	**$0**	**$125**	**$0**	**$400**	**$**	**525**
Task 6	***Management and Financing Plans and Schedule***											
	6.1	*Management Plan*		$0				$59		$200	$	259
	6.2	*Implementation Plan*		$0				$59		$200	$	259
	6.3	*Task 6 Report*		$0				$39		$200	$	239
		Subtotal	**-**	**$0**	**$0**	**$0**	**$0**	**$158**	**$0**	**$600**	**$**	**758**
Task 7	***Study Area Public Meetings, Final Report & Watershed Presentations***											
	7.1	*Public Meet # 1*	**2**	$1,200				$89		$200	$	1,489
	7.2	*Public Meet # 2*	**2**	$1,200				$89		$200	$	1,489
	7.3	*Final Report*		$0				$91		$200	$	291
	7.4	*Presentations with HVA*	**2**	$1,200				$98		$1,000	$	2,298
		Subtotal	**6**	**$3,600**	**$0**	**$0**	**$0**	**$367**	**$0**	**$1,600**	**$**	**5,567**
		GRAND TOTAL	**20**	**$12,000**	**$25,645**	**$2,000**	**$0**	**$2,042**	**$0**	**$6,000**	**$**	**47,869**

APPENDIX A HOUSATONIC VALLEY ASSOCIATION LETTER OF SUPPORT

Housatonic Valley Association

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Cornwall Bridge, CT 06754
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14 Main Street
PO Box 496
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T: (413) 298-7024

37 Furnace Bank Road
PO Box 315
Wassaic, NY 12592
T: (845) 442-1039

hvatoday.org

Philip Trowbridge
Assistant Director & Nonpoint Source Program Supervisor
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

March 27, 2019

RE: FY2019 DEEP Section 319 application

Dear Mr. Trowbridge,

This letter indicates the Housatonic Valley Association's (HVA) support for Brookfield Water Pollution Control Authority's (BWPCA) application to the DEEP Section 319 grant program entitled "*Septic System Impacts on Still River in Brookfield and downstream Housatonic River - Scientific Characterization & Creative Solutions for Bacterial, Nitrogen, & Phosphorus Impacts.*"

HVA is the watershed group and accredited land trust whose mission is to protect and restore the health and natural character of the entire Housatonic River watershed for this and future generations. HVA has convened municipalities, conservation organizations, and community leaders as the Still River Partners (SRP) to address Total Maximum Daily Loads for *E. coli*, nutrients and metals in the Still River watershed through development of a watershed-based plan. BWPCA's proposal is in line with the SRP's efforts to implement the aforementioned TMDL's and reduce nonpoint source pollution throughout the watershed. This project furthers the Still River Watershed Plan goal (approved by the SRP on February 21, 2019) to "Improve water quality of the Still River and its tributaries to meet Connecticut Water Quality Standards for recreation and habitat for fish, other aquatic life." This project will be included in the Implementation Strategy portion of the Still River Watershed Plan, and we expect it to emerge as a high priority for implementation.

HVA will contribute to the project by collecting water quality samples at the two sites indicated in the proposal - 777 Federal Road and at the USGS Gauging Station near Silvermine Road. HVA has approved funding through the CWA Section 319 grant program to collect samples for ambient water quality monitoring for *E. coli*, Fecal Coliform, Ammonia, Total Phosphorous, Surfactants, and Chlorine at 14 sites throughout the Still River which includes the site at 777 Federal Rd. We will collect methods under an approved QAPP to be written with the execution of the 319 contract for these parameters as well as the additional parameters and sites outlined in this proposal. As a partner, we commit to sharing all relevant data and analysis with BWPCA to further the efforts of this project.

This project will help pinpoint specific pollution impacting the Still River and inform the most effective strategies to mitigate these sources of pollution going forward. HVA looks forward to the opportunity that this project presents for the health of the Still River, and BWPCA has our full support for this endeavor.

Sincerely,

Michael Jastremski
Watershed Conservation Director
Housatonic Valley Association