



**Town of Essex, Connecticut
2019 Annual Report**

**General Permit for the Discharge of Stormwater
from Small Municipal Separate Storm Sewer Systems (MS4)**

Permit Number GSM 000019

MS4 General Permit
Town of Essex 2019 Annual Report
Existing MS4 Permittee
Permit Number GSM 000019
[January 1, 2019 – December 31, 2019]

This report documents Town of Essex's efforts to comply with the conditions of the MS4 General Permit to the maximum extent practicable (MEP) from January 1, 2019 to December 31, 2019.

Part I: Summary of Minimum Control Measure Activities

1. Public Education and Outreach (Section 6 (a)(1) / page 19)

1.1 BMP Summary

BMP	Status	Activities in current reporting period (if needed, more space available after this table)	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
Implement public education and outreach to raise awareness about pollution from stormwater runoff and its damaging impact on water quality	Ongoing	Updated the stormwater brochure which is made available to all residents. Brochure addresses the impact of the following on water quality: pet waste, impervious cover, application of fertilizers/pesticides/herbicides, Illicit discharges and improper disposal of wastes into the MS4. Brochures are available in the Essex Land Use Office in the Essex Town Hall and in the two local libraries.	Distribute printed & electronic information and promote web-based educational resources (Essex Events Magazine, electronic newsletter or Valley Courier) Sent to ~3000 homes in Essex	Land Use Office Essex DPW Essex Health Dept.	July 1, 2018 and continue until permit expires	July 1 2019	Implement public education and outreach to raise awareness about pollution from stormwater runoff and its damaging impact on water quality

		<p>Published on social media and town website a reminder about proper removal and disposal of leaves and other vegetation and to prevent debris from entering the MS4. Link to information on free compost collection at the Essex Landfill station.</p> <p>Submitted article for Essex Courier Newspaper entitled "Sustainable Essex Hosts Talks on Waste Reduction"</p>				<p>Sept. 29, 2019 Nov. 20, 2019</p>	
Address education/ outreach for pollutants of concern*	Ongoing	<p>Published on the Essex Health Dept website, information about Stormwater Pollution Prevention & links to UConn NEMO's comprehensive online library of stormwater educational material. The Essex Health Department's website (http://www.essexct.gov/health-department) links directly to this web-based library and promotes the availability of these materials. Essex also provided materials in a printed format to for display in public locations within Essex Town Hall and its public libraries. The Town of Essex also provided the public with an article discussing the phase out of sand during snow removal.</p>	Distribute printed & electronic information and promote web-based educational resources (Essex Events Magazine, electronic newsletter or Valley Courier)	Essex Health Dept	Ongoing		Address education/ outreach for pollutants of concern*
Implement public education and outreach to raise awareness about pollution from stormwater runoff and its damaging impact on water quaility	Ongoing	Town of Essex Community Resiliency Building Workshop.	In the Spring 2019, the Town of Essex embarked on a certification via Sustainable CT. As part of that certification, Sustainable CT and the Nature Conservancy provided the Town with a voluntary process to conduct an assessment of Climate Change impacts. In August 2019, a municipal-based core team organized a Community Reilience Building Workshop facilitated by	Town Members	Ongoing		

			the Nature Conservancy in Partnership with Sustainable CT. The core directive of this effort was the engagement with and between community stakeholders to facilitate the assessment of climate vulnerabilities and the education, planning and ultimately implementation of priority adaptation actions for Essex.				
Car and Truck Washing Events	Ongoing	Published Car and Truck washing prohibited on impervious surfaces.	Posted vehicle washing recommendations on town web site and Facebook page. Residents should avoid having car washes on impervious surfaces.	Town Members	Ongoing		The Town needs to educate residents to wash their cars and boats on grassy or crushed stone areas.
Pet Wastes (Pick up)	Ongoing	Published pet waste removal from Public Areas (i.e.parks)	Residents request to pick up after your pet.	Town Members	Ongoing		

Extra space for describing above BMP activities, if needed:

BMP	

1.2 Describe any Public Education and Outreach activities planned for the next year, if applicable.

Continued support of Sustainable CT and the Stormwater MS4 Working Group.
Continue to pursue other public activities and groups to participate in MS-4 activities.

1.3 Details of activities implemented to educate the community on stormwater

Program Element/Activity	Audience (and number of people reached)	Topic(s) covered	Pollutant of Concern addressed (if applicable)	Responsible dept. or partner org.
Stormwater Brochure	Approximately 3,000	Keeping Stormwater clean, recognizing illicit discharges and "What can I do?" items.	All	Essex Health Dept
Essex Events Magazine, electronic newsletter or Valley Courier	1,000's	Keeping Stormwater clean, recognizing illicit discharges and "What can I do?" items.	All	Essex Health Dept
Community Day Event / MS4 Stormwater Table	1,000's	Keeping Stormwater clean, recognizing illicit discharges and "What can I do?" items.	All	Essex Health Dept

2. Public Involvement/Participation (Section 6(a)(2) / page 21)

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
2-1 Final Stormwater Management Plan publically available	On-going	Publically available SMP.		Town of Essex	Ongoing	Ongoing	Town Hall and Town Website (http://essexct.com/)
2-2 Comply with public notice requirements for Annual Reports	On-going	Public Notice available	45-day Public Notice	Town of Essex	Ongoing	Ongoing	Valley Courier
TOWN OF ESSEX STORMWATER (MS4) WORKING GROUP	Quarterly Meetings	Committee Members Identified	Provide forum to coordinate SWMP implementation across commissions	John Guskowski (Town Planner)	-	On going	Reason for addition: Committee will represent town departments & commissions with stake in stormwater mgmt.

Extra space for describing above BMP activities, if needed:

BMP	

2.2 Describe any Public Involvement/Participation activities planned for the next year, if applicable.

Hold quarterly stormwater committee meetings to review SMP implementation progress.
Continue to present MS-4 information during public events and in area newspaper and magazines.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
Availability of the Stormwater Management Plan to public	Yes	1/1/2019	Town Webpage (http://essexct.com), Town Hall and Library
Availability of Annual Report announced to public	Yes	3/9/2020	Valley Courier and Town Hall

3. Illicit Discharge Detection and Elimination (Section 6(a)(3) and Appendix B / page 22)

3.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
3-1 Develop written IDDE program	Completed	Town completed written IDDE program using the CT IDDE program template	Written plan accepted		February 20, 2019		
3-2 Develop list and maps of all MS4 stormwater outfalls in priority areas	95% Completed	Finalizing the remaining interconnections and CBs.	100%		Jul 1, 2019		
3-3 Implement citizen reporting program					Ongoing		
3-4 Establish legal authority to prohibit illicit discharges	Completed	Completed	Written ordinance	Town Officials	February 2019	Completion date: February 20, 2019	
3-5 Develop record keeping system for IDDE tracking	Completed	Completed		WebMaster	Ongoing	March 2019	
3-6 Address IDDE in areas with pollutants of concern					Not specified		

Extra space for describing above BMP activities, if needed:

BMP	

3.2 Describe any IDDE activities planned for the next year, if applicable.

The written program will be posted to the Dept of Public works webpage and a link listed in next year's Annual Report; will update the written IDDE program as needed throughout the permit term.

Maintain master IDDE tracking spreadsheet and ensure all employees involved in IDDE program understand the logging process

3.3 List of citizen reports of suspected illicit discharges received during this reporting period.

Date of Report	Location / suspected source	Response taken

3.4 Provide a record of illicit discharges occurring during the reporting period and SSOs occurring July 2012 through end of reporting period using the following table.

Location (Lat long/ street crossing /address and receiving water)	Date and duration of occurrence	Discharge to MS4 or surface water	Estimated volume discharged	Known or suspected cause / Responsible party	Corrective measures planned and completed (include dates)	Sampling data (if applicable)

3.5 Briefly describe the method used to track illicit discharge reports, responses to those reports, and who was responsible for tracking this information.

Illicit discharges are called into the town and the town public works department is sent in to investigate.

3.6 Provide a summary of actions taken to address septic failures using the table below.

Location and nature of structure with failing septic systems	Actions taken to respond to and address the failures	Impacted waterbody or watershed, if known
13 septic system failures across Centerbrook, Essex & Ivoryton	Installed new septic systems or replaced specific components of the septic system in compliance with CT Public Health Code	Not all of the failures impacted a waterbody
13 Novelty La - Essex Yacht Club	Installed new Septic System	CT River
11 Novelty La - Corinthean Yacht Club	Installed new Pump Chamber	CT River
45 Main St. Ivoryton - Copper Beech Inn	Installed new Septic System	Falls River

3.7 IDDE reporting metrics

Metrics	
Estimated or actual number of MS4 outfalls	185
Estimated or actual number of interconnections	Ongoing Investigation
Outfall mapping complete	95%
Interconnection mapping complete	65%
System-wide mapping complete (detailed MS4 infrastructure)	90 %
Outfall assessment and priority ranking	30%
Dry weather screening of all High and Low priority outfalls complete	62
Catchment investigations complete	30
Estimated percentage of MS4 catchment area investigated	33%

3.8 Briefly describe the IDDE training for employees involved in carrying out IDDE tasks including what type of training is provided and how often is it given (minimum once per year).

IDDE Training is given annually to Town Garage (Public Works) Director and Town Health Department.

4. Construction Site Runoff Control (Section 6(a)(4) / page 25)

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
4-1 Implement, upgrade, and enforce land use regulations or other legal authority to meet requirements of MS4 general permit	Ongoing	Specific LID Requirements		Land Use Office Town Engineer Essex DPW Essex Health Dept.	Jul 1, 2019	Completed	
4-2 Develop/Implement plan for interdepartmental coordination in site plan review and approval	Ongoing	Stormwater MS4 Working Group		Land Use Office Town Engineer Essex DPW Essex Health Dept.	Ongoing	Completed	
4-3 Review site plans for stormwater quality concerns	Ongoing	Stormwater MS4 Working Group		Land Use Office Essex DPW Essex Health Dept.	Ongoing	Ongoing	
4-4 Conduct site inspections	Ongoing			Essex DPW Town Engineer AppGEO	Ongoing	Ongoing	
4-5 Implement procedure to allow public comment on site development	Ongoing	Stormwater MS4 Working Group		Land Use Office Town Engineer Essex DPW	Ongoing	Ongoing	
4-6 Implement procedure to notify developers about DEEP construction stormwater permit	Ongoing	Stormwater MS4 Working Group		Land Use Office Town Engineer Essex DPW	Ongoing	Ongoing	

4-7 Develop stormwater compliance checklist	In progress	Developing checklist to provide developers on stormwater mgmt compliance requirements	Standardize plan review	Land Use Office Town Engineer	Ongoing	Ongoing	Reason for addition: Make it easier to ensure compliance with stormwater regulations
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Extra space for describing above BMP activities, if needed:

BMP	

4.2 Describe any Construction Site Runoff Control activities planned for the next year, if applicable.

Integrate stormwater compliance checklist into review process once completed.

5. Post-construction Stormwater Management (Section 6(a)(5) / page 27)

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
5-1 Establish and/or update legal authority and guidelines regarding LID and runoff reduction in site development planning	In Progress	Develop guidelines and LID requirements.	Written Program	Land Use	Jul 1, 2021	Ongoing	
5-2 Enforce LID/runoff reduction requirements for development and redevelopment projects	In Progress	Develop guidelines and LID requirements.	Written Program	Land Use	Ongoing beginning Jul 1, 2019	Ongoing	

5-3 Identify retention and detention ponds in priority areas	In Progress	Heron Pond (stormwater detention pond) and 36 Pratt Street Oil/water separator	Annual and Semi-annual Maintenance activities	Land Use Office Town Engineer Essex DPW	Jul 1, 2019	Ongoing	Heron Pond (stormwater detention pond) clean out – 04/11/19. 36 Pratt Street Oil/water Separator – Inspection.
5-4 Implement long-term maintenance plan for stormwater basins and treatment structures	In Progress	Heron Pond (stormwater detention pond) and 36 Pratt Street Oil/water separator	Annual and Semi-annual Maintenance activities	Land Use Office Town Engineer Essex DPW	Ongoing beginning Jul 1, 2019	Ongoing	Heron Pond (stormwater detention pond) clean out – 04/11/19. 36 Pratt Street Oil/water Separator – Inspection.
5-5 DCIA mapping	In Progress	Awaiting final surface estimates of DCIA	Town-wide DCIA estimate	Land Use Office Town Engineer AppGEO	Jul 1, 2020	Ongoing	
5-6 Address post-construction issues in areas with pollutants of concern	In Progress			Land Use Office Town Engineer Essex DPW	Not specified		
5-7 Investigate alternative retention pond maintenance options	In progress	Identified areas that need maintenance activities	ID sustainable means of maintaining town owned detention ponds	Land Use Office Town Engineer Essex DPW	Ongoing	Jul 1 2020	

Extra space for describing above BMP activities, if needed:

BMP	

5.2 Describe any Post-Construction Stormwater Management activities planned for the next year, if applicable.

Utilize Department of Public Works to maintain highest priority retention ponds and oil/water separators.

5.3 Post-Construction Stormwater Management reporting metrics

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	1,049.68 acres (14%)
DCIA disconnected (redevelopment plus retrofits)	7,544.90 acres this year / acres total
Retrofits completed	1
DCIA disconnected	% this year / % total since 2012
Estimated cost of retrofits	\$0
Detention or retention ponds identified	1 (2019)

5.4 Briefly describe the method to be used to determine baseline DCIA.

In Progress. Awaiting AppGEO and Town DPW review of all CBs and interconnections. The Town of Essex is preparing town-wide maps to determine the current DCIA and historic DCIA disconnected areas. An evaluation of the DCIA baseline and DCIA disconnected will be reviewed in the Summer of 2020.

6. Pollution Prevention/Good Housekeeping (Section 6(a)(6) / page 31)

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
6-1 Develop/implement formal employee training program	Ongoing	MS-4 and Industrial personnel training	Completed Training	Land Use Office Town Engineer Essex DPW Essex Health Dept.	Ongoing	Ongoing	Training conducted on August 28, 2019.
6-2 Implement MS4 property and operations maintenance	Ongoing	Heron Pond (stormwater detention pond), 36 Pratt Street oil/water separator and Stone Brook Drive Infiltration Gallery.	Completed Inspection	DPW	Ongoing beginning Jan 1, 2018	Ongoing	
6-3 Implement coordination with interconnected MS4s	Ongoing			Land Use Office Town Engineer Essex DPW AppGEO	Not specified	Ongoing	
6-4 Develop/implement program to control other sources of pollutants to the MS4	Ongoing			MS-4 Work Group	Not specified	Ongoing	
6-5 Evaluate additional measures for discharges to impaired waters*	Ongoing			MS-4 Work Group	Not specified	Ongoing	
6-6 Track projects that disconnect DCIA	In Progress			Land Use Office Town Engineer Essex DPW AppGEO	Ongoing	Ongoing	

6-7 Implement infrastructure repair/rehab program	In Progress			Land Use Office Town Engineer Essex DPW Essex Health Dept.	Jul 1, 2021	Ongoing	
6-8 Develop/implement plan to identify/prioritize retrofit projects	Ongoing			Land Use Office Town Engineer Essex DPW Essex Health Dept.	Jul 1, 2020	Ongoing	
6-9 Implement retrofit projects to disconnect 2% of DCIA	Ongoing			Land Use Office Town Engineer Essex DPW Essex Health Dept.	Jul 1, 2022	Ongoing	
6-10 Develop/implement street sweeping program	Ongoing	Plan Attached.	Plan Completed	Town Engineer Essex DPW	Ongoing beginning Jul 1, 2017	Ongoing	
6-11 Develop/implement catch basin cleaning program	Ongoing	Plan Attached.	Plan Completed	Essex DPW AppGEO	Ongoing beginning Jul 1, 2020	Ongoing	
6-12 Develop/implement snow management practices	Ongoing			Essex DPW	Ongoing beginning Jul 1, 2018	Ongoing	
6-13 Map & Inventory highly erosive areas in town ROW	Not started	Collect information on eroding areas in ROW from highway maintenance personnel over course of normal operations	ID areas contributing large volume of sediment to town waterbodies	DPW Town Engineer	-	Jul 1, 2020	Reason for addition: Reduce sedimentation of waterways near town ROWs

Extra space for describing above BMP activities, if needed:

BMP	

6.2 Describe any Pollution Prevention/Good Housekeeping activities planned for the next year, if applicable.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Metrics	
Employee training provided for key staff	Yes / August 28, 2019
Street sweeping	
Curb miles swept	84 miles
Volume (or mass) of material collected	1,260 cubic yards
Catch basin cleaning	
Total catch basins in priority areas	100
Total catch basins in MS4	950
Catch basins inspected	410
Catch basins cleaned	317
Volume (or mass) of material removed from all catch basins	350 tons
Volume removed from catch basins to impaired waters (if known)	Unknown
Snow management	
Type(s) of deicing material used	Blizzard Wizard treated brown salt and Washed winter road sand
Total amount of each deicing material applied	235 tons / 333 tons
Type(s) of deicing equipment used	Spreader / Jet Sanders
Lane-miles treated	84 miles
Snow disposal location	1. Bushnell Park Parking Lot. 2. Comstock Field (50 Park Road)
Staff training provided on application methods & equipment	Yes

Municipal turf management program actions (for permittee properties in basins with N/P impairments)	
Reduction in application of fertilizers (since start of permit)	lbs or %
Reduction in turf area (since start of permit)	acres
Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems)	
Cost of mitigation actions/retrofits	\$

6.4 Catch basin cleaning program

Provide any updates or modifications to your catch basin cleaning program

The Town of Essex cleans approximately 1/3 of all catch basins per year. The catchment cleaning program is attached to this Annual Report. The program includes both Town Employees and subcontracted companies who assist with the Town in completing these activities.

6.5 Retrofit program

Briefly describe the Retrofit Program identification and prioritization process, the projects selected for implementation, the rationale for the selection of those projects and the total DCIA to be disconnected upon completion of each project.

In Progress

Describe plans for continuing the Retrofit program and how to achieve a goal of 1% DCIA disconnection in future years.

In Progress

Describe plans for continuing the Retrofit program beyond this permit term with the goal to disconnect 1% DCIA annually over the next 5 years.

In Progress

Part II: Impaired waters investigation and monitoring

1. Impaired waters investigation and monitoring program

1.1 Indicate which stormwater pollutant(s) of concern occur(s) in your municipality or institution. This data is available on the MS4 map viewer: <http://s.uconn.edu/ctms4map>.

Nitrogen/ Phosphorus ☒

Bacteria ☒

Mercury ☐

Other Pollutant of Concern ☐

1.2 Describe program status.

Discuss 1) the status of monitoring work completed, 2) a summary of the results and any notable findings, and 3) any changes to the Stormwater Management Plan based on monitoring results.

At this time, no changes to the SMP have been necessary based on historic analytical results.

2. Screening data for outfalls to impaired waterbodies (Section 6(i)(1) / page 41)

2.1 Screening data

Complete the table below for any outfalls screened during the reporting period. Each Annual Report will add on to the previous year's screening data showing a cumulative list of outfall screening data.

Outfall ID	Sample date	Parameter (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	Results	Name of Laboratory (if used)	Follow-up required? *
Witch Hazel Complex	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	1.10 mg/L ND<0.01 mg/L 1.99 mg/L 0.04 mg/L 31 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- None e. Coli (freshwater) – None
Walnut Street Bridge	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	1.18 mg/L ND<0.01 mg/L 0.99 mg/L 0.13 mg/L 1112 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- None e. Coli (freshwater) – Follow-up (review septic system inspections)
Stanford Hill	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	ND<0.1 mg/L ND<0.01 mg/L 2.68 mg/L 0.30 mg/L 908 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- None e. Coli (freshwater) – Follow-up (review septic system inspections)

2.2 Credit for screening data collected under 2004 permit

If any outfalls to impaired waters were sampled under the 2004 MS4 permit, that data can count towards the monitoring requirements under the modified 2017 MS4 permit. Complete the table below to record sampling data for any outfalls to impaired waters under the 2004 MS4 permit.

Outfall	Sample date	Parameter (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	Results	Name of Laboratory (if used)	Follow-up required? *
Foot of Main	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	ND<0.10 mg/L ND<0.01 mg/L 1.31 mg/L 0.61 mg/L 323 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- Follow-up (review lawn fertilizer additions) e. Coli (freshwater) – None
Cumberland Farms	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	0.25 mg/L ND<0.01 mg/L 0.77 mg/L 0.08 mg/L 1354 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- None e. Coli (freshwater) – Follow-up (review septic system inspections)
Brewer's Dauntless	11/12/19	Nitrate as N Nitrite as N TKN as N Tot Phosphorus E Coli	0.47 mg/L ND<0.01 mg/L 1.73 mg/L 0.19 mg/L 1483 MPN/100ml	Environmental Consulting Laboratories, Inc.	Nitrogen – None Phosphorus- None e. Coli (freshwater) - Follow-up (review septic system inspections)

*Follow-up investigation required (last column) if the following pollutant thresholds are exceeded:

Pollutant of concern	Pollutant threshold
Nitrogen	Total N > 2.5 mg/l
Phosphorus	Total P > 0.3 mg/l
Bacteria (fresh waterbody)	<ul style="list-style-type: none"> E. coli > 235 col/100ml for swimming areas or 410 col/100ml for all others Total Coliform > 500 col/100ml
Bacteria (salt waterbody)	<ul style="list-style-type: none"> Fecal Coliform > 31 col/100ml for Class SA and > 260 col/100ml for Class SB Enterococci > 104 col/100ml for swimming areas or 500 col/100 for all others
Other pollutants of concern	Sample turbidity is 5 NTU > in-stream sample

3. Follow-up investigations (Section 6(i)(1)(D) / page 43)

Provide the following information for outfalls exceeding the pollutant threshold.

Outfall	Status of drainage area investigation	Control measure implementation to address impairment
Walnut Street Bridge	Investgate outfall drainage area for failed septic system inspections	Review drainage area septic system inspections
Stanford Hill	Investgate outfall drainage area for failed septic system inspections	Review drainage area septic system inspections
Foot of Main	Investigate lawn fertilizer applications in drainage area	Reduce fertilizer use on fields and create 50 foot vegetated buffer.
Cumberland Farms	Investgate outfall drainage area for failed septic system inspections	Review drainage area septic system inspections
Brewer's Dauntless	Investgate outfall drainage area for failed septic system inspections	Review drainage area septic system inspections

4. Prioritized outfall monitoring (Section 6(i)(1)(D) / page 43)

Once outfall screening has been completed for at least 50% of outfalls to impaired waters, identify 6 of the highest contributors of any pollutants of concern. Begin monitoring these outfalls on an annual basis by July 1, 2020.

Outfall	Sample Date	Parameter(s)	Results	Name of Laboratory (if used)
Walnut Street Bridge				
Stanford Hill				
Foot of Main				
Cumberland Farms				
Brewer's Dauntless				

Part III: Additional IDDE Program Data

1. Assessment and Priority Ranking of Catchments data (Appendix B (A)(7)(c) / page 5)

Provide a list of all catchments with ranking results (DEEP basins may be used instead of manual catchment delineations).

1. Catchment ID (DEEP Basin ID)	2. Category	3. Rank

The Town of Essex continues to investigate and compile catchment data and mapping of interconnections. This information will be available in 2020.

2. Outfall and Interconnection Screening and Sampling data (Appendix B (A)(7)(d) / page 7)

2.1 Dry weather screening and sampling data from outfalls and interconnections

Provide sample data for outfalls where flow is observed. Only include Pollutant of concern data for outfalls that discharge into stormwater impaired waterbodies.

Outfall / Interconnection ID	Screening / sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or enterococcus	Surfactants	Water Temp	Pollutant of concern	If required, follow-up actions taken

2.2 Wet weather sample and inspection data

Provide sample data for outfalls and key junction manholes of any catchment area with at least one System Vulnerability Factor.

Outfall / Interconnection ID	Sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or Enterococcus	Surfactants	Water Temp	Pollutant of concern

3. Catchment Investigation data (Appendix B (A)(7)(e) / page 9)

3.1 System Vulnerability Factor Summary

For those catchments being investigated for illicit discharges (i.e. categorized as high priority, low priority, or problem) document the presence or absence of System Vulnerability Factors (SVF). If present, report which SVF's were identified. An example is provided below.

Outfall ID	Receiving Water	System Vulnerability Factors

Where SVFs are:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages.
2. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs.
3. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints.
4. Common or twin-invert manholes serving storm and sanitary sewer alignments.
5. Common trench construction serving both storm and sanitary sewer alignments.
6. Crossings of storm and sanitary sewer alignments.
7. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.
9. Areas formerly served by combined sewer systems.
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas.

11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).
12. History of multiple local health department or sanitarian actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).

3.2 Key junction manhole dry weather screening and sampling data

Key Junction Manhole ID	Screening / Sample date	Visual/ olfactory evidence of illicit discharge	Ammonia	Chlorine	Surfactants

3.3 Wet weather investigation outfall sampling data

Outfall ID	Sample date	Ammonia	Chlorine	Surfactants

3.4 Data for each illicit discharge source confirmed through the catchment investigation procedure

Discharge location	Source location	Discharge description	Method of discovery	Date of discovery	Date of elimination	Mitigation or enforcement action	Estimated volume of flow removed

Part IV: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Chief Elected Official or Principal Executive Officer

Document Prepared by

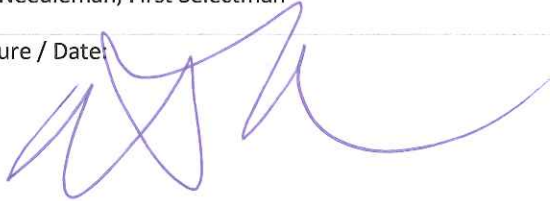
Print name:

Norm Needleman, First Selectman

Print name:

William Drouin, CHMM (#13261)

Signature / Date:



Signature / Date:





Overview

“SEED” - The **S**ustainable **E**sex **E**nvironmental **D**iscussion series, is comprised of individual sessions grouped by common themes (waste reduction, sustainable management of water resources, etc.).

The overriding goals of the Series are to:

- Create awareness,
- Provide guidance with ways individuals can modify their household behaviors to address climate change, and
- Gather suggestions for action at a community level.

First Group of Sessions

“The Solid Waste Crises in Essex and Connecticut” (five sessions)

1. Introduction - How garbage (solid waste) contributes to climate change.
2. The Impact of Food Waste
3. Plastic and Micro-plastic pollution and its impact on climate change
4. The status of plastic recycling in Connecticut – and what can I do?
5. The Impact of Cheap Fashion on our Land Fills & Climate Change

Target Audiences

- General public
- Faith groups: stress how stewardship for our Earth – the equitable restoration and protection of natural resources and wildlife– aligns with the key tenants of their faith;
- Local schools and PTOs, etc
- Local organizations (Rotary Club, yacht clubs, etc)



The Format

- Duration: Approx. 1 hour, weekends – will focus scheduling initial sessions for Saturday afternoons at the Essex Library for the general public
- Each session facilitated by a subject matter expert and a member of the Sustainable Essex Committee

Resources Handout

- Resources handouts provided at the end of each session
- Purpose:
 - Provide links to the video(s) used during the presentation (and additional relevant videos where appropriate)
 - Provide key background information/data
 - Example – for first session on how garbage (solid waste) contributes to climate change – basic data on the various categories of solid waste and their relative amounts of CO₂ emissions
 - Provide list of actions that individual households can undertake to respond to the environmental issue addressed in the presentation

Schedule – First round of sessions:

- Session 1 - Feb. 29, 2020 12:00 pm – Essex Library: Introduction – “Garbage and Climate Change, What’s the Connection?”
 - Facilitator: Sherill Baldwin, CT Dept. Energy & Environmental Protection (CT DEEP), sustainable materials management
 - Status:
 - Date reserved with Library and facilitator
 - Working with Library and other resources on promotion



- Session 2 – March 7, 2020 1:00 - Essex Library: “What is the Environmental Impact of the Food We Throw Away? What positive changes can we as a community make?”
 - Facilitator: Georgia Male, The Incarnation Center Nature Center and Gardens
 - Status:
 - Date reserved with Library and facilitator
 - Working with Library and other resources on promotion
- Session 3 – May 2, 2020 1:00 - Essex Library: Climate Change Impacts of plastic and micro-plastic waste”
 - Facilitator: Professor Evan Ward, Research Professor, UCONN Avery Pointe
- Session 4 – May 16, 2020 1:00 (Tentative) – Essex Library: “What is the Current Status of Plastics Recycling in CT – and How can I Help?”
 - Facilitator: TBA
 - Status:
 - Working with Library to finalize date
 - SEED Team working to identify appropriate facilitators (“Story of Stuff” program?)
- Session 5 – Summer - June/July – Date TBD – Essex Library: “Cheap Fashion: The impact of clothing - especially those made with plastic fibers - in our landfills.”
 - Facilitator: TBA (Patagonia?)
 - Status:
 - Working with Library to finalize date
 - SEED Team working to identify appropriate facilitators



Schedule – Second Round of Sessions

- Session 6 - Summer - June/July – Date TBD – Essex Library: “Sustainable Essex's Pollinator Pathway project”
 - Facilitator: TBA
 - Status:

Session 7 - Fall - Sept./October – Date TBD – Essex Library: - “Developing Resilient Coastlines in Long Island Sound”

- Facilitator: TBA (CT/NY Audubon Staff?)
- Session 8 - Fall - Sept./October – Date TBD – Essex Library: “Current Developments with Renewable Power Sources in the Essex and the Lower Connecticut River Valley area”
 - Facilitator: TBA

Sustainable Essex Hosts Talks on Waste Reduction

By Karena Garrity
Courier Staff Writer
ESSEX

To make residents more aware of the effects of global warming and offer solutions within their own homes, the Sustainable Essex Committee (SEC) has teamed up with the Essex Library to offer several programs focused around the central idea of environmental awareness.

"There are three main goals we have by offering these programs," said SEC member Mike Long. "We want to create awareness about solid waste issues and how they are impacting the climate change and the world, give guidance about how individual households locally can make changes to help reduce the amount of solid waste and food waste they produce, and we want to gather feedback from participants of these programs and discussions regard actions

they think we can take on a community level to make Essex a more sustainable community."

To achieve those goals, SEC has developed what it's calling Sustainable Essex Environmental Discussions or SEED at the Essex Library.

The first program discussion will be held on Saturday, Feb. 29 from noon to 1 p.m. facilitated by Cheryl Baldwin of the Department of Environmental & Energy Protection. The program is called "Garbage and Climate Change: What's the Connection?"

The second program will be held on Saturday, March 7 from 1 to 2 p.m. facilitated by Georgia Male, farm manager of the Bushy Hill Incarnation Center. This program is titled "What is the Environmental Impact of the Food We Throw Away?"

Third program, "Climate Change Impact of Plastic and

Micro-plastic Waste," is scheduled for Saturday, May 2 from 1 to 2 p.m. facilitated by professor Evan Ward, head of Maritime Science at the University of Connecticut at Avery Point.

"Our hope is to hold a series of eight programs in total, now through fall," said Long. "These programs are an opportunity for residents to get information on key drivers of global warming and climate change from experts in the field. In addition, we will be providing practical ways to residents make a change in their own homes and this an opportunity for them to share their ideas and thoughts about this issue. The SEC will then bring these ideas and concerns back to the Essex town officials so that action as an entire community can be taken."

For more information about these programs, visit www.youressexlibrary.org.



Town of Essex



Photo Credits: essexct.com, ctvisit.com, newengland.com, zip06.com

Community Resilience Building Workshop

Summary of Findings

September 2019



Town of Essex

Community Resilience Building Workshop

Summary of Findings

Overview

The need for municipalities, academic institutions, regional planning organizations, states and federal agencies to increase resilience and adapt to extreme weather events and a changing climate is strikingly evident amongst the communities of the state of Connecticut. Recent events such as Tropical Storm Irene and Sandy have reinforced this urgency and compelled leading communities like the Town of Essex to proactively collaborate on planning and mitigating risks. Ultimately, this type of leadership is to be commended because it will reduce the vulnerability of municipal residents, infrastructure, and ecosystems and serve as a model for other communities in Connecticut, New England, and the Nation.

In the spring of 2019, the Town of Essex embarked on certification via Sustainable CT. As part of that certification, Sustainable CT and the Nature Conservancy provided the Town with a voluntary process to conduct an assessment of climate change impacts. In August 2019, a municipal-based core team organized a Community Resilience Building Workshop facilitated by the Nature Conservancy in partnership with Sustainable CT. The core directive of this effort was the engagement with and between community stakeholders to facilitate the assessment of climate vulnerabilities and the education, planning and ultimately implementation of priority adaptation actions for Essex.

The Community Resilience Building Workshop's central objectives were to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future vulnerabilities and strengths;
- Develop prioritized actions for the Town of Essex;
- Identify opportunities to collaboratively advance actions to increase resilience.



For the Workshop, the Town of Essex employed a unique “anywhere at any scale”, community-driven process known as Community Resilience Building (CRB) (www.CommunityResilienceBuilding.org). The CRB’s Risk Matrix and various data and maps were integrated into the workshop process to provide both decision-support and risk visualization around shared values and priorities across Essex. Using this CRB process, rich with information, experience and dialogue, the participants produced findings which are outlined in this Summary of Findings report. The following report provides an overview of the top hazards, current concerns and challenges, current strengths, and proposed actions to improve Essex’s resilience to natural and climate-related hazards today, and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are proffered for comments, corrections and updates from workshop attendees and additional stakeholders alike. The leadership displayed by the Town of Essex on community resilience building will benefit from the continuous and expanding participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for the Community

During the CRB Workshop, community members were asked to identify the top hazards for the Town of Essex. The hazard of greatest concern to the participants was tidal flooding from the Connecticut River as concerns about increased flooding with accelerating sea level rise. The other hazards discussed included storms such as Nor’easters and winter storms that bring intense and sustained winds, snow and ice. In addition, extreme temperatures both cold snaps and heatwaves were identified as major concerns. These hazards have direct and increasing impacts on Essex’s residents and resources such as its neighborhoods, natural areas (river corridors, wetlands, watersheds, parks), roads, bridges, places of employment, residential drinking and wastewater systems, health care facilities, social support service to vulnerable populations, and other critical infrastructure and community assets.

Top Hazards and Areas of Concern for the Community

Top Hazards

- Tidal Flooding (Current and with Sea Level Rise)
- Storms (Nor'easters and Winter Snow/Ice Storms)
- Extreme Temperatures (Cold Snaps and Heatwaves)

Areas of Concern in Essex*

Ecosystems: Hazardous Trees (along transportation corridors and municipal-owned property), Gypsy Moth and Drought Stress on Trees across Municipality, Riparian Buffers, Stream Banks, Natural Storm Debris, Falls River, Beavers (flooding adjoining beaver dams), Viney Hill Brook, Thatch Bed Island (loss of area due to increased erosion), South Cove (silting in and lowering depth of harbor), Clean Vessel Act/Pump Outs of Vessels, No Public Swimming Areas, Mud River, Tidal Wetlands Upstream and Downstream of Essex on Connecticut River (i.e. Lords Cove, Meadows, etc.).

Roads, Road Networks, Bridges: Roads/Bridges crossing Falls River, North Main Street, Route 154, Walnut Street, Undersized Culverts, Bridge Abutment Encroachment, Route 9.

Infrastructure: Residential Septic Systems, Drinking Water Wells, Older Housing Stock (w/out AC), Gas Stations, Dams (six privately owned), Local Businesses (securing and maintaining over time), Essex Harbor, Bushy Hill Dam, Clark's Pond Dam, Mill Pond Dam, Ivoryton Pond Dam.

Developments and Neighborhoods: Downtown Village Area (economic center), Marina District, Residential Areas on Connecticut River north and south of Downtown Village Area, Residential Areas on Falls River in Ivoryton, Centerbrook Residential Area, Essex Meadows Senior Housing, Essex Court and Essex Place Affordable Housing.

Vulnerable Populations: Homebound/Isolated Elderly (rapidly aging population), Developmentally Disabled, Non-English Speaking, Low Income, Volunteers (decline over time), Fixed Income Retirees, Homeless Population, Tourists.

*Information above from workshop participants as well as from the Essex NHMP Update (2014).



Current Concerns and Challenges Presented by Hazards

The Town of Essex has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In recent years, Essex has experienced a series of highly disruptive and damaging weather events including Tropical Storm Irene (August 2011), Tropical Storm Sandy, (October 2012), winter Nor'easter Nemo (February 2013), and other impactful events in the last eight years. Impacts from Irene included heavy rain-induced riverine and tidal flooding and wind damage. Sandy caused extended power outages across portions of Essex. Winter snow storms drop excessive snow on the Town knocking out power and isolating residents and neighborhoods. The magnitude and intensity of these events and others across Connecticut has increased awareness of natural hazards and climatic change, while motivating communities like Essex to comprehensively improve resilience.

This series of extreme weather events highlights that for Essex the impacts from hazards are diverse; they range from limited riverine and tidal flooding of roads and low-lying areas near rivers and wetlands during intense storms and heavy precipitation events to property damage from trees, wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, and cold snaps have raised concerns about vulnerable segments of the population including the elderly and disabled. The combination of these issues presents a challenge to preparedness, response and mitigation priorities and requires comprehensive yet tailored actions for particular locations and/or areas across Essex.

The workshop participants were generally in agreement that Essex is experiencing more intense and frequent storm events, heat waves, and tidal flooding. The impacts have affected the daily activities of most residents. Additionally, there was a general concern about the challenges of being prepared with contingency plans for worst case scenarios during different times of the year (i.e. major disasters, storms, major hurricanes (Cat-3 or above)) particularly in the fall/winter due to more intense storms.



(Credit: firenews.com)



(Credit: essexct.com)



(Credit: williampitt.com)



Specific Categories of Concerns and Challenges

As in any community, Essex is not uniformly vulnerable to hazards and climate change, and certain locations, resources, and populations have and will be affected to a greater degree than others. Workshop participants identified the following items as their community's key areas of concerns and challenges across three categories - Infrastructure, Societal, and Environmental.

Infrastructure Concerns and Challenges

Roads, Road Networks, Bridges:

- Routine and major flooding of road networks adjacent to tidally and precipitation influenced waterways in select areas of municipality.
- Parking issues and congestion in Village.

Wastewater:

- Chronic flooding of septic systems in select areas and neighborhoods subjected to flooding and seasonal high ground water levels (February - April).
- Unknown common septic systems in Village shared between businesses and residents.
- Concerns regarding upstream combined-sewer overflow systems.

Emergency Management and Preparedness:

- Major hurricane creating unmanageable challenges for current response and recovery staff, resources, and facilities within municipality.
- Need for more business continuity and recovery planning for major events.
- Concerns regarding declines in volunteers for critical services.

Housing:

- Isolation of homes when road network is compromised for extended periods.

Societal Concerns and Challenges

Vulnerable Populations:

- Isolated pockets of residents who live in more rural parts of community.
- Older housing stock including homes without air conditioning.
- Implications on disproportionately disadvantaged populations (i.e. elderly, working poor, fixed income, etc.) due to flooding, winter storms, and heat waves.



Specific Categories of Concerns and Challenges (cont'd)

Societal Concerns and Challenges

Vulnerable Populations:

- Need to improve emergency communications and update information on special needs residents that require additional support during and after major events.
- Need for long-term residents to educate and support new residents on preparedness.
- Growing mobility issues given rapidly aging population.
- Limited availability of and access to proximate, larger grocery stores.

Power:

- Power outages to residential homes and business particularly during the winter months increasing isolation.
- Lack of generators amongst the five gas stations in municipality.

Environmental Concerns and Challenges

River, Watersheds, Aquifers:

- Principal drinking water source provided by two well heads susceptible to surface water flooding and subsequent contamination.

Trees and Forest:

- Increasing impacts to tree health from pests and pathogens resulting in dead and standing trees which pose risk to power lines, people, and property if not managed.

Connecticut River:

- Erosion of Thatch Bed Island and silting in of South Cove and Harbor.
- Long term viability of tidal wetlands upstream and downstream of municipality that store flood water and absorb storm surge currently and as sea level rise accelerates.



Current Strengths and Assets

Because of the recent experiences with extreme weather, the Town of Essex is well acquainted with existing and shared strengths. Reinforcing best practices and enhancing available assets will generate greater benefits to the Town and adjoining communities through increased resiliency to more frequent and intense storms, as well as to long term impacts from increases in flooding, temperatures, precipitation.

- Clearly, the responsive and committed leadership exhibited by officials and staff is a very appreciated strength within the Town of Essex. Ongoing collaboration between the Town, adjoining municipalities (mutual aid agreements), Lower Connecticut River Valley Council of Governments, DEMS Region 2, business community, faith-based organization, Visiting Nurse Association, and NGOs among others on the priorities identified below will help to advance comprehensive, cost-effective approaches to community resilience building.
- The Town has solid, highly experienced, staff with a desire to maintain adequate resources for most emergency situations. The coordination amongst various departments including leadership, Police, Fire, and EMS was cited as an ongoing, and highly valued community strength despite the need to maintain a flow of volunteers over time (i.e. multi-town Community Emergency Response Team).
- Relatively intact tidal wetland systems upstream and downstream of municipality couple with forested watersheds and robust rivers and wetland systems which provide flood storage, enhance public amenities for recreation and gathering, and increase ecological function and biodiversity.
- Network of support facilities to provide sheltering, food, heating/cooling, and charging options for residents regionally in addition to ongoing food pantries.
- Robust harbor facilities, moorings, and base of operations for pump out boats.
- Self-reliant and resilient residents that look out for one another and pride themselves on preparedness.
- Per MS4, mapping and prioritization of 1,200 catchment basins completed with immediate needs addressed and long-term plan for additional needs in place.
- Committed engagement via Health Department that identifies and maintains services for residents in need (i.e. SAFER Essex).
- Attractiveness and desirability of downtown village area and surrounds for tourist that are critically important to the economic vitality of municipality.

Top Recommendations to Improve Resilience

A common thread throughout the workshop discussions was the recognition that Essex needs to be better prepared through longer term community-based, contingency planning across all areas of concern. This need and additional core highlights surfaced by the Workshop participants are addressed below across Infrastructure, Societal, and Environmental categories.

Infrastructure

- Continue to conduct routine and regular upgrades, retrofits, and replacements to the 1200 catchment basins per the existing capital improvement and maintenance plans. Ensure that future precipitation scenarios are factored into future upgrades.
- Explore the costs and benefits of community septic systems or sewer infrastructure to select areas of the municipality via discussions between Planning Department, Economic Development Commission, Health Department, Board of Trade, and Ivoryton Alliance.
- Identify areas across municipality where **Low Impact Development (LID)** practices along with installation of green stormwater infrastructure could help to minimize localized flooding and improve water quality in adjoining waterbodies.
- Continue to monitor the status of large dams upstream from municipality and update periodically the footprint of downstream flooding due to catastrophic failure.
- Explore the potential options to alleviate traffic congestion for Main Street given current conditions and limitations.
- Advance a comprehensive culvert and bridge upgrade, retrofit, or replacement assessment and implementation plan over next 10-15 years designed for future, more extreme precipitation events.
- Look to replace Old Deep River Road Bridge with incorporation of increase intensity and frequency of precipitation-driven flooding event in associated water course.
- Consider the costs and benefits of installing microgrid(s) and burying power lines in high risk areas.
- **Look to incorporate green stormwater infrastructure installation where appropriate into upgrades to storm drains, paving, and general maintenance road. Integrate green stormwater options into Capital Improvement Plan budgets.**



Community Resilience Building Workshop Recommendations

Societal

- Continue to seek ways to improve the town-wide promotion of personal safety and responsibility in response to major events as well as a neighbor-helping-neighbor approach to preparedness.
- Include in the Town's Welcome materials for new residents information about how to sign up for Reverse 911 systems.
- Ensure wide distribution of sign-up sheets and info cards for Reverse 911 to residents via realtors, churches, laundry mat, library, and other places where people congregate.
- Consider securing paid language translation services to help assist non-English speakers and look to expand Reverse 911 to provide additional languages.
- Explore educational programming for senior residents with an emphasis on risk reduction and preparedness at the house-hold and community scale.
- Look to increase outreach and engagement with business community to help increase the level and depth of disaster continuity planning via the Board of Trade and Ivoryton Alliance.
- With a rapidly aging population, look to coordinate and increase transportation options to enhance mobility of seniors including access to larger grocery stores.



(Credit: Adam Whelchel/TNC)

Environmental

- Continue to address dead and standing tree concerns along critical transportation corridors and right of ways to proactively minimize power outages and access issues during and after major events.
- Explore options to establish a public swimming area to help reduce the impacts of heatwaves on residents and their families.
- Identify ecological restoration and funding options to help maintain Thatch Bed Island as a natural buffer to critical harbor and waterfront facilities and infrastructure. In addition, seek ways to increase ecological resilience of riparian corridors.

CRB Workshop Participants: Department/Organization

Town of Essex - First Selectmens Office
Town of Essex - Harbor Management
Town of Essex - Emergency Management
Town of Essex - Administration Office
Town of Essex - Planning
Town of Essex - Economic Development
Town of Essex - Parks and Recreation
Town of Essex - Public Works Department
Town of Essex - Sustainable Essex
Town of Essex - Residents
Lower Connecticut River Valley Council of Governments

CRB Workshop Project Team: Organization and Role

Essex Core Team

Stacy Abbott - Town of Essex - Sustainable Essex
Mackenzie Pias - Sustainable CT

Workshop Facilitation Team

The Nature Conservancy – Adam Whelchel, Ph.D. (Lead Facilitator)
Institute of Sustainable Energy - Jessica LeClair (Support Lead)
Institute of Sustainable Energy - Torin Radicioni (Scribe)
Sustainable CT Fellows - Mackenzie Pias (Scribe)

Recommended Citation

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Town of Essex, Sustainable CT, The Nature Conservancy. Essex, Connecticut.

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Special thanks to the Town of Essex Selectmen, staff, and community members for their willingness to embrace this process in hopes of a more resilient future for Essex. Thank you to Sustainable CT for providing refreshments and food. Finally, thanks to the scribes that recorded the workshop dialogue.

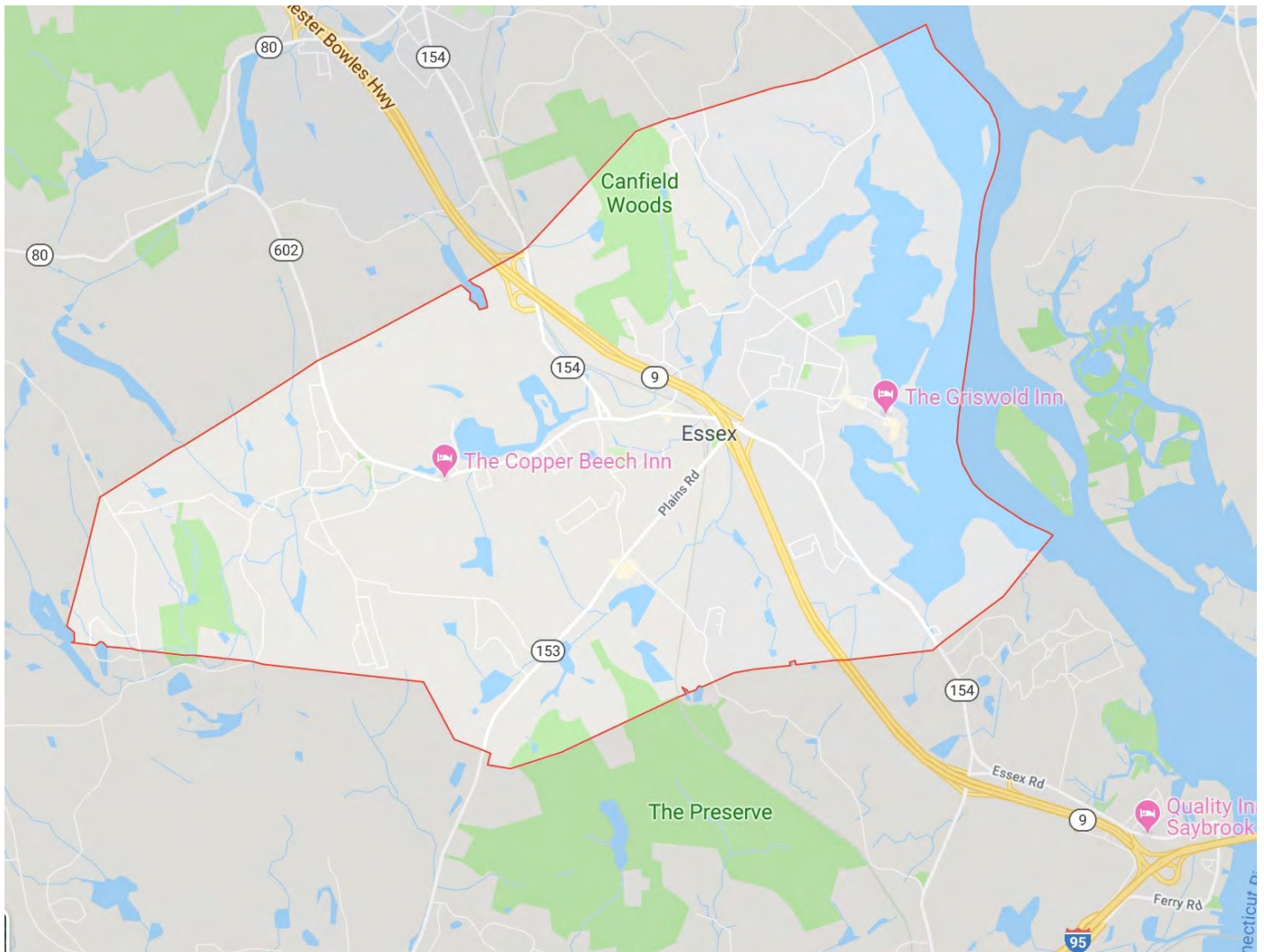
This project was made possible in part through the generous contribution of the Workshop team by The Nature Conservancy and Sustainable CT to conduct Essex's Community Resilience Building Workshop in close partnership with the Town's Core Team.



Appendix

Base Map





Essex Natural Hazard Mitigation Plan (2014)
Comprehensive Mitigation Actions
(Table 22)
Prepared by
Lower Connecticut River Council of Governments



Figure 22: Comprehensive Mitigation Action Items	Natural Hazards							Responsible Party ^{*1}	Schedule	Status	Cost ²	Possible Funding Source ^{*4}	Weighted STAPLEE Criteria								
	Flooding	High Wind and Tornado	Drought and Wildfire	Winter Storm	Earthquake	Hurricane	Extreme Heat		A. Daily				Costs (0)/ Benefits (1)								
									B. Monthly												
									C. Annually												
									D. 2013-2017												
									E. 2018-2022												
F. Beyond 2022																					
Local Plans and Regulations																					
Amend Flood Ordinance. Consider adding a “freeboard” – an additional height above the flood level – to add a greater margin of safety. In the case of nonresidential structures, the insurance rates do not go down until a structure is flood proofed at least one (1) foot above the BFE.	X			X		X		ZC, IWC, PC	D	New	\$	OP	1	1	0	0	1	1	1	5	
Benefit-Cost Analysis. Evaluate opportunities for public funding of mitigation projects on private property where public benefits exceed the cost for RL properties or for properties otherwise eligible for buy-out.	X	X	X	X	X	X	X	BOF, BOS	C	Occurs with all projects for which grant funding or public funding will be utilized.	\$	OP	1	1	0	1	1	1	1	6	
Best Management Practices. Continue to use best management practices (BMPs) as described in the Connecticut DEEP Storm water Management Guidelines on a site-by-site basic as advised by a professional engineer.	X	X	X	X	X	X	X	BOS, PW, LUO, BO	A	In Place, storm water infrastructure cleaning etc.	\$	OP	1	1	1	1	1	1	1	7	
Business Recovery Plan. Develop business recovery plan cooperatively with other region towns and distribute to town businesses.	X	X	X	X	X	X	X	BOS	D	No Plan exists to date.	\$\$	OP	1	0	0	1	1	1	1	5	
Capital Improvement Program. Use Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.	X	X	X	X	X	X	X	BOF, BOS, PW	C	Occurs Yearly	\$\$	CIP	1	1	1	0	1	0	1	5	
Conservation Planning Educate the public about how the town uses planning, regulation, and ordinances to mitigate NHs via LID, aquifer recharge, riparian buffer, rain gardens, open burning ordinances, house numbering, etc.	X		X	X		X	X	CC	D	New	\$	OP	1	1	0	0	1	1	1	5	
Design Standards. Continue to implement State Building/Fire Code and local Flood Code for construction that minimizes loss of life and property damage due to NHs.	X	X	X	X	X	X	X	BO	D	New	\$	CIP	1	0	0	0	0	1	1	3	
Immobile Evacuees. Review annually the program to evacuate persons without means of transport, including registration and house numbering.	X	X	X	X	X	X	X	EMD	C	New	\$	CIP, RTP, STIP	0	1	0	1	0	1	1	4	
Flood Zone Study. Update flood zone study for the town to incorporate changed conditions upland and within the floodplain.	X							LUO, IWC	D	New Maps Adopted 2008	\$\$	HMPG,PDM	1	1	0	1	1	1	1	6	

Figure 22

Comprehensive Mitigation Action Items

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Essex, CT

Forest Management Plan. Hire a consulting forester to establish a forest management plan to enable ability of firefighters to access forest fires during periods of drought.							X	EMD, Tree Warden	D	New	\$\$	CIP, OP	1	1	1	1	1	0	1	6
Grants. Identify and apply for grants to fund infrastructure improvements and other mitigation tasks identified in this plan.	X	X	X	X	X	X	X	BOF, BOS, LUO	C	Annually	\$	CIP, OP	1	1	0	1	1	1	1	6
Land Use Regulation. Strengthen as appropriate, subdivision and zoning regulations to make safer new roads and lots within flood zones.	X	X	X	X	X	X	X	PC, LUO, ZC	A	Regulations are reviewed yearly and are updated as the Commission sees necessary.	\$	OP	0	1	0	0	0	1	1	3
Landlord Incentives. Research what kind of incentives would motivate land owners to make the additional investment that would reduce potential damages to their properties and loss of life of their tenants.	X	X	X	X	X	X	X	BOS, LUO	D	New	\$	CIP,OP	1	1	0	1	1	1	1	6
Local Social Resources. Identify local resources to assist with those populations (i.e. elderly, disabled, non-English speakers, who may frequent, reside, or work) in Essex. Seek grants to provide funding for developing more detailed data to assist in the social – demographic analysis of how Essex will be affected by natural hazards.	X	X	X	X	X	X	X	BOS, EMD	D	New	\$	OP	0	1	0	1	1	1	1	5
Minimal runoff from development. Require all new development to be built using techniques to minimize run-off.	X		X	X		X		ZC, IWC, LUO	A	Currently required in subdivision regulations.	\$	OP	1	1	1	1	1	1	1	7
Owner Participation. Promote owner participation in mitigation efforts to protect their own properties.	X	X	X	X	X	X	X	LUO, BOS	C	Owners are encouraged to participate such as cutting trees and not building in flood zones, etc.	\$	OP	0	1	0	0	1	1	1	4
Possible Open Space Criteria. The Town Commissions should consider making possible inundation by Storm Surge to its considerations for preserving open space .	X			X		X	X	ZC, PC, LUO	D	Subdivision Regs. require open space; however, including at-risk areas is not a requirement.	\$\$	HMPG, PDM, CIP	1	1	1	1	1	1	1	7
Post Disaster School Arrangements. Establish reciprocal arrangements with other school districts for getting students back into classes during extended recovery periods.	X	X	X	X	X	X	X	BOE	D	New	\$	CIP, OP	0	1	0	0	1	0	1	3
Potential Financial Impact of Probable Events. Estimate the municipal tax revenue that could potentially be lost in various events to provide the Board of Selectmen and Board of Finance with an idea of how large a "rainy day" fund might be necessary to cover that post disaster period when there would be minimal income and maximum output of public funds at all levels of government.	X	X	X	X	X	X	X	LUO	D	New	\$	OP	1	1	0	0	1	0	1	4
Private Property Funds. Evaluate opportunities for public funding for projects on private property where the benefits exceed the costs.	X	X	X	X	X	X	X	BOS, BOF, LUO	C	Funds are made available as needed based on a CBA.	\$\$	HMPG, FMA, RFC, SRL	1	1	0	0	1	0	1	4
Public Transit Funding. Support regional transportation system (RTD) to facilitate movement of people without means of transportation prior to NH events.	X	X	X	X	X	X	X	BOF, BOS	C	9 Town Transit is available as needed.	\$\$	CIP	1	1	1	1	1	1	1	7

Figure 22

Comprehensive Mitigation Action Items

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Recovery & Reconstruction Plan. Develop a post-disaster recovery and reconstruction plan to re-establish infrastructure and public services, etc. damaged or destroyed by any NH event, including establishment of a "rainy day" fund in case Federal assistance is insufficient or delayed.	X	X	X	X	X	X	X	BOS, EMD, LUO, PC, PW	D	New	\$\$	CIP, HMPG	0	1	0	0	1	0	1	3
Regulations. Strengthen existing subdivision regulations to either optimally prevent road or house construction within the floodplain, or alternatively raise structures above BFE.	X	X	X	X	X	X	X	IVC, PC, ZC, LUO	D	Current regulations do not allow new structures in those areas.	\$	OP	1	1	1	1	1	1	1	7
Zoning Map Audit. The town should conduct a comprehensive audit of the zoning map to considering what changes might be advisable so that the free market investing is not misguided back towards areas that are at high risk from natural disasters.	X	X	X	X	X	X	X	ZC, LUO	C	Zoning Map is evaluated yearly.	\$	CIP, OP	1	1	0	0	1	1	1	5
Structure and Infrastructure Projects																				
Construction Standards. Ensure that flood proof construction standards for roads and structures within the flood plain are strictly enforced.	X			X		X		BO	D	Standards are enforced.	\$	CIP, OP	1	1	0	1	1	1	1	6
Critical Facilities. Upgrade as necessary all facility mechanicals, such as generators, in municipal and other critical facilities.	X	X	X	X	X	X	X	PW, BOS, BOF	C	Inspected monthly	\$\$	PDM, HMPG, CIP	1	1	0	1	1	0	1	5
Data for Plans. Use GIS database to develop better mitigation plans.	X	X	X	X	X	X	X	BOF, LUO	D	GIS was used for this Plan update.	\$	OP	1	0	0	1	1	1	1	5
Dry Hydrants. Continue to require dry hydrants or fire ponds in new developments where water supply is inadequate.			X					LUO, BO, ZC	A	Currently required.	\$	CIP, OP	1	1	1	1	1	0	1	6
Electronic Records Preservation. Design databases for records keeping. Create a back-up of existing electronic records, including geographic information system (GIS) data.	X	X			X	X		BOS, BOF	D	Several backups are in place.	\$	CIP, HMPG	1	0	0	1	1	1	1	5
Engineering Reports. Implement strategic enforcement actions to include engineering reports for structural expansion or alterations on properties within the 1% annual chance flood zone.	X			X		X		BO, LUO	D	Currently required for flood zone properties.	\$\$	OP	1	1	0	1	1	1	1	6
Firefighting Infrastructure Analysis. Evaluate existing firefighting infrastructure to identify needs for improvement to cover gaps in availability.			X					Fire Dept.	D	New	\$\$\$	CIP, HMGP	1	1	1	1	1	1	1	7
Geographic Information System. Annually review and update as necessary existing town GIS data.	X	X	X	X	X	X	X	LUO	D	GIS is updated regularly.	\$	CIP, HMGP	1	1	1	1	1	0	1	6
GIS Database. Establish a comprehensive GIS database to better identify and assess areas, structures and populations potentially affected by natural disasters. These data will provide the town with information necessary to assess natural hazard risks and develop plans to mitigate risks to people and property.	X	X	X	X	X	X	X	BOS, BOF, LUO	D	Regular updates, RiverCOG is currently mapping the entire region.	\$	CIP, OP	1	1	1	1	1	1	1	7
Municipal Buildings Capable of being Shelters. Future investment in municipal structures should include funding for new construction or renovation that will assure the structure is compliant with the standards for use as a shelter, to the extent possible.	X	X	X	X	X	X	X	BOS, BOF, BO	E	New	\$\$\$	HMPG, PDM, CIP	1	1	1	1	1	0	1	6

Figure 22

Comprehensive Mitigation Action Items

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Oblique Imagery. Over the next five (5) years obtain oblique imagery in order to allow for assessment of such factors as extent of fire damage, compliance with building standards, identification of shoreline hardening and shoreline erosion and accretion.	X	X	X	X	X	X		LUO	D	New	\$\$	OP	1	1	0	1	1	0	1	5
Paper Records Preservation. Convert all paper records maintained by the municipality to an electronic format, consistent with any State recommendations, to ensure their survival. Establish protocols for practices going forward.	X	X			X	X		BOS, BOF	D	Paper Records are converted as needed.	\$	OP	1	1	0	1	1	0	1	5
Pet Sheltering. Participate in regional program for sheltering pets during hazard events.	X	X	X	X	X	X	X	BOS, EMD	D	DEMHS Region 2 is in planning stages Region-wide.	\$	CIP, OP	1	1	0	1	1	0	1	5
Promote Self Inspection. Develop a list of techniques for homeowner self-inspection especially for those located in coastal areas.	X	X	X	X	X	X		BOS, LUO, BO	A	New	\$	OP	0	1	1	1	1	1	1	6
Public Works Garage & Transfer Station Generator. Install a generator for back-up power.		X		X		X	X	PW, BOF, BOS	D	New	\$\$	HMPG, CIP	1	1	0	1	1	0	1	5
Risk Reduction. Develop a strategy and funding program to elevate or relocate structures of flood-prone properties or acquire RL properties that request a "buy-out".	X	X	X	X	X	X	X	LUO	E	New	\$\$	OP	0	1	0	0	1	0	1	3
RL and SRL Properties. Encourage property owners of repetitive loss properties to obtain assistance for hazard mitigation funding from DEEP/FEMA for elevation of structures and repairs where applicable.	X	X	X	X	X	X		LUO	D	Information is available through Town Hall for those seeking buyouts. Very few properties in town are eligible.	\$	RLP, HMGP	1	1	0	1	1	1	1	6
Road Evaluation. Evaluate to develop plans, and improve for emergency access and evacuation.	X			X	X	X		PW	E	Yearly	\$\$	CIP, OP	1	1	0	1	1	0	1	5
Road Reconstruction. Develop a priority list for road and bridge reconstruction and elevation for routes which experience frequent flooding or are integral to evacuation such as Pratt Street, Falls River Drive, and others.	X			X	X	X		PW	F	Priority list is on file at DPW. Projects are carried out as funding is available.	\$\$\$	HMPG, FMA, CIP	1	1	0	1	1	0	1	5
Storm water Infrastructure Inventory. Implement mapping and monitoring of catch basins, storm water outfalls and related infrastructure.	X			X		X		PW	D	Inventory is on file at DPW, but not mapped.	\$\$	HMPG, FMA, CIP	1	1	0	1	1	1	1	6
Storm water Infrastructure Maintenance. Provide for annual maintenance of storm water infrastructure, including detention basins.	X			X		X		PW	C	Cleaned yearly or as needed	\$\$	CIP	1	1	0	1	1	0	1	5
Structural Reports. Continue to require structural engineering reports for expansion or alteration of buildings within the flood zones. Evaluate benefits of requiring structural engineering reports for expansion or alteration of buildings within other zones.	X	X		X		X		BO	A	Required	\$\$	OP	1	1	0	1	1	1	1	6
Telecommunication Tower Generators (Private). Evaluate whether generators are needed for back-up power at telecommunications facilities.		X		X		X	X	Private	D	New	\$\$	OP	1	1	0	0	1	0	1	4
Underground Utilities. Require underground utilities for new development; require retrofitting during redevelopment of existing sites to bury utilities where appropriate to mitigate NHs.		X	X	X	X	X		PC, BOS, BOF, LUO	F	Required in new subdivisions.	\$\$	HMPG, PDM, CIP	1	1	1	1	1	1	1	7

Figure 22

Comprehensive Mitigation Action Items

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Natural Systems Protection																			
Assist Property Owners with Buyouts. Develop strategy and program for flood prone property owners who request a buyout.	X	X	X	X	X	X	BOS, BOF, LUO	E	New	\$	FMA, RLP, HMPG	0	1	0	0	0	0	1	2
Below Base Flood Elevation Funding. Encourage property owners whose homes are below BFE to obtain assistance from DEEP and FEMA to acquire hazard mitigation funds to elevate structures where appropriate.	X			X		X	BOS, LUO	D	Information is available, few properties are eligible.	\$	HMPG, PDM, RFC, SRL	0	0	0	1	1	1	1	4
Boats. Identify places where people could store their boats during flooding and hurricane events that would reduce the damage to them and that they cause to the waterfront infrastructure when they break from moorings. Contact boat marinas to ascertain how many boats might need to be removed from docks and moorings.	X			X		X	EMD, PW, HMC	D	New	\$\$	OP	0	1	0	1	1	1	1	5
Dam Inventory. Update inventory of dams and assess downstream risks due to catastrophic failure. Include State, town, and Privately owned dams.	X			X		X	LUO, BOS	D	DEEP continues to regulate Dams	\$\$	HMPG	0	1	0	1	1	1	1	5
Drought Study. Conduct town-wide study of ground- and surface water capacity as it relates to planning for droughts.			X				LUO	D	New	\$\$	HMPG	1	1	0	1	1	0	1	5
Fire Warning. During vulnerable periods, a system of warnings about campfires and open fires should be posted in public locations			X				LUO	A	DEEP currently does this.	\$\$	CIP, HMGF, OP	1	0	0	1	1	0	1	4
FIRMs. Work with Federal Emergency Management Agency (FEMA) to incorporate updated Flood Insurance Rate Maps (FIRMs) into town's planning, outreach and mitigation actions.	X			X		X	LUO, PC	D	New	\$	HMGF, OP	1	1	0	1	1	1	1	6
Flood Enforcement. Enforce through existing zoning, building and flood permitting processes, construction standards to minimize flood risks.	X			X		X	IWC, PC, ZC, LUO	A	Zoning currently enforces standards.	\$	CIP, OP	1	1	0	1	1	1	1	6
Land Acquisition. Advance an assertive land acquisition plan to reserve vacant land subject to NHs.	X		X	X		X	BOS, BOF, CC	D	New	\$\$	FMA, RFC, SRL	1	1	0	1	1	0	1	5
Park Maintainer. Fund a dedicated Park Maintainer to act as steward of public open spaces, including parks, forests, drainage basins, conservation easements, coastal access points, and forests, and to mitigate NHs at town-owned properties.	X	X	X	X	X	X	CC, BOF, BOS	D	New	\$\$	CIP, OP	1	1	1	1	1	0	1	6
Risk Assessment. Use GIS to conduct NH risk assessments that identify potentially affected areas and depicts evacuation routes.	X	X	X	X	X	X	LUO	D	GIS was used for this Plan update.	\$\$	OP	1	0	0	1	1	1	1	5
Storm water Management. Continue to use best management practices (BMPs) as described in the Connecticut DEEP Storm water Management Guidelines on a site-by-site basis as advised by a professional engineer.	X			X		X	PW	D	Currently in place	\$	CIP, OP	1	1	1	1	1	1	1	7
Water Conservation. Recommendations for future land use patterns including recharge into existing aquifers, including site design to encourage water conservation through such techniques as: strict regulation of vegetative buffers for stream and river corridors, rain gardens for site drainage, and prohibition of wetlands alteration.				X			LUO, BOS	D	Currently included in zoning and subdivision n regulations.	\$	OP	1	1	1	1	1	1	1	7
Tree Hazard Management Program. Implement a tree hazard management program to encourage appropriate planting practices to minimize future storm damage to buildings, utilities and streets.	X			X		X	PW	A	Planting recommendations are in Zoning Regulations.	\$\$	CIP, OP	1	1	0	1	1	0	1	5

Figure 22

Comprehensive Mitigation Action Items

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Education and Awareness Programs																				
Circulate Existing Literature. Access existing literature prepared by regional groups and the chamber of commerce and FEMA and display for public distribution in the town Hall and Library.	X	X	X	X	X	X	X	BOS	C	Literature is available.	\$	HMPG, PDM	1	1	0	1	1	1	1	6
Drought Education. Coordinate with Connecticut Water Company on public education and public service announcements during droughts.			X				X	BOF, BOS	C	New	\$	HMPG, PDM	1	1	0	1	1	1	1	6
Educate About Risk Where People Live. Educate residents at high risk due to demographic or social attributes about the risk(s) present in the areas that they live.	X	X	X	X	X	X	X	LUO	C	New	\$	HMPG, PDM	0	1	0	1	1	1	1	5
Hotline. Publicize emergency "hotline" phone number or website for public information and volunteer support.	X	X	X	X	X	X	X	BOS	D	Essex Website has extensive information	\$\$	HMPG, PDM	1	1	0	1	1	1	1	6
Incident Notification System. Enlist public participation through public workshops to develop methods for notification of hazard events and emergencies.	X	X	X	X	X	X	X	BOS	D	Reverse 911 System in place	\$\$	CIP	1	1	0	1	1	1	1	6
Information. Publish materials on additional hazards and encourage additional insurance.	X	X	X	X	X	X	X	BOS, LUO	C	Newsletters and emails go out throughout the year. Information is available on Town website.	\$	OP	1	1	0	1	1	1	1	6
Interpretation in Shelters. Request information regarding the need for providing non-English language speakers during natural disasters from the District 4 School administration; and coordinate a shared service for non-emergency and emergency operations.	X	X	X	X	X	X	X	EMD	D	New	\$\$	OP	1	1	0	1	1	1	1	6
Natural Hazard Training. Continue to train and educate emergency responders about mitigating NHs.	X	X	X	X	X	X	X	LUO	C	New	\$\$	HMPG, PDM	1	0	0	1	1	1	1	5
Outreach. Promote owner participation in mitigation efforts to protect their property.	X	X	X	X	X	X	X	LUO	C	New	\$	HMPG, PDM	0	1	0	1	1	1	1	5
Pet Sheltering. Distribute hurricane preparedness information including pet sheltering plans.	X	X	X	X	X	X	X	EMD	C	Information available on Town Website.	\$\$	HMPG, PDM	1	1	0	1	1	1	1	6
Preparedness Webpage. Create a page on the town website with NH preparedness information, including hazard areas, evacuation routes deemed appropriate per NH event and locations of shelters.	X	X	X	X	X	X	X	EMD	D	Town website has extensive information.	\$\$	CIP	1	1	0	1	1	1	1	6
Proactive Pamphlets. Provide pamphlets and refer to web-based information for property owners for hazards listed in this document to show options for obtaining additional insurance, structural alterations to protect against various hazard damage, and emergency procedures for families during a hazard. Include information for contractors and homeowners on the risks of building in hazard prone areas.	X	X	X	X	X	X	X	LUO	C	Extensive information is available on Town website.	\$\$	HMPG, PDM	1	1	0	1	1	1	1	6
Public Participation. Enlist public participation through public workshops/ surveys to develop methods for notification of emergencies.	X	X	X	X	X	X		EMD, PC	C	Occurs annually.	\$	OP	1	1	0	1	1	1	1	6
Recovery Webpage. Post on town website information about recovery assistance following NH events.	X	X	X	X	X	X	X	BOS	C	New	\$\$	HMPG, PDM	1	1	0	1	1	1	1	6

Figure 22

Comprehensive Mitigation Action Items

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Reverse 911. Consider establishing reverse 911 alert system or similar alert system.	X	X	X	X	X	X	X	BOS, EMD	D	Complete, Everbridge System	\$\$	CIP	1	1	1	1	1	1	7
Schools. Visit schools and educate children about the risks of floods, hurricanes, and other natural hazards and how to prepare for them.	X	X	X	X	X	X	X	BOS	C	Emergency Personnel visit schools annually.	\$	HMPG, PDM	0	1	0	1	1	1	5
Social –Demographic Impacts. Seek grants to provide funding for developing more detailed data to assist in the social – demographic analysis of how Essex will be affected by natural hazards.	X	X	X	X	X	X	X	BOS, LUO	D	New	\$	OP	0	1	0	1	1	1	5
Tenant Notification. Develop a mechanism for tenants to register for disaster notification.	X	X	X	X	X	X	X	LUO	C	New	\$	HMPG, PDM	1	1	0	1	1	1	6
Webpage. Update town webpage with the section on Hazard Preparedness for the public. Include maps of evacuation route, storm surge areas, and shelters. Include options for mitigation for residential structures and business recovery and provide links to FEMA, NOAA, State OEM and RiverCOG websites for additional information.	X	X	X	X	X	X	X	BOS	C	Continual updating of Town website	\$\$	HMPG, PDM	1	1	0	1	1	1	6
Wildfire Education. Educate the public about potential hazard of wildfire caused by campfires or open burning.			X					Fire Dept.	C	Information is available on Town and DEEP websites.	\$	HMPG, PDM	1	1	0	1	1	1	6

*Responsible Party Code		**Funding Source Code	
BO	Building Official	BOE	Board of Education
BOE	Board of Education	CIP	Capital Improvement Plan
BOF	Board of Finance	FMA	Flood Mitigation Assistance
BOS	Board of Selectmen	HMPG	Hazard Mitigation Grant Program
EMD	Emergency Management Director	OP	Other Program
HMC	Harbor Management Commission	PDM	Pre-Disaster Mitigation
LUO	Land Use Office	REC	Repetitive Flood Claim
PC	Planning Commission	RTP	Regional Transportation Program
PW	Public Works	SRL	Severe Repetitive Loss
ZC	Zoning Commission	STIP	State Transportation Improvement Project
ZEO	Zoning Enforcement Official		

Notes:

1. Many Action Items include more than once responsible party; however, the first party listed is the primary.
2. Estimated Costs are defined as: \$ = \$0 to \$50,000; \$\$ = \$50,001 to \$100,000; \$\$\$ = Over \$100,000.

Figure 22

Comprehensive Mitigation Action Items

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Resources and Maps Used During Workshop



Essex, Connecticut **Natural Hazards** **Mitigation Plan Update, 2014**



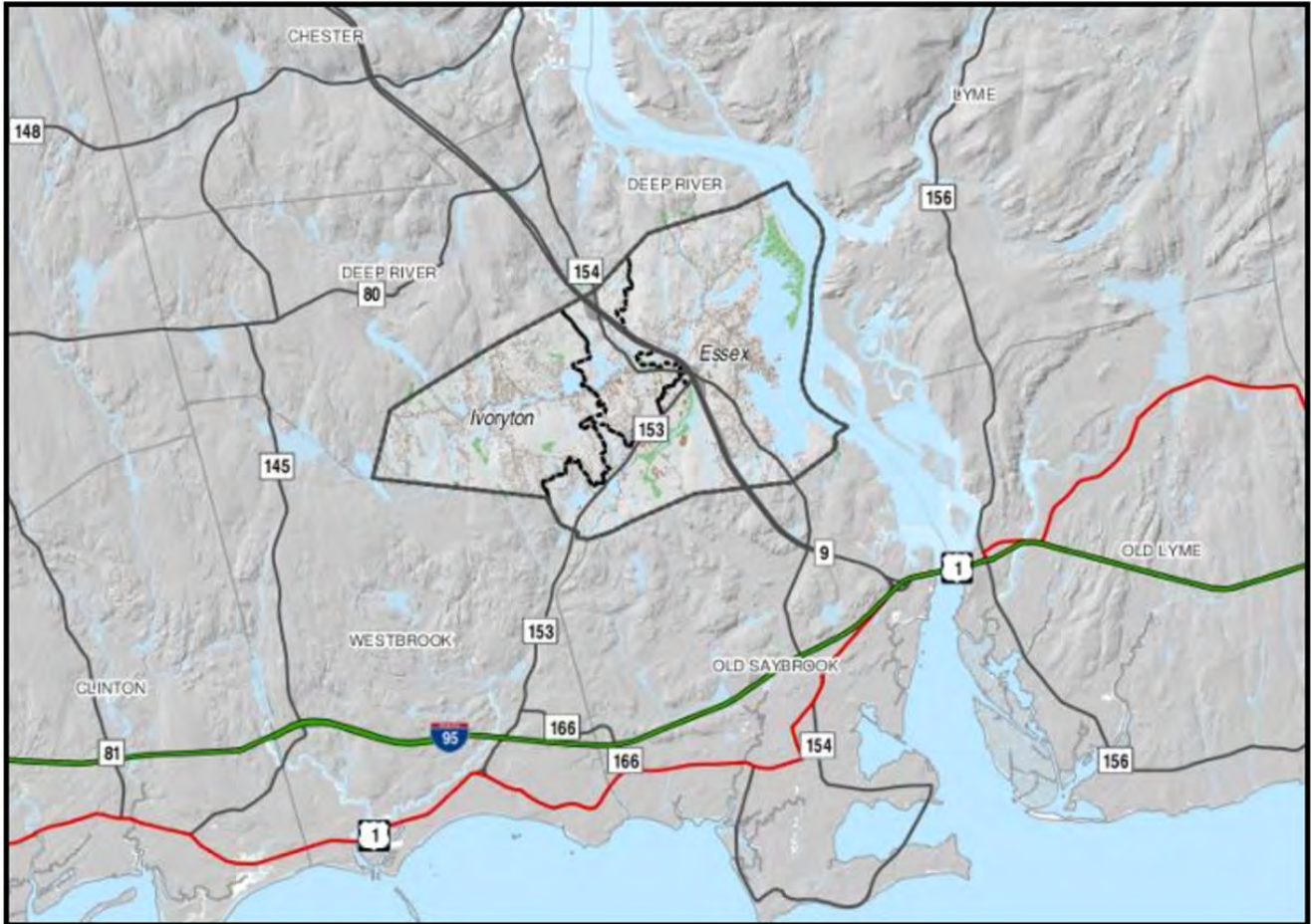
Prepared for
Essex Planning Commission

Adopted by
Town of Essex, Connecticut
June 4, 2014



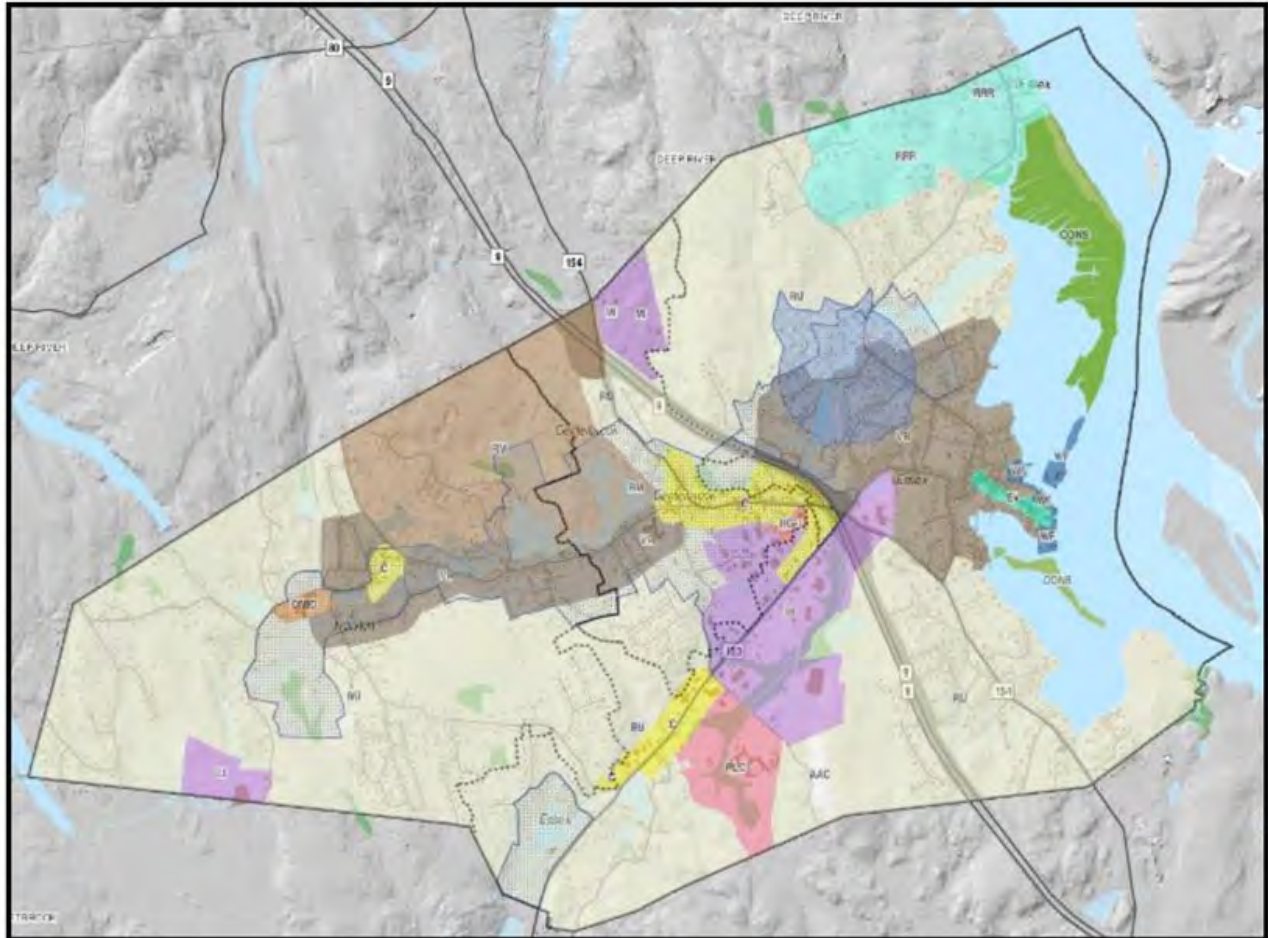
Prepared by
Lower Connecticut River Valley Council of Governments
145 Dennison Road
Essex, CT 06426
www.rivercog.org

Essex, CT



Map 1: **Essex** and surrounding towns.

This map depicts Essex among surrounding towns. The map also shows Essex's relationship to the Connecticut River as well as major roads.



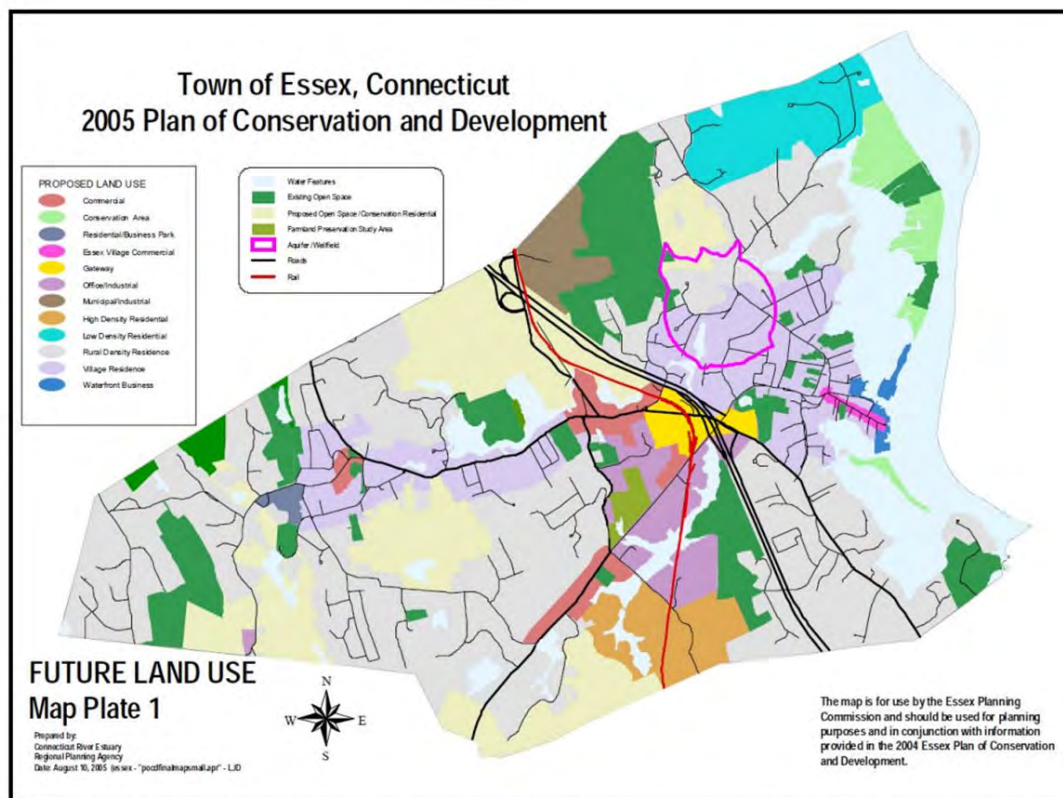
Zoning Legend

- Commercial District
- Conservation District
- Design Municipal Industrial District
- Essex Village District
- Heritage Gateway
- Limited Industrial District
- Municipal & Industrial Service Zone
- Residential Life Care District
- River Road Residential
- Rural Residential
- Rural Residential-Multi Family
- Village Residence District
- Waterfront Business District
- Active Adult

Map 2: Zoning Districts

This map depicts the relationships among Essex's Zoning Districts.

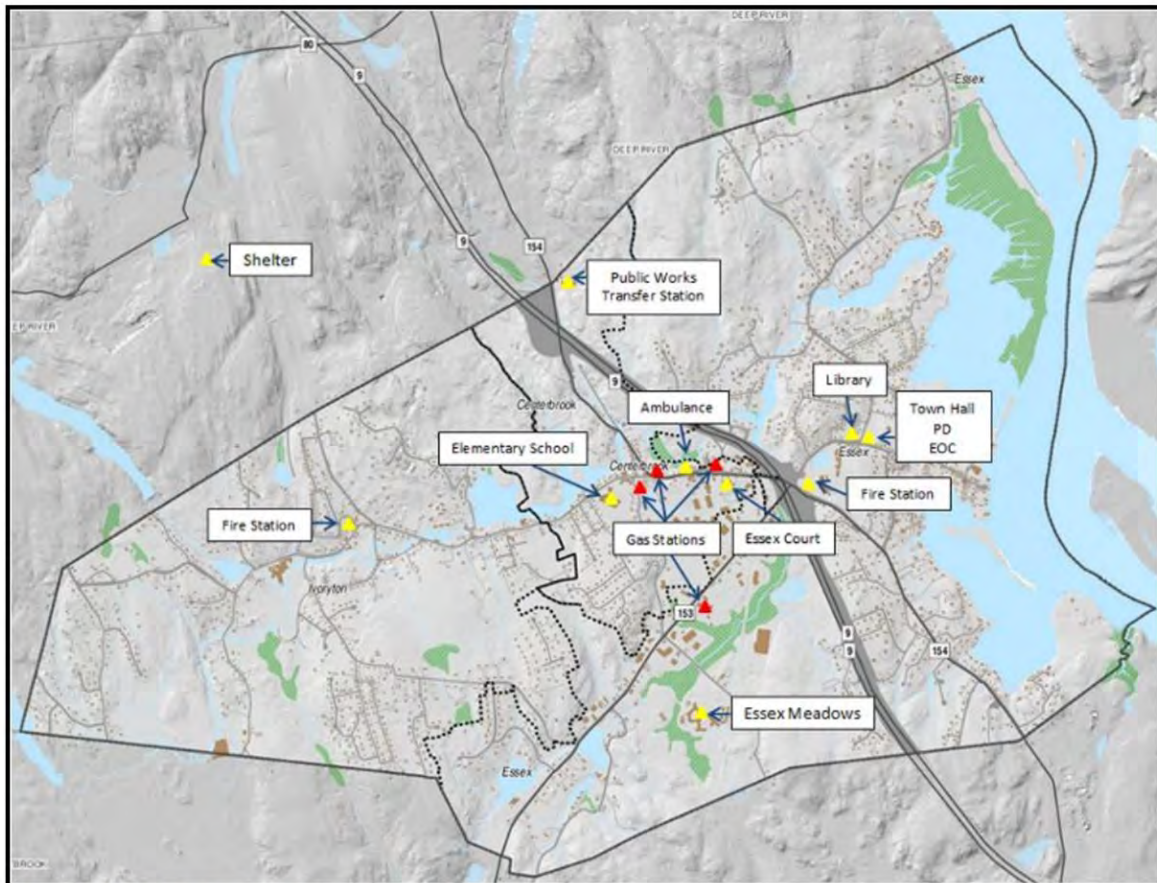
Source: Essex GIS (4/2013)



Map 3: Future Land Use. This map depicts the future land use throughout the town of Essex based on current Land Use and Zoning Regulations.

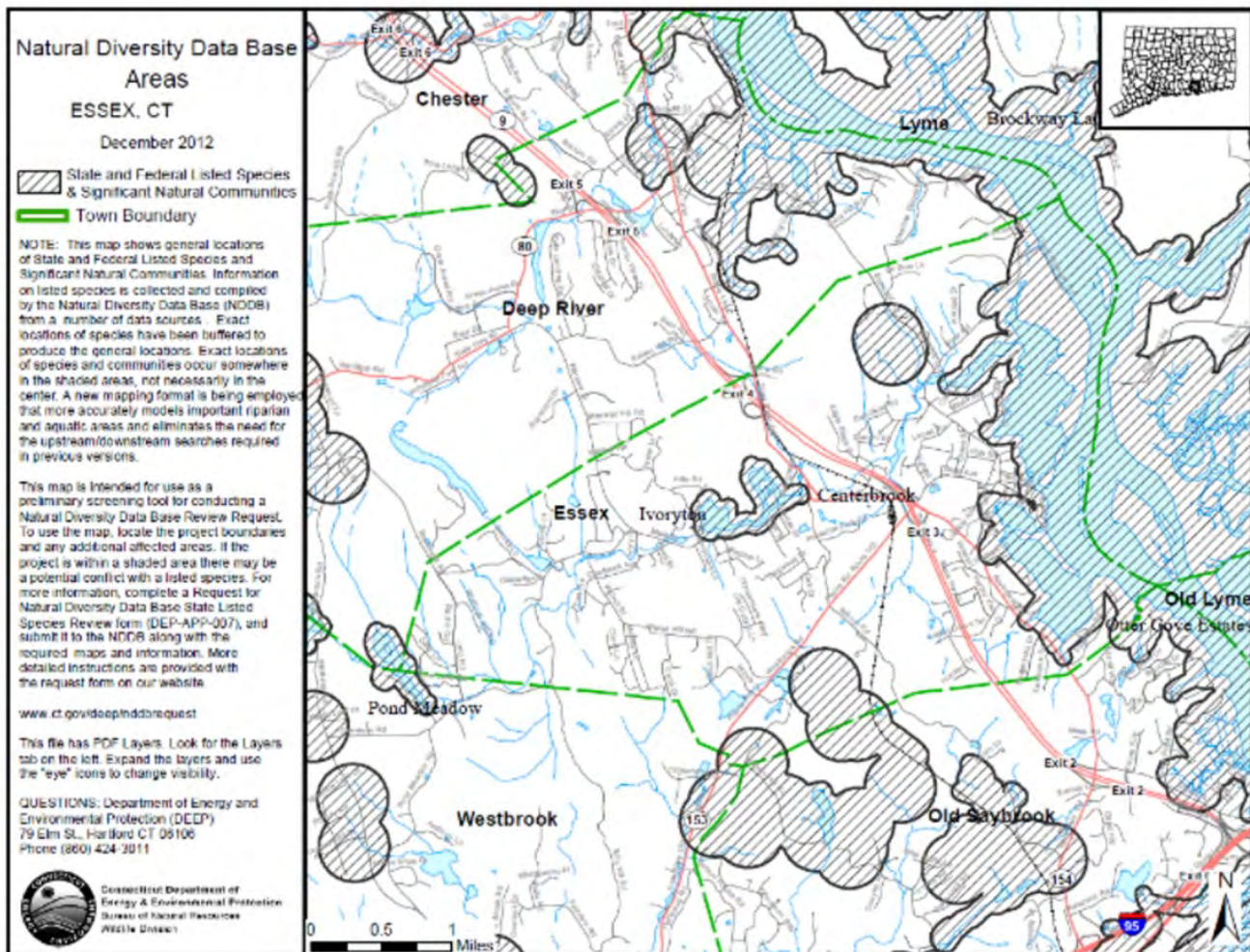
Source: Essex POCD, 2005

Essex, CT



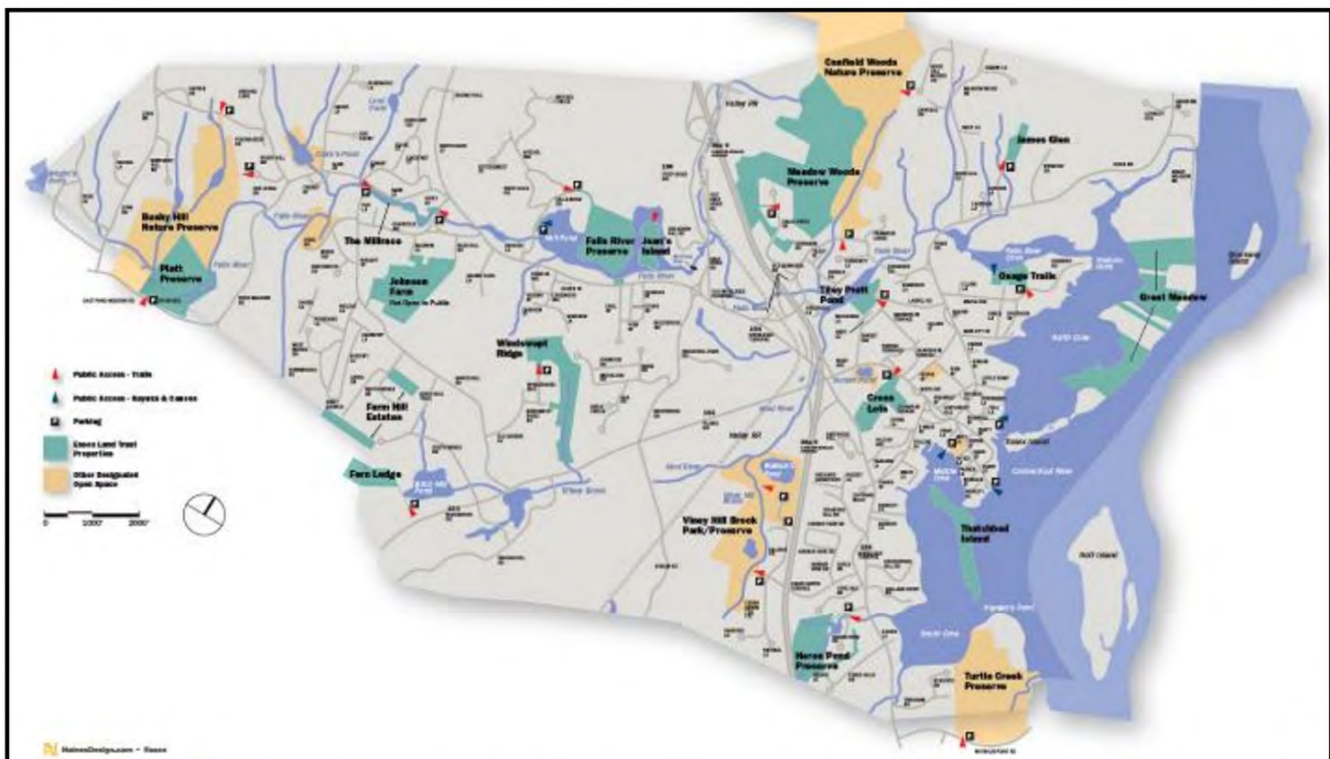
Map 4: **Critical Facilities** throughout Essex.

Source: RiverCOG



Map 5: Natural Diversity Area locations include State and Federally listed species and significant affected natural communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center.
Source: DEEP

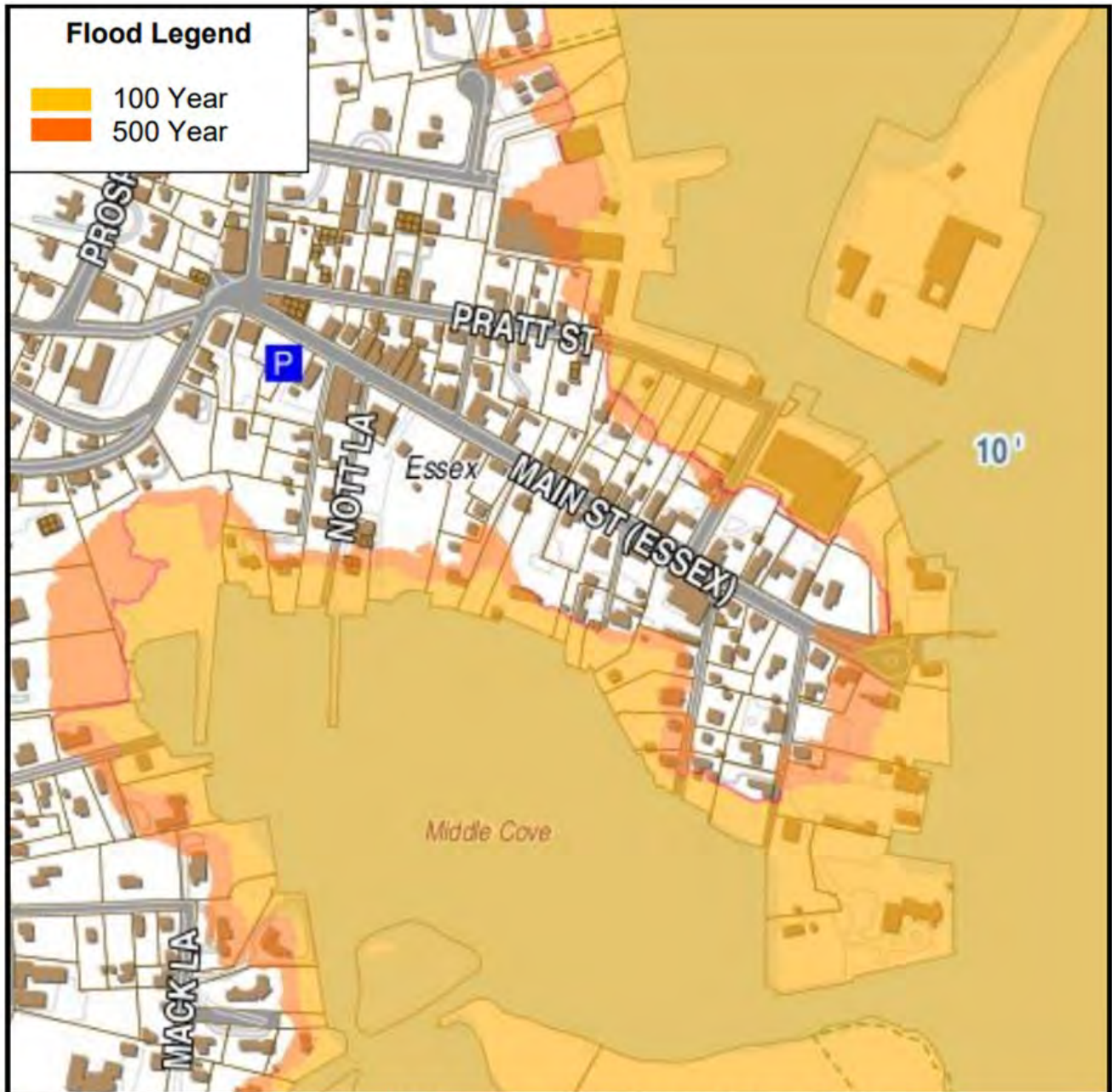
Essex, CT



Map 6: Essex Open Space

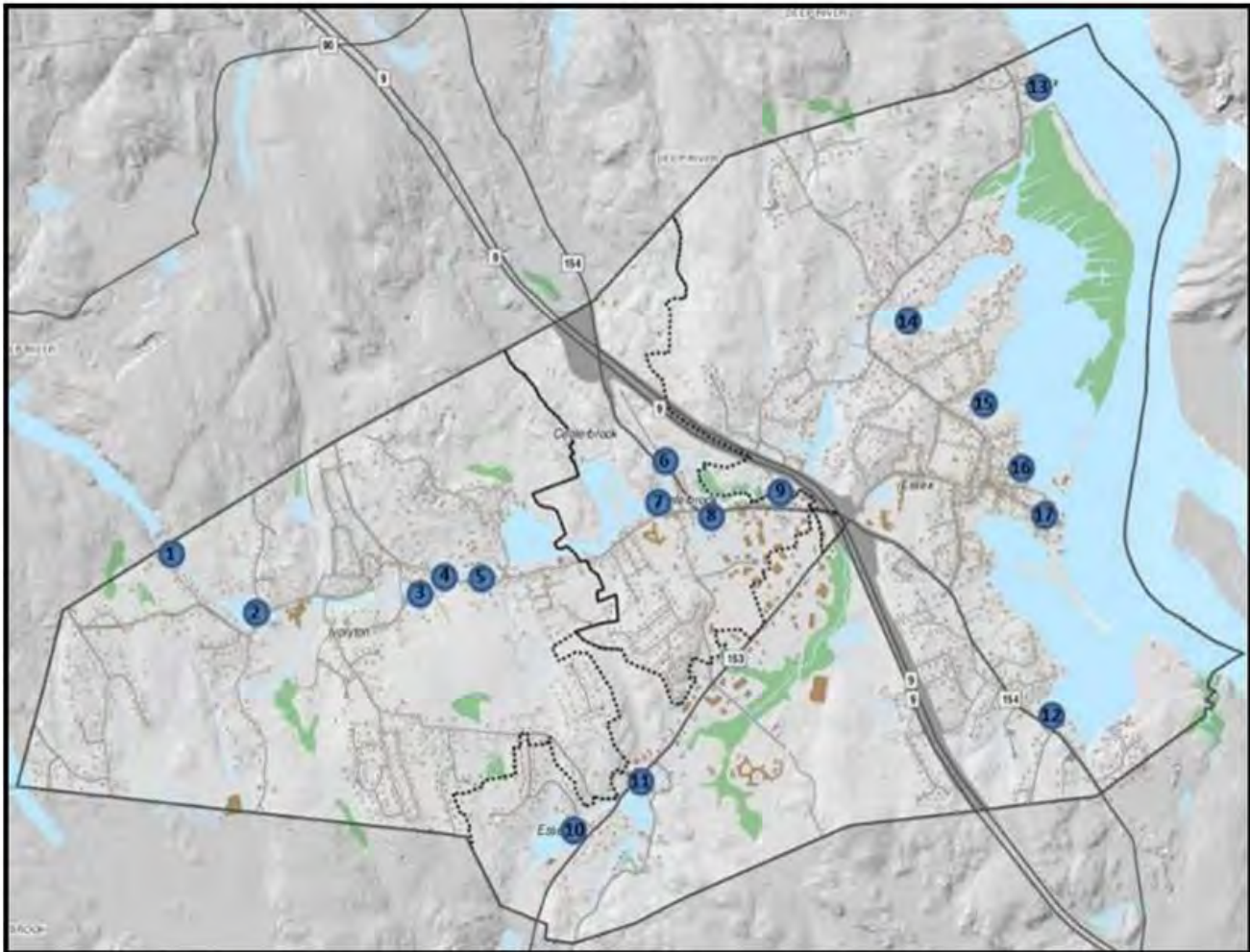
This map shows designated open space throughout Essex, both lands owned by the Essex Land Trust and lands owned by other entities designated as open space.

Source: Essex Land Trust (4/2013)



Map 7: **Special Flood Hazard Area** surrounding Essex Village Center.

This map shows the flood zone that runs through Essex's economic center. Visible is the extent of the downtown property that lies within the flood zone. This map is based on the latest FIRM, adopted August 28, 2008.



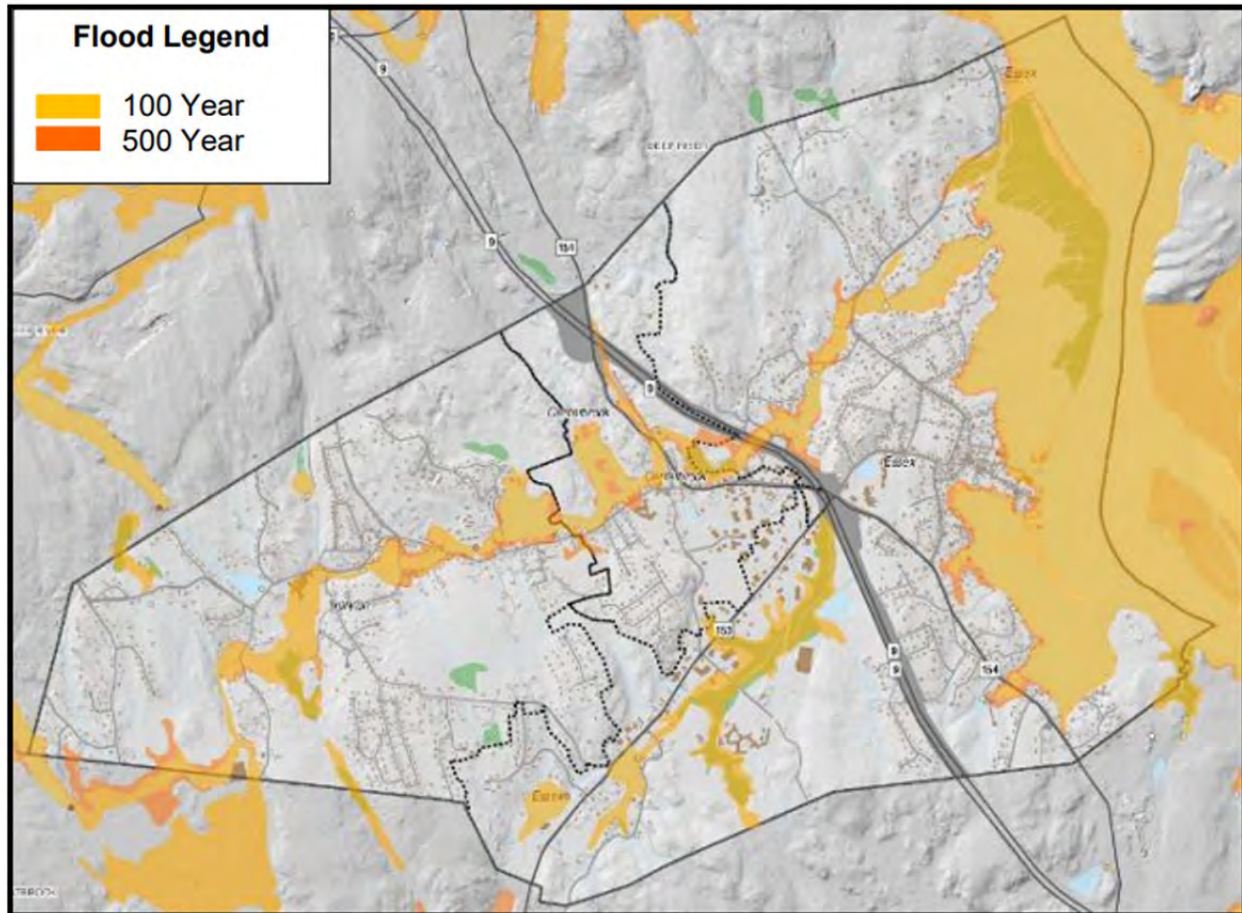
Hazard Legend

1. Bushy Hill Dam – Private Owner in Deep River
2. Clarks' Pond Dam – Private Owner
3. Residential Area – Density w/in flood plain
4. Commercial Flooding – Density w/in flood plain
5. Ivoryton Pond Dam – Private Owner
6. Dam Maintenance
7. Mill Pond Dam – Private Owner
8. Centerbrook Commercial and Residential Flooding
9. Flooding Under Route 9
10. Dam Maintenance - Private
11. Dam Maintenance - Private
12. Residential Area – Storm Surge and River Flooding
13. Residential Area – Storm Surge and River Flooding
14. Residential Area – Storm Surge and River Flooding
15. Residential Area – Storm Surge and River Flooding
16. Marina District – Storm Surge and River Flooding
17. Village Commercial and Residential Flooding

Map 8: Infrastructure Hazard Areas

This map depicts areas that are prone to nuisance and storm flooding, as well as other hazards, throughout town. Areas are based on a review completed by the Town for the 2006 NHMP.

Essex, CT

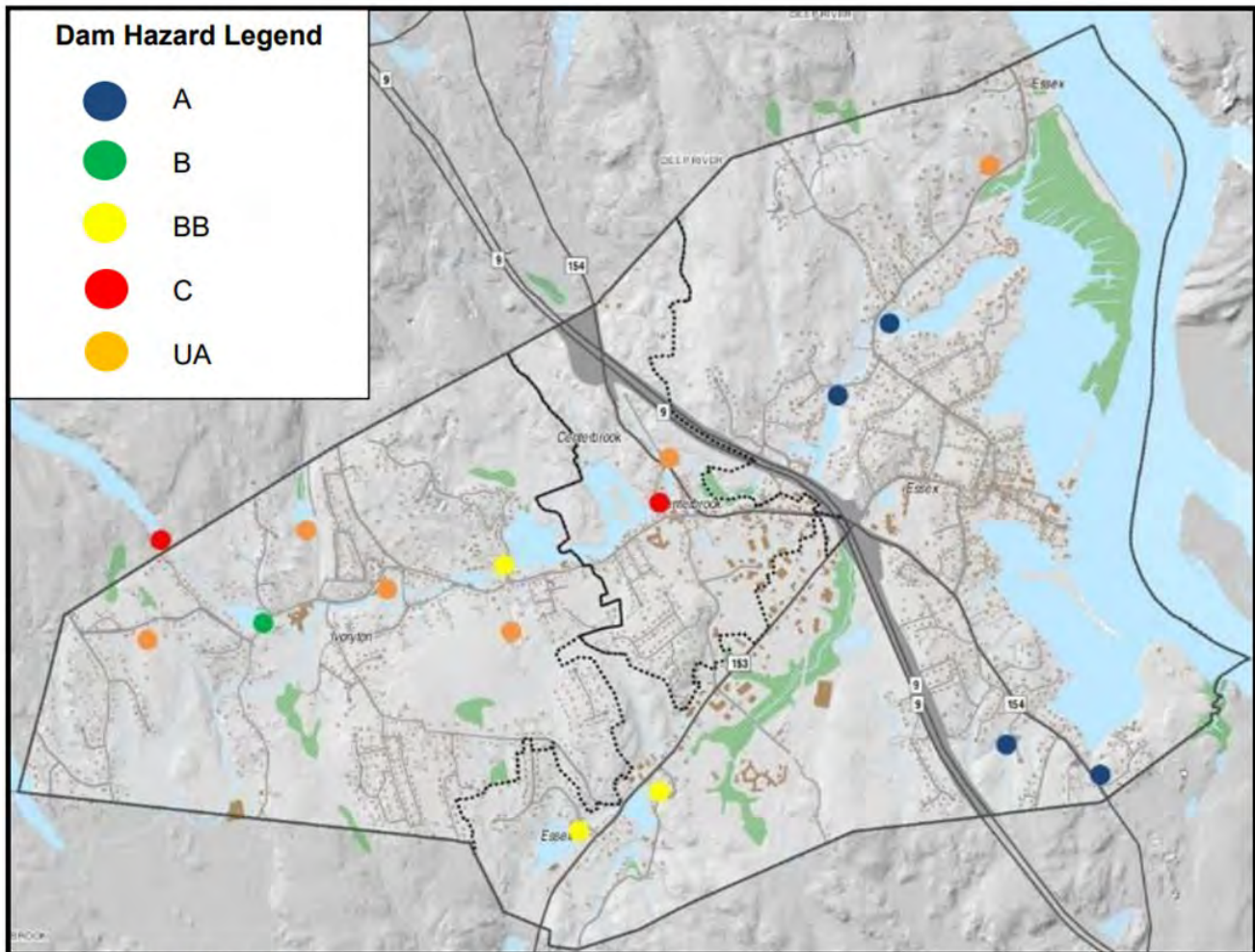


Map 9: **Flood Zones** in Essex.

This map depicts flood zones through Essex. Much of the flood zone occurs along the Connecticut River with a length along the Falls River (north) and the Mud River (south).

Source: Essex GIS (4/2013) Based on August 28, 2008 FIRM

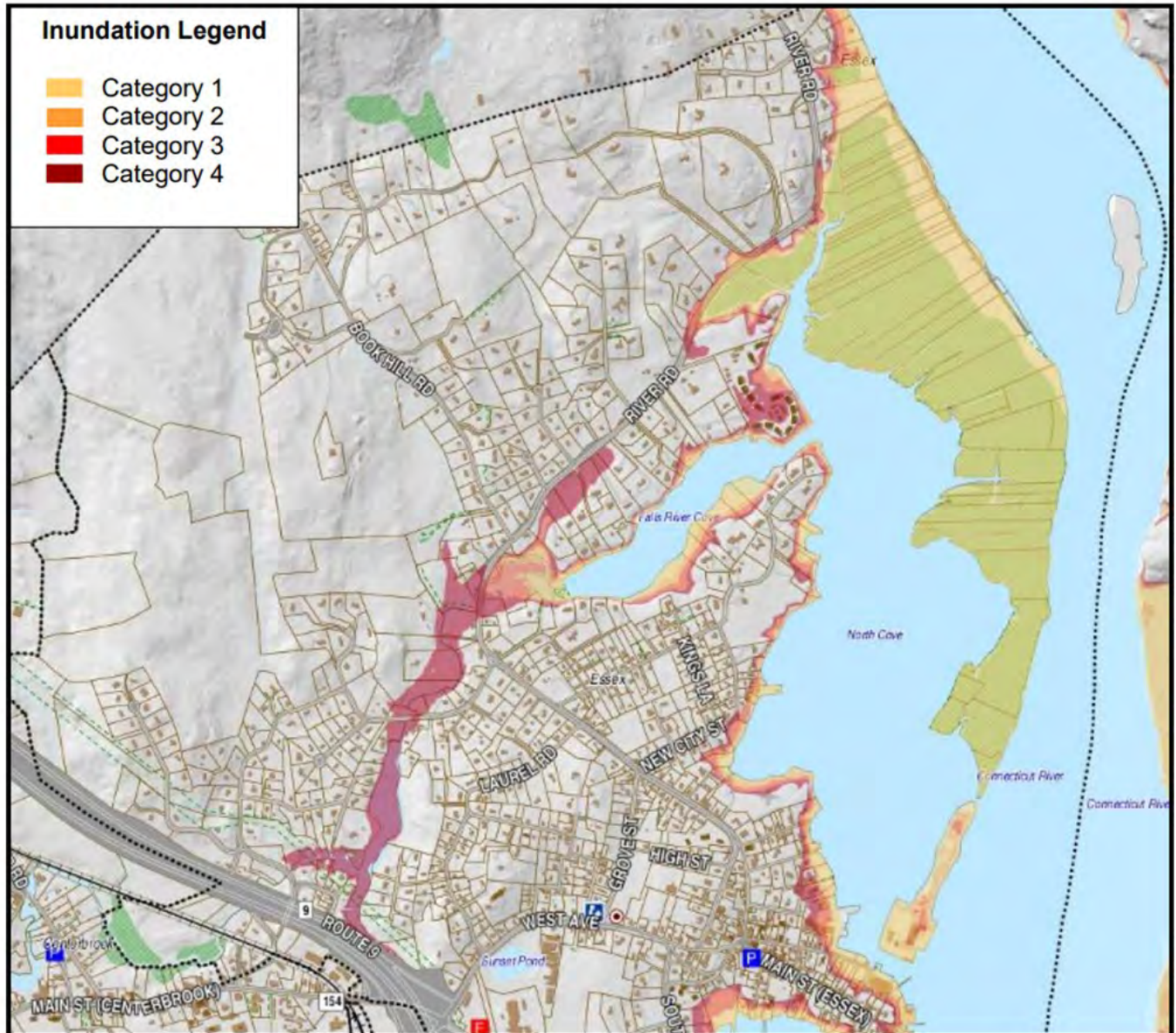
Essex, CT



Map 10: **Dam Hazards**

This map depicts the locations of dams and flood zones in Essex and indicates their hazard potential classification. Note that the Bushy Hill Dam, the only High Hazard Dam is located in neighboring Deep River, though water flowing over the dam proceeds into Essex, approximately 350 feet downstream.

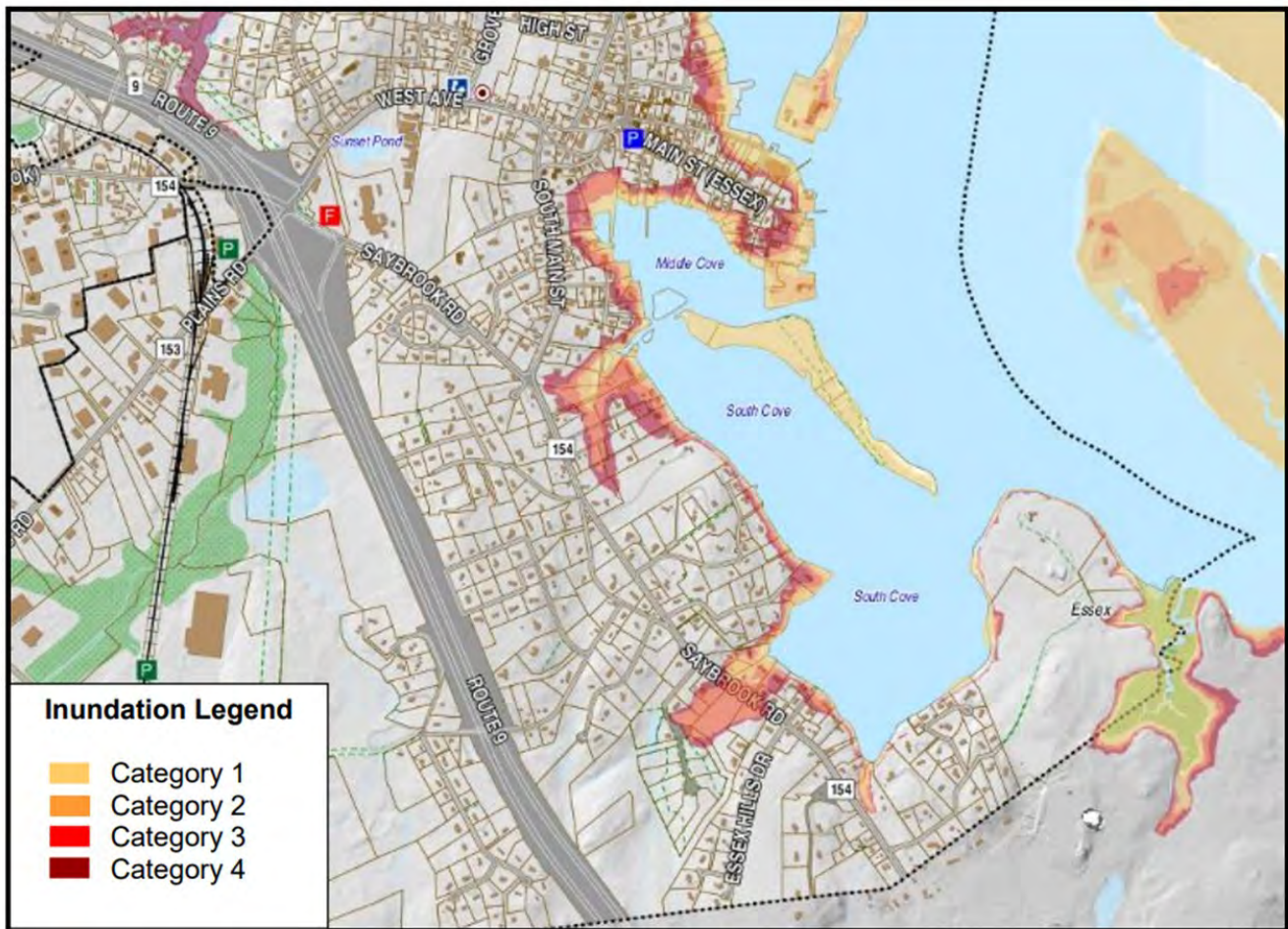
Source: Essex GIS (4/2013)



Map 11: **Hurricane Inundation** in the Northeastern part of town. Visible is the extent of the Falls River that would be affected by a Category 4 Hurricane.

Source: Essex GIS (4/2013)

Essex, CT



Map 12: **Hurricane Inundation** in the Southeastern Portion of Essex.

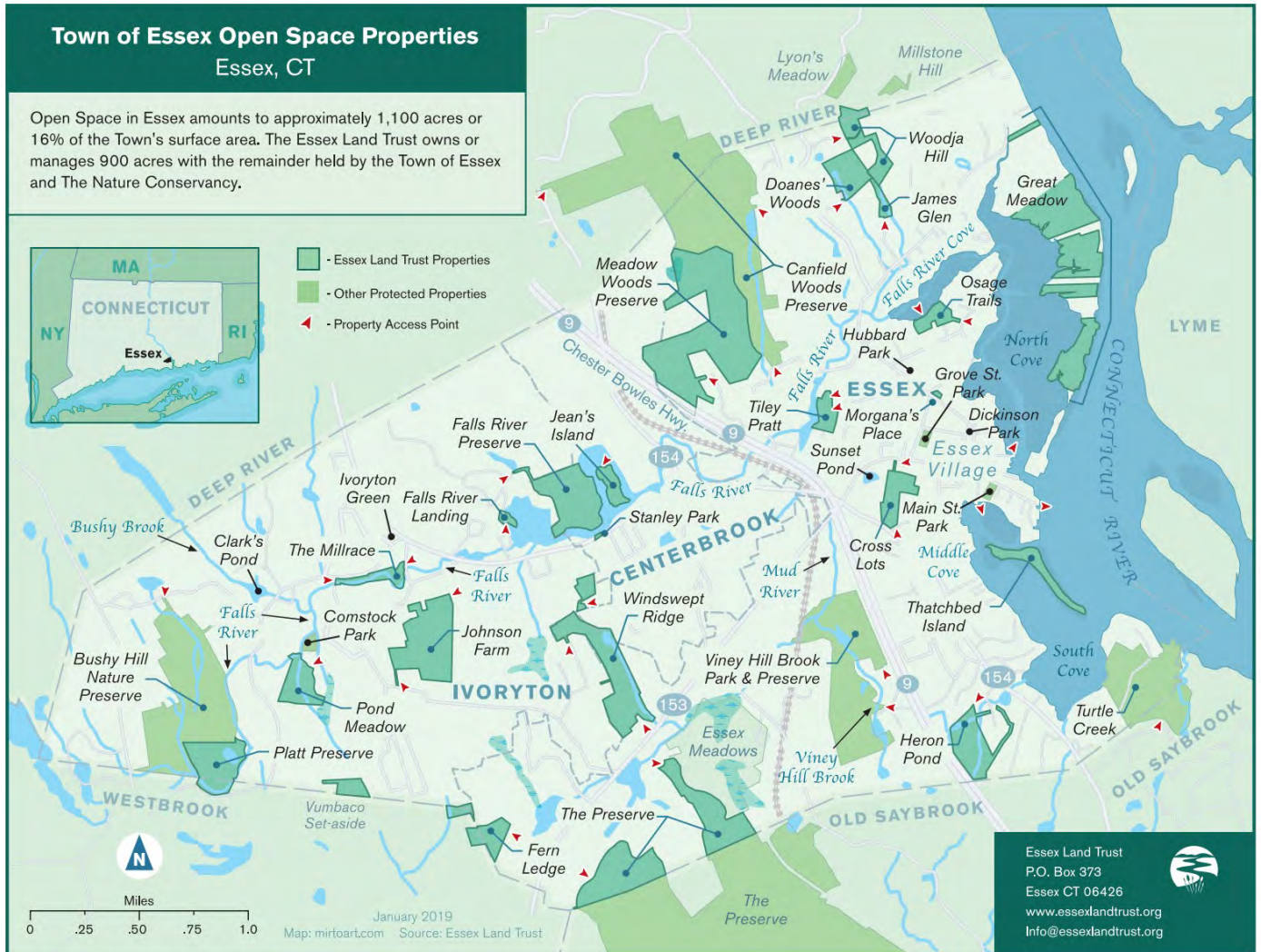
Source: Essex GIS (4/2013)

Town of Essex Open Space Properties Essex, CT

Open Space in Essex amounts to approximately 1,100 acres or 16% of the Town's surface area. The Essex Land Trust owns or manages 900 acres with the remainder held by the Town of Essex and The Nature Conservancy.

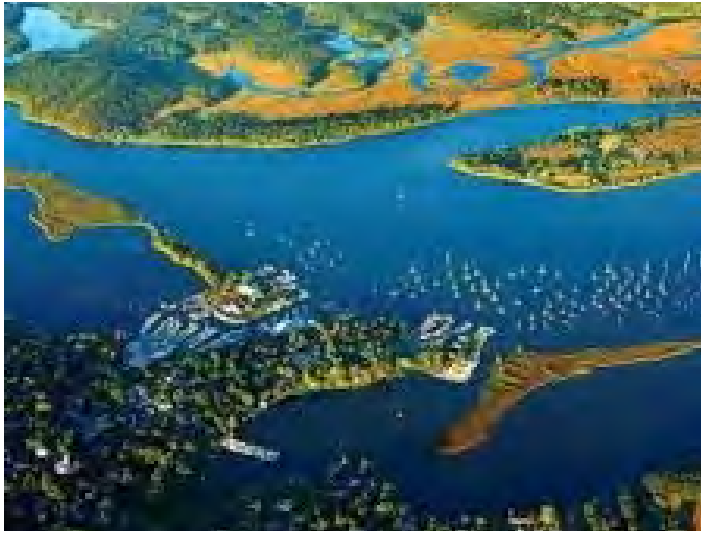


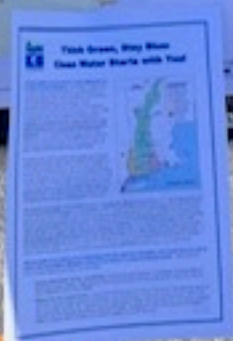
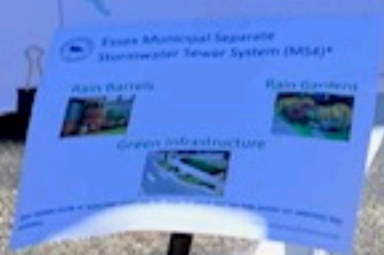
- - Essex Land Trust Properties
- - Other Protected Properties
- ▲ - Property Access Point



Essex Land Trust
P.O. Box 373
Essex CT 06426
www.essexlandtrust.org
Info@essexlandtrust.org







**TOWN OF ESSEX PUBLIC WORKS AND HIGHWAY
DEPARTMENT**

1 DUMP RD ESSEX, CONNECTICUT 06426

860-767-0715

MS4 STORM WATER MAINTENANCE

LOCATION Heron Pond Retention Pond

INSPECTION Y/N ANNUAL QUARTLY MONTHLY

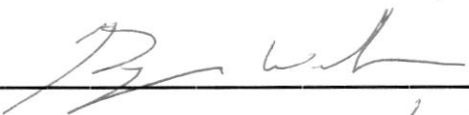
CLEANOUT Y/N ANNUAL QUARTLY MONTHLY

DATE PERFORMED 4/11/2019

CREW MEMBERS WHO PERFORMED WORK Brian, Dave,
Dwight

DISCRIPTION OF WORK Clear cut brush using
hand tools and small equipment.

NOTES Retention Pond is Functioning
normally. Annual cleanout of brush is
very important.

SUPERVISORS SIGNATURE 
RYAN WELCH / DPW DIRECTOR

**TOWN OF ESSEX PUBLIC WORKS AND HIGHWAY
DEPARTMENT**

1 DUMP RD ESSEX, CONNECTICUT 06426

860-767-0715

MS4 STORM WATER MAINTENANCE

LOCATION 36 Pratt St. oil water separator

INSPECTION ☒ Y ☐ N ☒ Bi- ☐ ANNUAL ☐ QUARTLY ☐ MONTHLY

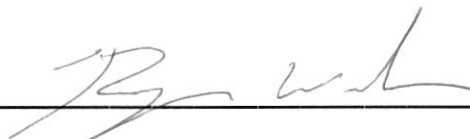
CLEANOUT ☒ Y ☐ N ☐ ANNUAL ☐ QUARTLY ☐ MONTHLY

DATE PERFORMED 5/22/2019

CREW MEMBERS WHO PERFORMED WORK Ryan. Dwight,
Dave.

DISCRIPTION OF WORK removed manhole covers
to inspect oil separator tank. Approx. 12 in

NOTES Sediment in bottom.
* will clean out tank in Fall.

SUPERVISORS SIGNATURE 

Catch Basin and Drainage Repair 2019

Essex Public Works and Highway Department

In 2019 drainage upgrades and repairs were made to the following locations:

July

26 Grove St. Replaced flat top basin and rebuilt top course of block.

September

92 Mares Hill. Replaced and rebuilt flat top basin and reset to proper grade.

November

3 Oak Drive. Replaced curb top basin top and rebuilt first 2 courses of block catch basin structure.

21 Ridge Rd. Replaced curb top basin top and minor repair work to basin block.

December

27-32 West Hill Rd. Added 2 new catch basin structures connected by 250 feet of HDPE pipe. Tied into existing catch basin structure to outlet flow.

5 Mitchel Terrace. Removed 2 old type I catch basin structures and replaced with type II double catch basins.

2019 BATCH BASIN CLEANING RECORD

Town of Essex, Public Works Department

Basins cleaned by Janet Sweeping Company,
Meriden CT

Between October 1st and December 1st all the
catch basins on the following roads were
cleaned: **(317 total catch basins cleaned)**

Book Hill Rd

Book Hill Woods Rd

Carriage Ln

Donald Rd

Hudson Ln

Meadow Woods

Navy Ln

Old Dennison Rd #3

Ox Bow Ln

Primrose Ledge

River Rd and Heritage Cove Condos

River Road Dr

Birch Cir

Birch Mill Tr

Bokum Rd

Brookside Ln

Carol Dr

Cedar St

Charles St

Dennison Rd

Dump Rd

Eagle Ridge Dr

Earl St

Industrial Park Rd

Ingham Hill Rd

Mares Hill Rd

Northwinds Dr

Oak Dr

Old Dobbin Ln

Plaza Dr

Ridge Rd

South Winds Dr

Town Woods Rd

Westwoods Rd

Windermere Way

Windsor Ln

Windswept Ridge Rd

Woodland Dr

2018-2019 Annual Sand and Salt usage

Town of Essex Public Works Department

Purpose: winter snow and ice control

235 Tons- Blizzard Wizard treated brown salt

333 Tons- Washed winter road sand

2018-2019 Annual Road Sweeping accumulation

Approximately 500 yards of Sand, Dirt, leaves and road debris were collected.

ROAD SWEEPING REPORT 2019

TOWN OF ESSEX PUBLIC WORKS AND HIGHWAY DEPARTMENT

It is necessary to continually sweep town-maintained roads throughout the year. The collection of sand, leaves, dirt, litter and other debris is part of our best management practice to ensure clean streets, drainage and waterways.

1/2 Comstock, Baldwin, West Ave to Main St one side, North Main to Maple Ave one side, Bushnell ST, New City ST, Maple and Riverview one side.

1/3 Maple Ave, Kings Ln, North Main, River RD, Book Hill to Meadow Woods, Navy Ln.

1/4 Main St Centerbrook one side, Barbershop to firehouse, South Main one side to Main St, Post office parking lot, foot of Main St, Ferry St, Pratt St, North Main one side to Book Hill, Navy, Meadow Woods, Oxbow, Mares Hill for water runoff problem- sweep out edge of road to keep water in gutter.

1/8 Book Hill Woods, River Rd, North Main, South Main, Partridge Hill, Cove Hill, South Cove, Captains Walk.

1/9 Partridge hill, Cove Hill, Cedar Grove, Hillside, Harbor View, Gates RD.

1/10 Bokum Rd, Mares Hill, Woodland DR.

2/6 Summit ST, Oak ST, Chestnut, Blake, Main ST to Bushy Hill, Cheney St, Woodland DR.

2/9 Pond Meadow, Rachel LN, Mikes Terrace, Comstock, Read Hill RD.

3/15 West Ave, South Main, Grove ST, Town Hall, North Main, Pratt ST.

3/18 West Ave, Main ST, Post Office Parking Lot, Cross ST, Bushnell ST, Teal LN, Prospect ST, Maple Ave, Little Point ST,

3/20 Main ST Ivoryton, Ivory ST, Comstock Ave.

3/21 Ivoryton Park Lot, Main ST, Walnut ST, Comstock Ave, Ivory ST, Read ST, Terrace LN.

3/22 Industrial Park RD, Woodland DR entire neighborhood.

4/2 Cedar, Charles, Earl ST, Falls River, Dump RD.

4/3 Summit ST, Mitchell Circle, Mitchell Terrace, West Hills

4/4 Chestnut, Summit, Budney Hill, Blake ST, Oak ST, Highland Terrace, Cheney ST, Brooks LN, Bushy Hill.

4/5 Main ST Ivoryton, Bushy Hill, Post Master, Hopper, Lynn Rd, Deer Ln, Pine Lake, Oak DR.

4/8 Pond Meadow, Toby Hill, Rachell Ln, Winthrop Hills, Blake ST.

4/9 Bokum RD, Ingham Hill RD.

4/10 West Ave, Town Garage area, North Main, Grove ST to River RD, Maple Ave, Clark Ln, Kings Ln, Foxboro RD, Riverview, New City ST.

4/15 Prospect St, North Main, River RD, Andrews RD, Lookout Hill.

4/16 Main ST, Post Office parking lot, Scholes Ln, Ferry, Pratt, Cross St, Methodist Hill, Prospect, North main, River Rd DR.

4/17 Bank LN, North Main, Book Hill, Navy Ln, Meadow Woods, Book Hill Woods, Dennison RD.

4/18 Main St Centerbrook, Rail Road tracks to barber shop, south side of Old Dobbin, South Winds, Birch Mill, Mares Hill, Dump Rd.

4/22 Woodland DR, Mares Hill RD, North Winds, Cord LN, Melody to Fife CT, Harmony, Walnut ST.

4/23 River Rd, Laurel RD, Sunset Terrace, Old Dobbin entire neighborhood.

4/24 Comstock, Harmony, Piney Branch, Melody Ln, Town Woods, West Woods, Walnut, Main St Ivoryton.

4/25 Comstock, Cedar, Stonebrook DR.

5/7 Post Office parking lot, Main St, West Ave, Pratt St, Ferry ST, South Main ST, Fordham RD, Hemlock DR, Essex Hills, Dump RD, South Main, Carlson RD.

5/8 Gates Rd, Cove Hill RD, Heron Pond RD, Industrial Park RD.

5/9 South Cove, Mallard PT, Cross Trees Hill RD.

6/27 Woodland DR, Bokum, West Ave, Grove St, Maple Ave, New City ST, River View ST, Grove ST.

6/28 Dennison Rd, River Rd, Carriage Ln, River Road Drive, Lookout Hill, Andrews RD.

7/1 Book Hill RD, Book Hill Woods RD, Oxbow RD, Curiosity Ln, Primrose Ledge, Donald RD, Eagle Ridge, Dennison RD.

7/19 Grandview, Bokum RD, Dump RD.

9/14 Sweeping loose stone from all chip seal roads in south end of town. Cove Hill, Cedar Grove, Hillside, Cedar Grove EXT, Nutmeg, Hunters Trail, Dump Rd.

9/16 Cedar Grove Terrace, Stamford Hill RD, Russet, Orchard Heights, Mack Ln. Dump Rd.

9/17 West Ave, Grove ST, Main ST Centerbrook, Grandview, Dump RD.

9/25 Cedar Grove, Cedar Grove EXT, Hillside DR, Hunters Trail, Nutmeg, Grandview.

9/26 South Cove, Cove Hill, Cedar Grove Terrace, Stamford Hill, Russet Ln, Orchard Heights

9/27 Firehouse parking lot- sweep up chip seal stone.

10-11 Mack Ln- sweep up chip seal stone and leaves.

10/30 West Ave, Grove St, Main St, Pratt St, Ferry ST, North Main ST, Charles, Cedar ST, Main ST Ivoryton, Post Office parking lot.

10/31 South Main, Main ST, Post office parking lot, Summit ST, Prospect, High ST, North Main, Dennison RD, Chestnut, Oak ST, Highland Terrace, Blake St.

11/4 Dennison, Book Hill, Navy LN, Book Hill Woods.

12/5 Centerbrook parking lots, Main ST Centerbrook, Near exit 3 off ramp, Plains Rd, Grove St, West Ave, Pratt ST, Ferry ST.

12/6 Sweep for Ivoryton Center Illuminations, Main ST, Chestnut ST, Summit ST, Main ST to Bushy Hill, Comstock Ave, Ivory St, North Main ST.

12/13 Fordham RD, Hemlock, South Cove, Gates Rd.

12/16 Cross Trees Hill Rd, Stamford Hill and Neighborhood,

12/23 Cedar Grove Terrace, Hunters Trail, Hillside DR, Nutmeg RD, Cedar Grove EXT.

12/24 Mares Hill, Ingham Hill RD.

12/26 Main ST Ivoryton, Pond Meadow, Bushy Hill RD, Brooks Ln.

12/27 Bokum Rd

Post-construction Stormwater Management

Requested BMPs for development projects since 2011:

November 2011	66 Plains Road – New construction for Dentist’s Office. Detention basin installed in rear.
April 2014	26 Main Street, Centerbrook – New construction for Elderly Affordable Apartment Building, 22 Units, known as Essex Place. Four underground Cultec recharger stormwater chambers in front of building.
June 2015	14 Essex Glen Drive – New construction for Essex Glen, a 26-unit Active Adult Community on a 10-acre parcel. Two on-premises detention basins at north end. Off-premises, north of road, there is a larger detention basin.
February 2016	26 Hemlock Road – Existing Single-Family Dwelling. Infiltrator installed at the front of home
April 2016	84 Main Street, Centerbrook – New construction for Cumberland Farms. A riprap apron was installed to filter stormwater from paved areas.
April 2016	84 Main Street, Centerbrook – New construction for Cumberland Farms. A stormwater bioretention cell was installed along Westbrook Road and Main Street. Two sediment forebays will be located within this area. A Stormwater Management Report was submitted. Dated January 11, 2016.
October 2016	21 Plains Road – New construction for Essex Station, 2-story multifamily.
October 2016	27 Plains Road – New construction for Essex Station, 3-story multifamily.
October 2016	29 Plains Road – New construction for Essex Station, 3-story multifamily. The three buildings that were built on these three parcels are tied into three stormwater infiltration systems. One is 60 feet long. Another is 65 feet long. And a third is 80 feet long.
October 2016	50 Bokum Road – New construction for Cobblestone Court, four two-family dwellings. A 5-foot deep retention basin installed in front with a catch basin leading to a rear yard splash pad.
August 2017	63 Main Street, Essex – New construction for a marina and restaurant building known as Carlson’s Landing. Underground detention system installed. (6) 4x8x4 concrete retention chambers.
September 2019	14 Essex Glen Drive - Essex Glen – Added a retention basin at southwest corner of development.

SWPPP TRAINING ATTENDANCE FORM

Town of Essex - DPW
1 Old Dump Road
Essex, Connecticut

I have received a copy of the Town of Essex "Stormwater Pollution Prevention Plan – Training Document."

I have read and understand the information and objectives of this document.

[illegible]

Training Performed by:

William Brown W Brown 8/28/19
Name (Print) Name (Print) Date

1005 BOSTON POST ROAD
MADISON, CT 06443
Phone 203-245-0568
FAX 203-318-0830
Connecticut Certification PH-0535
www.eclinonline.com



ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo
Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: FM - Foot of Main Essex

Sample ID#: 128757
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	323	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	ND	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.61	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.047	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	0.10	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	1.31	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	89.5	umhos/cm	SM2510B	1	11/13/2019	JB
PH	6.26	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS



DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

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ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo

Sample ID#: 128758
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: WH - Witch Hazel Complex

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	31	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	1.10	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.04	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.097	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	ND	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	1.99	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	198	umhos/cm	SM2510B	1	11/13/2019	JB
PH	6.78	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS


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Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo

Sample ID#: 128759
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: CF - Cumberland Farms

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	1354	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	0.34	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	0.25	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.08	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.077	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	ND	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	0.77	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	156	umhos/cm	SM2510B	1	11/13/2019	JB
PH	6.57	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS

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ENVIRONMENTAL
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Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo

Sample ID#: 128760
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: WB - Walnut St Bridge

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	1112	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	0.09	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	1.18	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.13	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.05	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	ND	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	0.99	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	96.7	umhos/cm	SM2510B	1	11/13/2019	JB
PH	6.81	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS

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ENVIRONMENTAL
CONSULTING LABORATORIES, INC.


Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo

Sample ID#: 128761
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: SH - Stanford Hill

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	908	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	ND	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.30	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.45	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	0.087	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	2.68	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	84.6	umhos/cm	SM2510B	1	11/13/2019	JB
PH	8.89	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS


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ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Report of Analysis

Name: Essex - Town of
Health Dept
29 West Ave
Essex, CT 06426
Attn: Lisa Fasulo

Sample ID#: 128762
Sample Type: Water
Sample Source: MS4 Stormwaters
Sampler: Client

Sample Date: 11/12/2019
Receipt Date: 11/12/2019
Report Date: 12/3/2019
Sample Site: BD - Brewers Dauntless

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological Coliform, E. Coli	1483	MPN/100mL	Colilert-18	0	11/12/2019	JB
Chemical Ammonia as N	0.30	mg/L	ASTM D6919-03	0.05	11/25/2019	KC
Chlorine- Residual, Total	ND	mg/L	SM4500-Cl G	0.02	11/12/2019	JB
Nitrate as N	0.47	mg/L	EPA300.0	0.1	11/14/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	11/14/2019	JB
Phosphorous -Total as P	0.19	mg/L	EPA 200.7	0.04	11/19/2019	JB
Salinity	0.179	ppt	CALC	0.01	11/20/2019	DB
Surfactants as MBAS	ND	mg/L	SM5540C	0.05	11/13/2019	CET
TKN as N	1.73	mg/L	4500NorgC	0.5	11/27/2019	KC
Physical Conductivity	372	umhos/cm	SM2510B	1	11/13/2019	JB
PH	8.86	pH	EPA 150.2	1	11/13/2019	JM
Temperature	15.7	C	SM2250B	1	11/12/2019	LS


DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

ENVIRONMENTAL
CONSULTING LABORATORIES,

1005 Boston Post Road
Madison, CT 06443

(203) 245-0568 Phone
(203) 318-0830 Fax

Client: TOWN OF ESSEX				Project: MS4 STORMWATERS			Required Analysis											
Contact:							PH, Conductivity, Salinity	T Phos, Surfactants	TKN, Ammonia, No2, No3	Ecoli bacteria	Residual Chlorine	Temperature						
Address:																		
Phone:				Fax:														
PWSID#:		Samplers Name: (Print) <i>Rich Gallacher</i>																
System Type:																		
CLIENT ID	Sampling Location	Date	Time	Sample Type		# of Containers										ECL Sample I.D.#		
				Water	Grab													
<i>FM BD</i>		<i>11-12-19</i>	<i>12:46pm</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128753</i>		
	<i>WH</i>		<i>1257</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128754</i>		
	<i>CF</i>		<i>105</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128755</i>		
	<i>WB</i>		<i>115pm</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128760</i>		
	<i>SH</i>		<i>152pm</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128761</i>		
	<i>BD</i>		<i>201pm</i>	<i>X</i>	<i>X</i>	<i>3</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				<i>128762</i>		
Relinquished by: <i>RLM/gly</i>		Date: <i>11-12-19</i>	Time: <i>225pm</i>	Received by: <i>Lisa Sepe</i>		<i>2:25 11/12/19</i>	Were Samples received within holding time? <i>Y</i> / N Were Samples chilled upon receipt? <i>Y</i> / N Were Samples in appropriate containers? <i>Y</i> / N If No Explain _____										<i>15.7C</i>	
Relinquished by:		Date:	Time:	Received by:			Are containers broken/leaking? <i>Y</i> / N Did Samples need to be split upon receipt? <i>Y</i> / N Were Samples preserved properly? <i>Y</i> / N Is No type needed											