

Appendix A

Planning Process & Public Participation

Appendix A-1
Memorandums of Agreement (MOA)

MEMORANDUM OF AGREEMENT FOR A MULTI-JURISDICTIONAL PLANNING TEAM REGARDING THE EXECUTION OF THE 2016 PRE-DISASTER MITIGATION PLAN UPDATE

I. PURPOSE

A Memorandum of Agreement (MOA) is hereby executed between the Participating Jurisdictions in the 2016 Pre-disaster Mitigation Plan Update, hereafter referred to as "2016 PDM Update". The parties to and "Participating Jurisdictions" in this MOA are as follows:

- South Western Regional Planning Agency (SWRPA)
- Town of Darien
- Town of Greenwich
- Town of New Canaan
- City of Norwalk
- City of Stamford
- Town of Weston
- Town of Westport
- Town of Wilton

The purpose of this MOA is to establish commitment from and a cooperative working relationship between all Participating Jurisdictions in the development and implementation of the 2016 PDM Update. In addition, the intent of this MOA is to ensure that the multi-jurisdictional hazard mitigation plan is developed in accordance with Title 44 of the Federal Code of Regulations (CFR) Part 201.6; that the planning process is conducted in an open manner involving community stakeholders; that it is consistent with each participating jurisdiction's policies, programs and authorities; and it is an accurate reflection of the community's values.

This MOA sets out the responsibilities of all parties. The MOA identifies the work to be performed by each Participating Jurisdiction. Planning tasks, schedules, and finished products are identified in the Work Program and Schedule. The plan created as a result of this MOA will be presented to the legislative body (City Council and/or Board of Selectmen) of each participating jurisdiction for adoption.

II. BACKGROUND

Mitigation plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. The Participating Jurisdictions in a mitigation planning process would benefit by:

- Identifying cost effective actions for risk reduction;
- Directing resources on the greatest risks and vulnerabilities;
- Building partnerships by involving people, organizations, and businesses;
- Increasing education and awareness of hazards and risk;

- Aligning risk reduction with other community objectives; and
- Providing eligibility to receive federal hazard mitigation grant funding.

SWRPA has received a grant from the Federal Emergency Management Agency (FEMA) to prepare a multi-jurisdictional hazard mitigation plan in accordance with FEMA requirements at 44 C.F.R. § 201.6.

III. PLANNING TEAM RESPONSIBILITIES

SWRPA will act as the Lead Agency, and will assign a Project Lead to the Planning Team for the 2016 PDM Update. The Participating Jurisdictions authorize the Lead Agency to manage and facilitate the planning process in accordance with the Work Program and Schedule. The Participating Jurisdictions understand that representatives must engage in the following planning process, as more fully described in the *Local Mitigation Planning Handbook* (FEMA, 2013), including, but not limited to:

- Develop the Work Program and Schedule with the Planning Team ;
- Organize and attend regular meetings of the Planning Team;
- Assist the Planning Team with developing and conducting an outreach strategy to involve other planning team members, stakeholders, and the public, as appropriate to represent their Jurisdiction;
- Identify community resources available to support the planning effort, including meeting spaces, facilitators, and media outlets;
- Provide data and feedback to develop the risk assessment and mitigation strategy, including a specific mitigation action plan for their Jurisdiction;
- Submit the draft plan to their Jurisdiction for review;
- Work with the Planning Team to incorporate all their Jurisdiction's comments into the draft plan;
- Submit the draft plan to their respective governing body for consideration and adoption; and
- After adoption, coordinate a process to monitor, evaluate, and work toward plan implementation.

IV. PLANNING TEAM

The following points of contact are authorized on behalf of the governing bodies to participate as members of the Planning Team for the 2016 PDM Update:

Lead Party:

SWRPA

Mr. Robert Sachnin, AICP

Regional Planner

203-316-5190

Sachnin@swrpa.org

Participating Jurisdictions:

Town of Darien

Mr. Marc McEwan
Emergency Management Director/Deputy Fire Marshal
203-656-7345
mmcewan@darienct.gov

Add:

*Mr. Jeremy Ginsberg
Director of Planning & Zoning
203-656-7354
jginsberg@darienct.gov*

Town of Greenwich

Mr. Dan Warzoha
Emergency Management Director
203-622-2222
emoc@greenwichct.org

Ms. Katie DeLuca
Deputy Director of Planning and Zoning
203-622-7894
Katie.DeLuca@greenwichct.org

Town of New Canaan

Mr. Steve Bury
Engineer
203-594-3057
Steve.bury@newcanaanct.gov

Mr. Tiger Mann
Senior Engineer
203-594-3056
Tiger.Mann@newcanaanct.gov

City of Norwalk

Chief Denis McCarthy
Fire Chief/Emergency Management Director
203-854-0230
dmccarthy@Norwalkct.org

Ms. Michele DeLuca
Deputy Emergency Management Director
203-854-0238
MDeLuca@norwalkct.org

City of Stamford

Captain Thomas Lombardo
Police Captain/Emergency Management Director
203-977-5900
tlombardo@ci.stamford.ct.us

Ms. Erin McKenna
Senior Planner
203-977-4715
EMcKenna@ci.stamford.ct.us

Town of Weston

Sergeant Mike Ferullo
Police Sergeant/Emergency Management Director
203-222-2600
mferullo@westonpolice.com

Town of Westport

Chief Andrew Kingsbury
Fire Chief/
Emergency Management Director
203-341-5001
akingsbury@westportct.gov

Ms. Michele Perillie
Planner
203-341-1076
mperillie@westportct.gov

Ms. Alicia Mozian
Conservation Director
203-341-1170
amozian@westportct.gov

Town of Wilton

Deputy Chief Mark Amatrudo
Deputy Fire Chief/Emergency Management Director
203-834-6246
mark.amatrudo@wiltonct.org

V. MOA IMPLEMENTATION

This MOA will be in effect from the date of signature by all parties, will remain in effect through the duration of the planning process, and will terminate after adoption of the final FEMA-approved mitigation plan by all Participating Jurisdictions, or five years after FEMA approval, whichever is earlier. It may be terminated prior to that time for any Participating Jurisdiction by giving sixty days written notice. This MOA is to be implemented through the attached Work Program and Schedule, and any addendums that describe specific activities, programs, and projects, and if necessary, funding by separate instrument.

SWRPA:

Signature: _____

Date: 5/28/14

Name: _____ Floyd Lipp

Title: _____ Executive Director

Town of Darien:

Signature: _____

Date: 7/2/14

Name: _____ Jayme J. Stevenson

Title: _____ First Selectman

IV. ATTACHMENTS

1. Draft Work Program; May, 2014
2. Project Schedule

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SWRPA:

Signature: Floyd Lapp
Name: Floyd Lapp
Title: Exec. Dir. SWRPA

Date: 6-30-2014

Town of Greenwich:

Signature: Peter J. Tesei
Name: PETER J. TESEI
Title: FIRST SELECTMAN

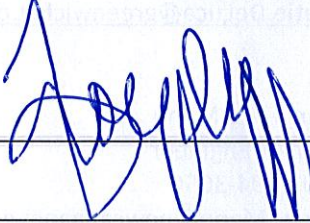
Date: 06/30/2014

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SWRPA:
Signature: 
Name: Floyd Lupp
Title: Executive Director

Date: 5/28/14

Town of New Canaan:
Signature: 
Name: Alex S. Melloni III
Title: Fire Selectman

Date: 6/3/14

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- 2. Project Schedule

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SWRPA:

Signature: _____

Date: 5/28/14

Name: Floyd Lupp

Title: Executive Director

City of Norwalk:

Signature: Harry W. Rilling

Date: 6/3/14

Name: Harry W. Rilling

Title: Mayor

IV. ATTACHMENTS

1. Draft Work Program; May, 2014
2. Project Schedule

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SWRPA:

Signature: _____

Date: 5/28/14

Name: Floyd Lapp

Title: Executive Director

City of Stamford:

Signature: _____

Date: June 17, 2014

Name: DAVID MARTIN

Title: MAYOR

IV. ATTACHMENTS

1. Draft Work Program; May, 2014
2. Project Schedule

Approved as to Form
Corporation Counsel

By SN

Date 6-12-14

V. MOA IMPLEMENTATION

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SWRPA:

Signature: _____

Date: 5/28/14

Name: Floyd Lepp

Title: Executive Director

Town of Weston:

Signature: _____

Date: 6/24/14

Name: GAYLE WEINSTEIN

Title: FIRST SELECTMAN

IV. ATTACHMENTS

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2. Project Schedule

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SWRPA:

Signature: _____

Date: 5/28/14

Name: Floyd Lupp

Title: Executive Director

Town of Westport:

Signature: _____

Date: 6/26/14

Name: James S. Marpe

Title: First Selectman

IV. ATTACHMENTS

1. Draft Work Program; May, 2014
2. Project Schedule

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SWRPA:

Signature: _____

Date: 5-29-2014

Name: _____

Title: _____

Town of Wilton:

Signature: _____

Date: 5/29/2014

Name: _____

Title: _____

IV. ATTACHMENTS

1. Draft Work Program; May, 2014
2. Project Schedule

Appendix A-2
Project Development Meetings

Appendix A-2.1
Regional Meetings

To: Pre-disaster Mitigation Plan Update Advisory Committee

From: Robert Sachnin, Regional Planner

Date: July 31, 2013

Re: PDM Advisory Committee Meeting – **9:00 AM to 11:00 AM Wednesday, August 14, 2013**

As part of the 2011 Pre-disaster Mitigation Plan, the Advisory Committee agreed to meet regularly to review progress towards implementation. The first meeting following the approval of the Pre-disaster Mitigation Plan is scheduled for Wednesday, August 14, 2013 from 9:00 AM to 11:00 AM. At this meeting we would like to take the time to discuss how the plan has worked for your community and any changes or additions you would like to see as we prepare to update the plan in 2014. The meeting will be held in the SWRPA conference room on the third floor of the Stamford Government Center, 888 Washington Blvd., Stamford, CT. If for any reason you are unable to attend please consider sending an alternative representative or calling in using the information below. The agenda for the meeting follows.

**Pre-disaster Mitigation Plan Update
Advisory Committee
Wednesday August 14, 2013
9:00 AM – 11:00 AM**

1. Introduction
2. PDM and Update Overview
3. Importance and Roles of the Advisory Committee
4. Review of 2011 Pre-disaster Mitigation Strategy Document
 - a. Strategies Implemented
 - b. What would you like to see included, enhanced, or removed
5. Hurricane Sandy, Irene, Winter Storm Nemo, etc
 - a. Impacts, Strategies Implemented
 - b. Lessons Learned and Safeguards moving forward

6. Next Steps
7. Next Meeting Date – Mid January, 2014

Please bring a copy of the 2011 Pre-disaster Mitigation Strategy Document (PDM) so that we may discuss the summary of implemented strategies for your town, as well as any updates that need to be made to the summary document. The PDM can be accessed electronically via the link provided below:

<http://www.swrpa.org/default.aspx?Regional=268>

Conference Call Instructions:

Conference Dial-in Number: **(218) 339-4600**

Participant Access Code: 500386#

PDM Update Advisory Committee
 August 14, 2013
 9:00 AM - SWRPA Conference Room

Name:	Title:	Municipality:	E-mail and Phone:
THOMAS LOMBARDO	EMD	STAMFORD	TLOMBARDO@C.I.I.S.TAMFORD.CT.US
AARON KINGSBURY	EMD	WESTPORT	AKINGSBURY@WESTPORTCT.GOV
Alicia Nozian	Conservation Director	Westport	amozian@westportct.gov
Michele DeLuca	Dept EMD	Norwalk	mdeLuca@norwalkct.org
Nicole Davis	Regional Planner	SWRPA	ndavis@swrpa.org
Rob Schmin	Regional Planner	SWRPA	rschmin@swrpa.org
Floyd Goff	EO	SWRPA	floyd@swrpa.org

**Pre-disaster Mitigation Plan Update
Advisory Committee
Wednesday August 14, 2013
9:00 AM – 11:00 AM**

Present: Norwalk: Ms. Michele DeLuca; Stamford: Captain Thomas Lombardo; Westport: Chief Andrew Kingsbury, Ms. Alicia Mozian, Ms. Michelle Perillie; SWRPA: Dr. Floyd Lapp, Ms. Nicole Davis, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting by welcoming and thanking everyone for attending. He then asked the group to introduce themselves.

2. PDM and Update Overview

Mr. Sachnin indicated that the purpose of the Pre-disaster Mitigation Plan (PDM) was to develop strategies to reduce the loss of life and property as a result of natural disasters. He added that while work on the plan update is slated to begin during the spring of 2014, this meeting would function as part of an annual plan assessment, as well as to provide opportunities for the committee to provide feedback regarding plan implementation and proposed changes.

Mr. Sachnin also discussed how the PDM is required in order to remain eligible for FEMA funding assistance, and emphasized the importance of municipal participation in plan development.

3. Importance and Roles of the Advisory Committee

Following the said importance of municipal participation in plan development, Mr. Sachnin discussed the role of the advisory committee as a coordination liaison for planning efforts between the SWRPA Region and the respective municipalities. He added the importance of committee members in ensuring all potential mitigation projects for the municipality are included in the plan.

Ms. Davis added that formal correspondence would be sent to the First Selectman for each municipality requesting the designation of an appointee(s) to PDM plan development, with the suggested addition of the benefit of having multiple departments being involved in the plan development. The timing of such correspondence is anticipated around January of 2014. Dr. Lapp recommended the group consider scheduling a future presentation with the MPO discussing the PDM.

The plan update is expected to be in the Spring of 2014

4. Review of 2011 Pre-disaster Mitigation Strategy Document

Mr. Sachnin began by informing the group that Climate Change and Evacuation Planning were elements that will be incorporated into the plan update.

a. Strategies Implemented

No major comments were received regarding current strategies, as most of the discussion was focused on additional strategies, particularly as they relate to recent major storms. Since the adoption of the plan a number of homes have been elevated and Westport was currently seeking a grant to install a new generator for the police department.

b. What would you like to see included, enhanced, or removed

The group agreed flooding was a major concern for the region and its municipalities, including flooding from rain events, storm surge, and possible dam failure.

Ms. DeLuca commented on the importance of planning and zoning department involvement in the PDM, adding department staff has recognized such importance in the wake of recent storms. A discussion on the land use and zoning aspects ensued and included regulations associated raising building elevations and the importance of freeboard, prevention of building within flood zones, potential enacting of stream clearing ordinances, and Community Rating System (CRS) activity ordinances. Chief Kingsbury added that Westport was exploring the possibility of land acquisition of a coastal parcel(s) for pre-disaster mitigation purposes, to which Ms. Davis replied that Darien had successfully acquired coastal property for that very reason.

The group felt dam safety at the larger dams was sufficient, Chief Kingsbury added that Westport is in frequent contact with area dam owners and are kept briefed on all dam related aspects. There was general consensus that smaller, privately owned dams that may not be regularly monitored dams could pose a potential flooding risk. Some concern was expressed regarding the lack of staffing for dam safety at the state level. The group agreed that dam safety is an important regional and local concern, which would be reflected in the PDM update.

5. Hurricane Sandy, Irene, Winter Storm Nemo, etc

a. Impacts, Strategies Implemented

Committee members discussed recent storm impacts, including coastal and inland flooding, tree damage and the effects on area utilities. Mr. Sachnin stressed the importance of evacuation planning, citing that while there are many hazards, each hazard has the potential to create many effects, which could vary depending on the geographic location relative to the hazard. He used coastal flooding as an example, adding that inundated coastal areas could trigger an influx of evacuees and corresponding effects/hazards to other inland areas/municipalities that were not inundated with water.

b. Lessons Learned and Safeguards moving forward

Ms. Mozian asked if there were any lessons learned in light of recent major storms in regards to after action reviews. Ms. DeLuca referred to the previous nights informal Hurricane Preparedness discussion, citing preparedness response

and lessons learned, as well as the agreement of REPT members to create more topic-driven meetings. Dr. Lapp expressed concern over the length of time between recent storms and corresponding after action reviews. Dr. Lapp, Captain Lombardo and Chief Kingsbury also highlighted the need for improvement in regards to utility response, expressing a need to get utility companies more involved in both prevention and recovery efforts. It was suggested the greater emphasis be put on including utilities as part of the PDM update.

6. Next Steps

Mr. Sachnin informed the group that a questionnaire would be sent to committee members to more formally document and solicit existing mitigation strategies implemented, the success of the current PDM, as well as proposed changes to incorporate into the next PDM update.

DRAFT - DO NOT DISTRIBUTE

To: 2016 Pre-disaster Mitigation Plan (PDM) Update Advisory Committee

From: Robert Sachnin, Regional Planner

Date: June 10, 2014

Re: PDM Advisory Committee Meeting –2:00 pm to 3:30 pm; Thursday, June 12, 2014

The first meeting of the PDM Advisory Committee will be held in the SWRPA conference room, located on the third floor of the Stamford Government Center, 888 Washington Blvd., Stamford, CT. If for any reason you are unable to attend, please see the conference call instructions below.

The agenda for the meeting follows:

**PDM Advisory Committee Meeting
Thursday, June 12, 2014
2:00 pm to 3:30 pm**

- 1. Introductions**
- 2. Project Overview**
 - a. Purpose of PDM
 - b. Structural Components of Document
 - c. Importance and Roles of the Advisory Committee
- 3. Administrative and Financial**
 - a. Project Funding Breakdown
 - b. Project Schedule
 - i. Key Dates
 - ii. Local Approval Process Confirmation
- 4. Review of 2011 PDM and Inclusion into 2016 PDM**
 - a. Mitigation Strategies
 - i. Status Update of Implemented Strategies (if any)
 - ii. Difficulties Encountered (if any)
 - iii. Suggestions for New or Re-prioritized Mitigation Strategies (particularly in light of recent storm events)
 - b. Outreach Strategy

- i. Advisory Committee: who else should be participating?
 - ii. Stakeholders: identify key stakeholders to keep involved in plan development
 - iii. General Public: identify methods and formats to communicate and solicit input from the general public
- c. Capabilities Assessment
- d. Risk Assessment
 - i. Principal Hazard Types and Subsequent Municipal Impacts
 - ii. Critical Municipal Assets/Infrastructure
 - iii. Vulnerable Areas

5. Next Steps

- a. Meet with individual municipalities to discuss in more detail:
 - i. Community Capabilities
 - ii. Critical Assets/Infrastructure
 - iii. Vulnerable Areas and Corresponding Hazard Types
 - iv. Old and New Mitigation Strategies
- b. Next Advisory Committee Meeting: target date: TBD
 - i. Recap Individual Meeting Results
 - ii. Finalize and Document Outreach Plan
 - iii. Identify Regional:
 - 1. Capabilities
 - 2. Assets/Infrastructure
 - 3. Vulnerable Areas
 - 4. Old and New Mitigation Strategies

6. Handouts

- a. Mitigation Planning Team Worksheet
- b. Capability Assessment Worksheet
- c. National Flood Insurance Program (NFIP) Worksheet
- d. Safe Growth Audit

Please note the **new conference call** number below. I look forward to a great discussion with you all!

Conference Call Instructions:

*****Note the New Number!!!*****

Conference Dial-in Number: **(712) 432-0360**

Participant Access Code: 500386#

2016 Pre-disaster Mitigation Plan Update Meeting

June 11, 2014

2:00 pm - SWRPA Conference Room

Name:	Municipality/Agency	Initial:	Notes:
Mr. Robert Sachnin	SWRPA	R.S.	
Dr. Floyd Lapp	SWRPA	F.L.	
Mr. Marc McEwan	Darien	M.M.	
Mr. Dan Warzoha	Greenwich	D.W.	
Ms. Denise Savageau	Greenwich	D.S.	
Ms. Katie Deluca	Greenwich	K.D.	
Chief Jack Hennessey	New Canaan	J.H.	
Mr. Mike Handler	New Canaan		
Mr. Tiger Mann	New Canaan		
Mr. Steve Bury	New Canaan		
Chief Denis McCarthy	Norwalk	D.M.	1/2 phone
Ms. Michele Deluca	Norwalk	M.D.	1/2 phone
Mr. Ted Jankowski	Stamford		
Captain Thomas Lombardo	Stamford		
Ms. Erin McKenna	Stamford	E.M.	
Sergeant Mike Ferullo	Weston		
Chief Andrew Kingsbury	Westport	A.K.	
Michelle Perillie	Westport	M.P.	1/2 phone
Alicia Mozian	Westport		
Mark Amatrudo	Wilton		
Other Attendees:			
Patty Payne	SWRPA	P.P.	

**Pre-disaster Mitigation Plan (PDM) Update
Advisory Committee Meeting
Thursday, June 12, 2014
2:00 pm to 3:30 pm
Meeting Summary**

Participants: Mr. Robert Sachnin, SWRPA; Dr. Floyd Lapp, SWRPA; Ms. Patty Payne (SWRPA); Mr. Marc McEwan (Darien); Mr. Dan Warzoha (Greenwich); Ms. Denise Savageau (Greenwich); Ms. Katie DeLuca (Greenwich); Chief Jack Hennessey (New Canaan); *Chief Denis McCarthy (Norwalk, via phone); Ms. Michele DeLuca (Norwalk, via phone); Ms. Erin McKenna (Stamford); Chief Andrew Kingsbury (Westport, via Phone); Ms. Michele Perillie (Westport)*

1. Introductions

The meeting began at 2:06 pm with Mr. Sachnin welcoming the group; he thanked them for their time and commitment to project efforts. The group participants then introduced themselves.

2. Project Overview

Mr. Sachnin briefed the group on the purpose of the PDM Update, stating the objective of such efforts were to identify and plan for potential disasters prior an actual event, including mitigation measures to help reduce overall risk and vulnerability. He explained the plan is valid for five years, with the current plan expiring in June of 2016. Mr. Sachnin added that an adopted PDM is paramount for municipalities to remain eligible for many types of FEMA funding, and emphasized the importance of project efforts to ensure the new plan is adopted prior to expiration of the existing 2011 PDM to avoid any lapses in funding eligibility.

Lastly, Mr. Sachnin provided an overview of the structural components contained within the PDM, citing the new FEMA PDM guidance and briefly referencing the changes. PDM components included: determining the area and resources; building the planning team; creating a public outreach strategy; reviewing community capabilities; conducting a risk assessment; developing/updating mitigation strategies; plan maintenance; review and adoption of PDM; and creating safe and resilient communities.

3. Administrative and Financial

Ms. Payne informed the group of the administrative and financial aspects of the project, and noted that an in-kind match was required. The total project funding is \$55,600 and requires a non-federal match of \$13,900. She explained that during the development of the 2011 PDM Update, a standard rate of \$34/hour was used and based on the overall average municipal salary. Ms. Savageau stated that the hourly rate seemed low, and inquired about the incorporation of the burden-fringe-overhead (BFO) into the equation. Mr. Sachnin then added that he would inquire with the State of Connecticut and the Federal Emergency Management Agency (FEMA) as to an appropriate and compliant method for calculating hourly rates. He suggested that the group keep track of the hours in the interim, and pending

an answer from the state/FEMA, a specific rate(s) would then be implemented. The group agreed that this was sufficient course of action.

Mr. Sachnin next discussed to the short-term project schedule, outlining the aggressive schedule and key milestones. He again explained that the current 2011 PDM was set to expire in June of 2016, noting that this correlated with the start of hurricane season. Given this timing, he stressed the importance of having the 2016 PDM Update adopted in advance of this deadline, adding that a failure to do so could result in a window of time where the region would be ineligible for certain types of FEMA funding. He explained that the schedule also factored in state, FEMA, and public review, as well as the incorporation of any revisions. He highlighted importance of the advisory committee in helping to achieve the schedule goals, encouraging their ongoing and active participation.

Local Approval Process

Mr. Sachnin briefed the group on the PDM plan adoption process, explaining the importance of outlining the municipal steps and associated timing involved in plan adoption. He further explained that gaining an understanding of the process as early as possible was critical in order to ensure a seamless transition from 2011 to 2016 Plan Updates. This would help to avoid risking a window of time with no adopted plan and subsequent ineligibility of certain FEMA funding.

Ms. Katie DeLuca, Ms. Savageau, and Mr. Warzoha alluded to the schedule, explaining that in Greenwich, the adoption process would involve the Board of Selectmen, Planning and Zoning, as well as the Representative Town Meeting, which could take some time. Mr. McEwan also stated a minimum of six to eight weeks time required for Darien. Mr. Sachnin acknowledged the processes and associated timing, stating the importance and need for a transparent PDM process, which could help avoid delays to the greatest extent possible. He further explained by keeping FEMA, the State, stakeholders, the general public, as well as the municipalities informed of items in real time, he hoped that any issues that may arise could be handled and resolved expeditiously, avoiding “surprises” down the road.

4. Review of 2011 PDM and Inclusion into 2016 PDM

Mitigation Strategies

The conversation transitioned to mitigation strategy updates from the 2011 PDM update and the identification of new mitigation strategies. Mr. Sachnin opened up a general dialogue, but also explained that mitigation strategies, along with the risk assessment components, would be discussed in more detail during upcoming meetings with the individual municipalities. He added that following the individual municipal meetings, the advisory committee would reconvene and recap the results, as well as formulating mitigation strategies and risk assessment components for the region as a whole.

Ms. Katie DeLuca asked if the failure to identify mitigation strategies in the report could negatively impact consideration for certain grant applications, to which Mr. Sachnin stated difficulty in answering such a question without project specifics. He explained that there were no limits to the amount of mitigation strategies identified, and suggested all of the municipalities work diligently with SWRPA to ensure all potential vulnerabilities are identified and contained with 2016 PDM Update. Ms Savageau also recommended in certain instances that impact vast geographies, such as flooding, to incorporate less site specific information and develop a mitigation strategy that includes all flood-prone areas. Mr. Sachnin also added that when writing grant letters of support for projects that do not have identified mitigation strategies in the PDM but are consistent with the PDM vision, he

acknowledges the consistency of such grant efforts and highlights their relation objectives and strategies outlined within the PDM.

Chief Hennessey explained to the group that dam safety was a growing concern in New Canaan, adding that two principal concerns were the lack of monitoring of certain dams upstream of New Canaan, in New York, as well the release of water from upstream dams in conjunction with rain events, leading to flooding issues. He suggested that better coordination and communication with the towns and/or Westchester County could be of great benefit in mitigating some riverine flooding exacerbated by the upstream New York dams.

Mr. Warzoha spoke to CL&P's locations of critical infrastructure along areas vulnerable to flooding, and inquired as to the progress regarding the construction of a dike around a power station in Greenwich.

Outreach Strategy

Mr. Sachnin informed the group that as part of the PDM process, an effective outreach strategy must be identified and documented within the PDM. He explained that there exists three tiers of PDM involvement, including the Advisory Committee/Planning Team, Stakeholders, and the General Public. The Advisory Committee/Planning Team serve as the steering committee for the project, providing input and guiding project development in a manner that yields the greatest benefits to the region and its municipalities. He added that this group will also serve as the liaisons and primary points of contact between the region and its municipalities. Stakeholders were identified as those persons, groups or institutions that can affect or be affected by the PDM and its courses of action. Mr. Sachnin added that unlike the Advisory Committee, stakeholders would be involved in the planning process and kept abreast of activities, providing input and comments as necessary, but less involved in the day-to-day operations taken on by the Advisory Committee. Lastly, Mr. Sachnin identified the third tier, which was the general public. He explained the PDM was a transparent process, and a significant component of the PDM Update would involve updating stakeholder sand the general public, as well as soliciting comments and feedback from them. Ms. Savageau also spoke to the importance of public participation as part of the PDM process.

Mr. Sachnin asked the group who else should be at the table, and in what role (stakeholder verses advisory committee) and distributed Worksheet 2.1: Mitigation Planning Team Worksheet. A discussed then ensued, the results of which are captured in the Table 1 below:

Table 1: 2016 PDM Update List of Additional Advisory Committee and Stakeholder Members

Federal Entities	Suggested Point of Contact(s)	Advisory Committee	Stakeholder
Federal Emergency Management Agency (FEMA)	TBD	X	
United States Army Corps of Engineers (USACOE)	TBD		X
Office of Congressman Jim Himes	Rachel Kelly		X
National Oceanic and Atmospheric Administration	TBD		X

(NOAA)			
State/Regional Entities			
Housatonic Valley Council of Elected Officials (HVCEO)	Dave Hannon	X	
Connecticut Division of Emergency Management and Homeland Security (DEMHS)	Tessa Gutowski, Robert Kenny, Chris Ackley	X	
The Nature Conservancy (TNC)	Adam Whelchel		X
Connecticut Department of Transportation (CTDOT)	TBD		X
Connecticut Department of Energy and Environmental Protection (DEEP)	Karen Michaels		X
Metro-North Railroad (MNR)	TBD		X
Connecticut Light and Power (CL&P)	TBD		X
American Red Cross (ARC)	Kristen Binau		X

*Note: Additional Advisory Committee and Stakeholders will be identified on an ongoing, as needed basis. Identified stakeholders may move into Advisory Committee roles and vice versa, depending on project needs.

Finally, the group engaged in a conversation regarding outreach strategies, which would serve both to inform stakeholders and the general public about the PDM Update, as well as to obtain key information from them for inclusion into the PDM development process. Mr. Sachnin suggested utilizing The Natural Conservancy’s Hazards and Community Resilience Workshops, which actively engages the municipalities, stakeholders and the general public alike in a forum that discusses risk and vulnerabilities, commonalities, plans as well as mitigation, including actions to take and next steps. Given the size of the region, he suggested at least three workshops grouped based on comparable geographies and hazards, as follows (in no particular order): Workshop #1: Greenwich and Stamford; Workshop #2: Darien, Norwalk, Westport; Workshop #3: New Canaan, Wilton, Westport. Ms. Savageau highlighted the importance of having individual municipal public meetings/workshops, and the group agreed to conduct both formats of meetings/workshops. Mr. Sachnin also suggested including the Housatonic Valley Council of Elected Officials (HVCEO), citing that a merger is scheduled between SWRPA and HVCEO, as well as commonalities with respect to certain hazard types and geographies.

Capabilities Assessment

The group next discussed the capabilities assessment, where Mr. Sachnin explained that as part of the PDM process, the region and its municipalities must individually describe their capabilities with respect to reducing long-term vulnerability through mitigation planning. He referred the group to Worksheets: 4.1: *Capability Assessment Worksheet*; 4.2: *Safe Growth Audit*; 4.3: *National Flood Insurance Program (NFIP) Worksheet*. He asked that the group leverage other municipal departments to assist in the completion of the worksheets, adding that he would also be reaching out to the municipal planning directors for additional assistance. He asked the group complete the worksheets by July 18, 2014.

Risk Assessment

Mr. Sachnin briefed the group on the risk assessment process and associated components for the region and each municipality, including: principal hazard types and associated impacts; critical assets/infrastructure; as well as vulnerable areas. Ms. Savageau expressed the importance of focusing on all natural hazards, not just water resources, to which the group agreed. Lastly, Mr. Sachnin reiterated that specific risk assessment components would be discussed in greater detail during individual meetings with the participating municipalities. He stated an intention to conduct all meetings by July 18, so that all results could be discussed at the next Advisory Committee meeting, along with the development of regional risk components.

With no further questions or comments from the Advisory Committee, the meeting concluded at 3:05 pm.

5. Action Items

- Each municipality will complete Worksheet 4.1: Capability Assessment Worksheet by close of business, July 18, 2014.
- Each municipality will complete Worksheet 4.2: Safe Growth Audit, by close of business, July 18, 2014.
- Each municipality will complete Worksheet 4.3: National Flood Insurance Program (NFIP) Worksheet by close of business, July 18, 2014.
- SWRPA will coordinate and conduct individual meetings with all municipalities to discuss the risk assessment and mitigation strategies, to be completed by close of business, July 18, 2014.
- Next Advisory Committee meeting: late July/early August

To: 2016 Hazard Mitigation Plan (HMP) Update Advisory Committee
From: Robert Sachnin, Senior Regional Planner; Mike Towle, Regional Planner
Date: September 17, 2014
Re: HMP Advisory Committee Meeting RE: The Nature Conservancy Hazard Mitigation Workshops –1:30 pm to 3:30 pm; Monday, September 22, 2014

The meeting of the HMP (formerly PDM) Advisory Committee will be held in the SWRPA conference room, located on the third floor of the Stamford Government Center, 888 Washington Blvd., Stamford, CT, at 1:30 pm. If for any reason you are unable to attend, please see the conference call instructions below.

The agenda for the meeting follows:

**HMP Advisory Committee Meeting
Monday, September 22, 2014
1:30 pm to 3:30 pm**

- 1. HMP Updates and Announcements**
 - a. Municipal Hazards and Assets Data – COMPLETED!
 - i. A special thank you to all the municipal representatives for your efforts towards this task!
 - b. 2016 Mitigation Strategies and Prioritization
- 2. TNC HMP Workshop Logistics**
 - a. Geography of “Cluster” Workshops
 - i. Partnering Municipalities
 - ii. Locations of Workshops
 - b. Invitation List
 - i. Confirm recipients/participants
 - ii. Confirm methodology for Invitation invites
 - c. Timeline: Target: late October/early November – try not to exceed mid-November
- 3. Confirm Workshop Structure**
 - a. Overview
 - i. 1-day, 4-5 hours (can do something like 9am to 1 pm)
 - ii. Each municipality gets a table, or two tables? (this way they are treated individually)
 - b. Structural Components

Conference Call Instructions: *Note the New Number!!!!*****

Conference Dial-in Number: **(760) 569-0100** Participant Access Code: 1012804#

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

September 22, 2014

Time: 1:30 pm - 3:30 pm, Location: SWRPA and via phone

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	R.S.	
Mike Towle	SWRPA	M.T	
Adam Whelchel	TNC	A.W.	
Amanda Ryan	TNC	AR	
Dan Warzoha	Greenwich	DW	via phone
Captain Tom Lombardo	Stamford	TL	via phone
Erin McKenna	Stamford	EM	
Karen Commarota	Stamford		
Liz Rodriguez	Stamford		
Maria Goncalves-Vazquez	Stamford	M.G.	
Emily Provonsa	Stamford-DSSD	EP	
Marc McEwan	Darien		
Chief Kanterman	Wilton		
Steve Kleppin	New Canaan	SK	via phone
Michelle Perillie	Westport	MP	via phone
Alicia Mozian	Westport	AM	via phone
Tracy Kulikowski	Weston	TK	via phone
Other Attendees:	SWRPA, Flagstaff	FL	
Denise Sauvageau	Greenwich	DS	
Michelle Delvec	Norwalk	MD	via phone
Mike Yasoche	Norwalk	MY	via phone
Mike Vinelli	Westport/Wilton/Weston	MV	via phone
Rob Morney	Wilton	RM	via phone
Dave Thompson	Greenwich	DT	via phone
Frank Polise	Greenwich	FP	via phone

Alicia & Michelle
 Dave Thompson
 Frank Verese
 Michelle
 Tom Lombardo

**Pre-disaster Mitigation Plan (PDM) Update
Advisory Committee Meeting
Monday, September 22, 2014
1:30 pm to 3:30 pm
Meeting Summary**

Participants (21): Mr. Robert Sachnin (SWRPA); Mr. Mike Towle (SWRPA); Dr. Adam Whelchel (TNC); Ms. Amanda Ryan (TNC); *Mr. Dan Warzoha (Greenwich via phone)*; Captain Tom Lombardo (Stamford); Ms. Erin McKenna (Stamford); Ms. Maria Goncalves-Vazquez (Stamford); Ms. Emily Provonsha (Stamford-DSSD); *Mr. Steve Kleppin (New Canaan via phone)*; *Ms. Michelle Perillie (Westport via phone)*; *Ms. Alicia Mozian (Westport via phone)*; *Ms. Tracy Kulikowski (Weston via phone)*; Ms. Denise Savageau (Greenwich); Dr. Floyd Lapp (SWRPA); *Ms. Michele DeLuca (Norwalk via phone)*; *Mr. Mike Yeosock (Norwalk via phone)*; *Mr. Mike Vincelli (Westport/Wilton/ Weston via phone)*; *Mr. Bob Nerney (Wilton via phone)*; *Mr. Dave Thompson (Greenwich via phone)*; *Mr. Frank Petise (Greenwich via phone)*;

1. Introductions

The meeting began at 1:30 pm with Mr. Sachnin welcoming the group; he thanked them for their time and commitment to project efforts.

2. HMP Updates and Announcements

Mr. Sachnin declares that the collection and mapping of municipal asset data for the region is now complete. The asset data will be utilized for mapping in the HMP update and will be an input for disaster simulations in HAZUS. Mr. Sachnin then thanked the municipal representatives for their efforts towards the task.

Mr. Towle presented the current status and time line for the HMP plan. Current in-house projects include drafting 22 hazard summaries for each of the 8 towns, documenting the planning process, generating figures and maps, and preparing data for HAZUS simulations. Future goals for this month include planning the TNC HMP workshops. Until the end of the 2014 year SWRPA will be chipping away at the report. Current deadline for the first draft is late January to early February, to allow ample time for state and federal review, including any necessary edits. Mr. Sachnin explained the importance of allocating as much time for review as possible, since the existing plan is set to expire in June 2016, and without an approved plan in place, the municipalities would be ineligible for certain types of FEMA funding assistance. He added that the Department of Emergency Management and Homeland Security (DEMHS) had taken over the responsibility of reviewing HMP's for the State of Connecticut from the Department of Energy and Environmental Protection (DEEP), citing that until this new working relationship with FEMA was cultivated, the best way for the region to safeguard itself was to leave as much time for review as possible, hence the aggressive draft report deadline.

3. TNC HMP Workshop Logistics

Mr. Sachnin facilitated the discussion with respect to the potential clustering of towns for the TNC HMP workshops. He stated that in accordance with previous correspondence, including the meeting invitation, this meeting was the opportunity for each municipality to steer the direction of the workshops and the corresponding municipal clustering.

A healthy discussion ensued regarding potential cluster scenarios. Mr. Sachnin polled the participants of New Canaan, Wilton, and Weston about clustering those three municipalities, citing they were the inland communities, and likely had similar concerns with respect to hazard mitigation, including the lack of a coast line and associated storm surge. The municipal representatives agreed that clustering such municipalities made sense, and had no objections. Captain Lombardo noted that Greenwich and Stamford share similar obstacles, and have a strong history of shared services and working relationships. Ms. Savageau also highlighted the geographic similarities between Greenwich and Stamford, including the shared water supply and rivers. Mr. Warzoha and Mr. Thompson both stated agreement with Captain Lombardo. The municipalities of Norwalk, and Westport agreed to form a cluster with themselves and Darien. In summary, the following clusters were decided by the group:

- a. Greenwich, Stamford
- b. New Canaan, Wilton, Weston
- c. Darien, Norwalk, Westport

Dr. Lapp asked Dr. Whelchel if there was concern regarding too many participants at a cluster workshop, to which Dr. Whelchel agreed, and stated previous concern regarding the effectiveness of an overcrowded workshop. The group agreed to revisit the number of HMP workshops, should the need arise due to overcrowding. Mr. Sachnin stated this would be dependent on the number of confirmed invitees, and added that additional assistance would likely be required to help SWRPA and TNC facilitate and execute additional workshops. The participants tentatively agreed to provide additional assistance with workshops, should the total number exceed three. Additional information regarding workshop structure and size can be found in item #4 below.

Mr. Sachnin then facilitated a discussion on how to handle invitations. He proposed an initial idea to target members of the advisory committee, key stakeholders, public leaders, and a few open public seats. The group unanimously agreed with that option. Ms. McKenna recommended that invitations should be from the CEOs and Ms. Savageau recommended that the Emergency Director should also sign off on these invites to give them more weight. Ms. Savageau recommend bringing in two other stakeholders: USGS, because they manage the stream gauges and will be inputting tide gauges in the future and also ConDOT to be represented for at least one of the workshops. Ms. Savageau also recommended that public invite letters and targeted letters should be treated as different types of letters. The group also agreed that the few open public seats at the workshop should be determined by RSVP.

4. Confirm Workshop Structure

Mr. Sachnin and Dr. Whelchel proposed a 1 day workshop ~4-5 hours in length. The group unanimously agreed. Mr. Sachnin then introduced Dr. Whelchel and Ms. Ryan with the TNC. Dr. Whelchel walked the group through the structure of the TNC hazard workshops and key objectives, including the following:

- Understand connections between ongoing community issues, hazard, and local planning/mitigation processes in your municipality and region.

- Evaluate strengths and vulnerabilities of residents, infrastructure, and natural resources to hazards.
- Identify and map vulnerabilities and assets, as well as develop infrastructure, societal and natural resource risk profile.
- Develop and prioritize actions for your municipality, local organization, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience in your municipality and the region.

Dr. Whelchel identified that 8-10 people per table as the ideal size, with a facilitator for each table. This raised a concern that the workshops might become too large to manage in three workshops. Dr. Whelchel recommended monitoring the invitee lists and to modify the workshop clusters or even do a 4th or 5th workshop if needed. Ms. Savageau also suggested invited members from MTA Metro-North and the Connecticut Department of Transportation to at least one workshop, considering the transportation infrastructure which transects the region.

5. Action Items

- SWRPA will provide a draft invitee list for each municipality. Each municipality will finalize the list and transmit to SWRPA.
- Once Invitee lists are finalized, SWRPA will provide a draft invitation to each municipality, who will then work with their respective CEOs and Emergency Management Directors (EMDs) for appropriate dissemination. SWRPA will provide municipalities with any assistance, where required.
- Agreed on 3 or 4 workshops, but the need for an addition workshop(s) or re-clustering is largely contingent on the amount of participants/invitees for each municipality.
- Anticipated dates for the TNC hazard workshops are somewhere in early November.

Meeting ended at 3:30 pm

12/22/14 - DEMHS Regional 1 1:30-3:00 pm

<u>Name</u>	<u>Title</u>	<u>Agency</u>
Rob Sachin	Sr. Regional Planner	WCCOB/SUMMIT
Chris Ackley	RI Planner	DEMHS Region 1
Robert Kenny	Reg EM Coord.	CT DESPP-EMHS

Appendix A-2.2
Darien Meetings

To: 2016 PDM/HMP Darien Appointees, Other Darien Municipal Staff

From: Robert Sachnin, Regional Planner

Date: July 15, 2014

Re: PDM/HMP Darien Individual Meeting, Monday July 21, 2014 – Time: 11:00 am

The individual Town of Darien PDM/HMP meeting will commence the morning of Monday, July 21, 2014 at 11:00 am.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Darien Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Darien: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: Darien Municipal Resources
- 6. Figure 2: Darien Community Resources

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Darien Individual Meeting: Darien Town Hall, Monday July 21, 2014–11:00am to 1:00 pm**

Present: Mr. Jeremy Ginsberg, Mr. Edward Gentile, Mr. Darren Oustafine, Mr. Marc McEwan, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 11:02 am, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. There was no update as to progress, however Mr. Ginsberg asked that Mr. Sachnin resend the documents so that the town could complete them, to which Mr. Sachnin agreed. Mr. Sachnin then asked that the town representatives complete them as expeditiously as possible, and to the best of their respective abilities.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Darien-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following Darien stakeholders: Aquarion Water Company, Yankee Gas. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the Town of Darien.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow the public to comment on the draft report development. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into

the Hazard Mitigation Plan Update, to the extent possible and applicable. Lastly, Mr. Sachnin added that specific details would be sorted out well in advance of the meeting, recommending a call between the HMP advisory committee and TNC to ensure that the region and its municipalities receive workshops most suited to their needs.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the Town of Darien to ensure effective communication and the greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached.

4. Darien Hazards

The group next discussed natural hazards of concern in Darien, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Darien results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. Darien Critical Assets and Infrastructure

A review of the existing Town of Darien assets and infrastructure was conducted using GIS data. Such data was previously obtained through extensive work with Darien and outreach to other applicable stakeholders. The participants reviewed two maps depicting municipal and community assets. Mr. Oustafine noted that three pump stations were missing from the municipal resource maps, including: Noroton Bay, Stony Brook, Five Mile River Road Pump Stations. He marked the locations on the map sample, and the group agreed that it was worthwhile to illustrate these locations on the map. Mr. Sachnin agreed to add the three pump stations to Darien's Assets and Infrastructure map products, for purposes of the HMP/PDM.

6. Mitigation Strategies

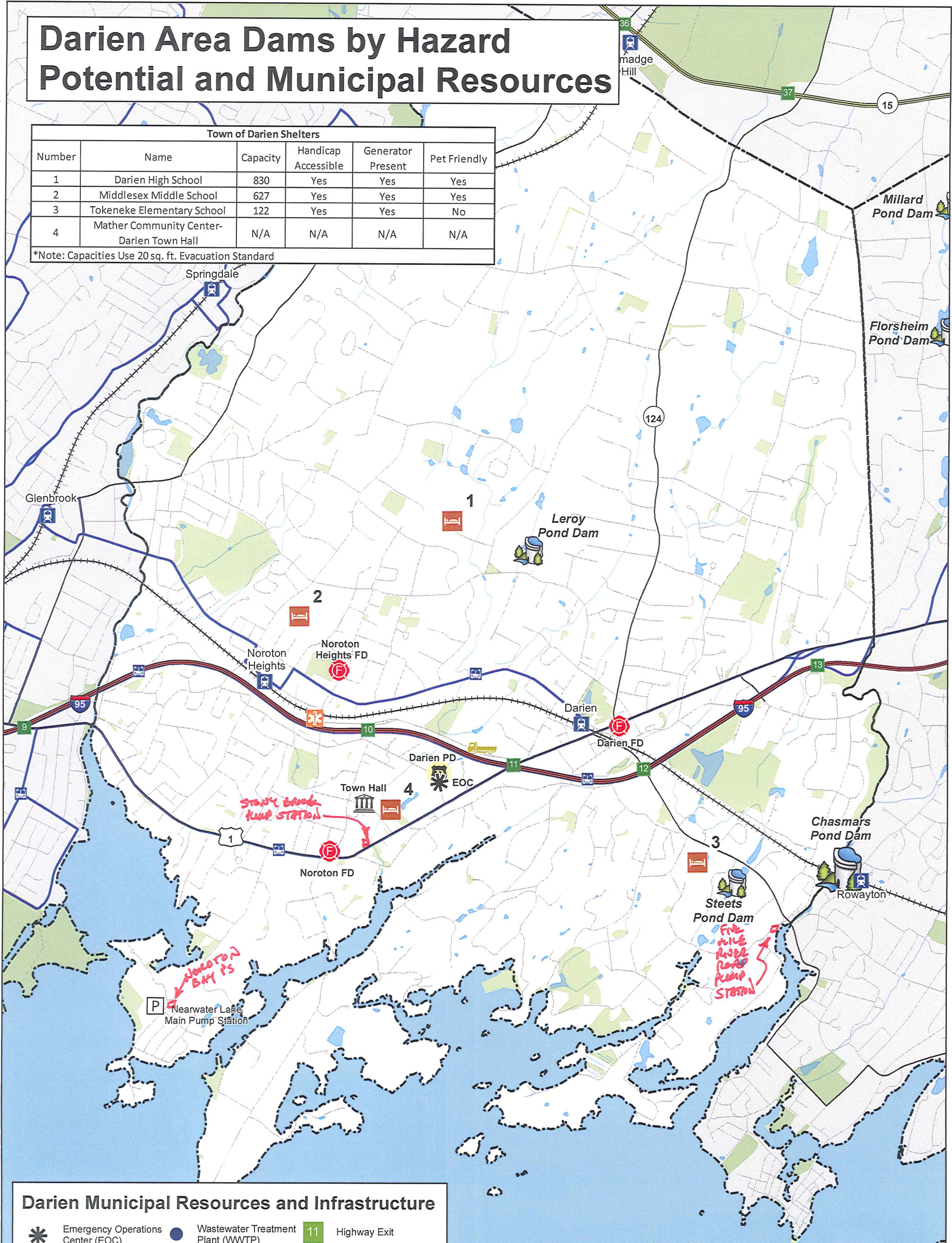
The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. A decision was made to identify and prioritize new 2016 strategies at a later meeting.

The meeting ended at 1 pm.

Darien Area Dams by Hazard Potential and Municipal Resources

Town of Darien Shelters					
Number	Name	Capacity	Handicap Accessible	Generator Present	Pet Friendly
1	Darien High School	830	Yes	Yes	Yes
2	Middlesex Middle School	627	Yes	Yes	Yes
3	Tokeneke Elementary School	122	Yes	Yes	No
4	Mather Community Center-Darien Town Hall	N/A	N/A	N/A	N/A

*Note: Capacities Use 20 sq. ft. Evacuation Standard



Darien Municipal Resources and Infrastructure

- Emergency Operations Center (EOC)
- Police
- Fire
- Emergency Medical Services (EMS)
- Shelter
- Public Works (DPW)
- Open Space
- Wastewater Treatment Plant (WWTP)
- Town Hall
- Pump Station
- Railroad Station
- Railroad
- Bus Route
- Water
- Highway Exit
- Highway
- Limited Access Road
- Interstate
- Local Road
- Municipal Boundary



Area Dams (Class B or Higher)

- Class B - Significant Hazard Potential
- Class C - High Hazard Potential (most extreme CT classification)



Disclaimer: This Map is for general planning purposes only.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Southwestern Regional Planning Agency, Town of Darien



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 5, 2014
TO: Darien HMP Advisory Committee and Staff
FROM: Rob Sachnin, Mike Towle
RE: Darien Individual Meeting: Friday December 19, 2014, 2:00 pm

Agenda: 12/19/14 Darien Individual HMP Meeting

Location: Darien Town Hall

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Darien-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Darien 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Darien Capabilities Text

HMP Followup Meeting

December 19, 2014

2:00 PM - Darien

2:00 pm - 3:30 pm

Name:	Title:	Municipality:	E-mail and Phone:
Maureen McEwan	EMD	Darien	mmewin@darienct.gov
Jeremy Ginsberg	P&Z Director	Darien	JGinsberg@darienct.gov
Rob Szuchman	Sr. Reg Planner	WCCOG/srpa	
Michael Towle	Regional Planner	WCCOG	<hr/>

Appendix A-2.3
Greenwich Meetings

To: 2016 PDM/HMP Greenwich Appointees, Other Greenwich Municipal Staff

From: Robert Sachnin, Regional Planner

Date: July 3, 2014

Re: **PDM/HMP Greenwich Individual Meeting, Friday July 11, 2014 – Time: 11:30 am**

The individual Town of Greenwich PDM/HMP meeting will commence the morning of Friday, July 1, 2014 at 11:30 am.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Greenwich Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Greenwich: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: Greenwich Community Resources
- 6. Figure 2: Greenwich Municipal Resources
- 7. Figure 3: Greenwich Housing Resources

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Greenwich Individual Meeting: Greenwich Town Hall
Tuesday July 1, 2014 – 11:00 am to 1:00 pm**

Present: Ms. Amy Siebert, Ms. Katie DeLuca, Ms. Denise Savageau, Mr. Jim Michel, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 11:03 am, and introductions followed.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting. Ms. DeLuca indicated an intention to complete the worksheets, but asked Mr. Sachnin to resend the documents, which he agreed to do.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Greenwich-specific stakeholders should be added to the list. A brief discussion regarding the role of stakeholders ensued. Key additions identified by the town representatives included: Greenwich Hospital, Nathaniel Witherell Nursing Home, Board of Education, Housing Authority, United Way, Connecticut Natural Gas, Aquarion, and the Greenwich Emergency Medical Service (GEMS). Mr. Sachnin asked the group to provide contact information for the aforementioned stakeholders, which will be added to the stakeholder distribution list for all future HMP correspondence.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, which included at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow the public (and stakeholders) to comment on the draft report development. Lastly, a third round of public involvement and outreach would be conducted allowing each municipality and its general public to comment on the plan document prior to a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. He added that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be

agreed upon with the Town of Greenwich to ensure effective communication and the greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue.

4. Greenwich Hazards

The group next discussed natural hazards of concern in Greenwich, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Greenwich results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. Greenwich Critical Assets and Infrastructure

A review of the existing Town of Greenwich assets and infrastructure was conducted using GIS data previously obtained through extensive work with Greenwich and outreach to other applicable stakeholders. Mr. Sachnin emphasized that all assets and infrastructure discussed for HMP/PDM purposes would be made publically available, and cautioned the group to consider this when making decisions on what assets and critical infrastructure to map. Ms. Siebert noted some potential changes to a few area dams, one of which involved the classification. She agreed to follow up and provide any new information. Additional housing locations and corresponding information was also provided, including the need to clarify the grouping of "affordable" and "family" housing in the legend provided as part of the sample map used. The municipal representatives from Greenwich agreed to finalize the corrections by marking up the sample maps, which will then be scanned and e-mailed to Mr. Sachnin to make appropriate corrections. The correct assets and infrastructure for the Town of Greenwich will then be mapped and included within the updated plan.

6. Mitigation Strategies

The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. A few emergency management strategies were deferred until progress/results could be vetted with Mr. Warzoha. All participants agreed to identify and prioritize new 2016 mitigation strategies in a future meeting.

7. Other

The group briefly discussed the importance of planning in the hazard mitigation process. Ms. Siebert mentioned the potential benefits of having a regional hazard awareness week, which would convey important reminders of regional hazards and associated risks across the board to the public and municipalities alike. Ms. Savageau stressed the importance of intra and inter-municipal communication when planning for and addressing the impacts of hazards. Mr. Sachnin added that an important benefit of the HMP/PDM process was that it provides a forum to bring the necessary municipalities and their departments, as well as key stakeholders such as utilities, and the general public together to address hazard mitigation.

The meeting ended at 2:08 pm.

To: 2016 PDM/HMP Westport Appointees, Other Westport Municipal Staff

From: Rob Sachnin, Senior Regional Planner; Mike Towle, Regional Planner

Date: August 26, 2014

**Re: PDM/HMP Greenwich Individual Meeting: Part 2, Thursday August 28, 2014 –
Time 12:30 pm**

The individual Town of Greenwich PDM/HMP meeting will commence the afternoon of Thursday, August 28, 2014 at 12:30pm. The meeting will be located at Greenwich Town Hall.

The agenda for the meeting follows:

- 1. Updates and Announcements**
- 2. Overview of Existing Work Products**
 - a. Greenwich Asset Update
 - i. Town of Greenwich will provide SWRPA an update regarding critical town assets and infrastructure, for inclusion in HMP Update
 - b. Capability Assessment and Safe Growth Worksheets - Greenwich
- 3. Mitigation Strategies**
 - a. 2016 Mitigation Strategies
 - i. Group will identify and prioritize new 2016 mitigation strategies (where applicable)
 1. Will utilize the “STAPLEE” method
 2. Include associated goals, objectives and actions (where applicable)
 - ii. Group will reorganize and make appropriate edits to official 2016 mitigation strategy table, including:
 1. ensuring that all identified hazards have at least one mitigation action strategy
 2. there exists one action dealing with:
 - a. existing structures
 - b. new development
- 4. Attachments**
 - Tables/Worksheets**
 1. Greenwich Capability Assessment, Safe Growth Audit and NFIP
 2. Greenwich 2016 Mitigation Strategies

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

August 28, 2014

Time:

, Location: Greenwich Town Hall

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	R.S.	
Mike Towle	SWRPA	MT	
Dan Warzoha	Greenwich		
Denise Savageau	Greenwich	DMS	
Katie DeLuca	Greenwich	KS	
Amy Siebert	Greenwich	AJS	
James Michel	Greenwich	Jm	
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Greenwich Individual Meeting: Greenwich Town Hall, Thursday August 28, 2014 12:30
pm to 2:30 pm**

Present: Ms. Denise Savageau, Ms. Katie DeLuca, Ms. Amy Siebert, Mr. James Michel, Mr. Robert Sachnin, Mr. Mike Towle

1. Updates and Announcements

Mr. Sachnin began the meeting at 12:30 pm and the group introduced themselves. Mr. Sachnin also gave a summary on a recent presentation for the COAST tool which provides cost benefit results on a parcel level for flood mitigation strategies.

2. Overview of Existing Work Products

The group unanimously agreed to include a “Severe Storm” category to account for weather natural hazards not already covered in the Hazard Summary report

a. Greenwich Asset Update

Mr. Sachnin and Mr. Towle inquired as to the status of Greenwich Town Assets, which Mr. Sachnin indicated would be used for project mapping, and to some extent, for inclusion into the HAZUS-MH risk assessment. Ms. Siebert explained that she had reached out to Greg Sullivan, Greenwich GIS Coordinator, to prepare a Greenwich inventory for SWRPA. SWRPA then agreed to contact Mr. Sullivan for a status update, indicating that the HAZUS risk assessment would be initiated in the near future.

b. Capability Assessment and Safe Growth Worksheets – Greenwich

In order to capitalize on the opportunity of having various town departments in one room, the group to discussed and populated the department specific Capability Assessment and Safe Growth Audit worksheets, which Ms. DeLuca had initially populated to the best of her abilities. Ms. Siebert confirmed that Greenwich has an EOC plan. With respect to the town taxing authority from the worksheets, the group stated that the only utility taxing authority is with the sewer system, since the remaining utilities such as gas and electric are private (not municipally owned). Ms. Siebert mentioned that financial details can be confirmed by Peter Mynarski, and the town agreed to complete the remaining items of both worksheets.

3. Mitigation Strategies

Mr. Sachnin walked the group through FEMA’s STAPLEE rating process, which also included a 3-point scale (high, medium, or low priorities) used to identify priorities for each listed action. After defining each type of priority and providing examples of costs and benefits, the group then began rating each action item included Greenwich’s Mitigation Strategies. After rating 4 actions Ms. Savageau and Siebert discussed the potential of reevaluated and reorganizing Greenwich’s actions and strategies. The group unanimously agreed to strike out strategy #9. Following this discussion, SWRPA agreed to send an excel version of Greenwich’s mitigation strategies, for the

town to reorganize and reevaluate. Mr. Sachnin and Towle also volunteered to accommodate any questions or concerns the group may have when they begin to revise their strategies. Mr. Sachnin cautioned the group to be mindful of specific FEMA requirements that pertain to the mitigation strategies during any revisions.

The meeting ended at 2:30



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 5, 2014
TO: Greenwich HMP Advisory Committee and Staff
FROM: Rob Sachnin, Mike Towle
RE: Greenwich Individual Meeting: Wednesday December 24, 2014, 9:00 am

Agenda: 12/24/14 Greenwich Individual HMP Meeting

Location: Greenwich Town Hall

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Greenwich-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Greenwich 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Greenwich Capabilities Text

HMP Followup Meeting

~~December 19, 2014~~ 12/24/2014

9:00 AM - Greenwich

Name:	Title:	Municipality:	E-mail and Phone:
Michael Toule	Regional Planner	WCCOG	
Rob Sachnin	Sr. Regional Planner	WCCOG/swr	
KATIE DELUCA	Director Pt 2	Greenwich	
Amy Siebert	DPW Comm.	"	203 622 7740
Denise Savage	Gen. Director	"	203-622-6461

Appendix A-2.4
New Canaan Meetings

To: 2016 PDM/HMP New Canaan Appointees, Other New Canaan Municipal Staff

From: Robert Sachnin, Senior Regional Planner

Date: July 17, 2014

Re: **PDM/HMP New Canaan Individual Meeting, Tuesday July 22, 2014–Time: 2:00 pm**

The individual Town of New Canaan PDM/HMP meeting will commence the afternoon of Tuesday, July 22, 2014 at 2:00 pm.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. New Canaan Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. New Canaan: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: New Canaan Community Resources
- 6. Figure 2: New Canaan Municipal Resources

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

July 22, 2014

Time: 2:00 pm - 3:45 pm

, Location: New Canaan Police Department

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	R.S.	
Chief Jack Hennessey	New Canaan	JMH	
Mike Handler	New Canaan	MH	
Tiger Mann	New Canaan	TM	
Steve Bury	New Canaan		
Steve Kleppin	New Canaan		
Michael Pastore	New Canaan		

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of New Canaan Individual Meeting: New Canaan Police Department, Tuesday July 22, 2014
2:00pm to 3:45 pm**

Present: Mr. Michael Handler, Chief Jack Hennessey, Mr. Tiger Mann, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 2:05 pm, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. Chief Hennessey explained that he had circulated the handouts to the municipal departments following the kick-off meeting, but wasn’t aware of any progress made to the worksheets. Mr. Sachnin then asked that the town representatives complete them as expeditiously as possible, and to the best of their respective abilities. He also agreed to help reach out to certain municipal departments, if needed.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any New Canaan-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following New Canaan stakeholders: Aquarion Water Company, 1st and 2nd Taxing Districts (Norwalk), Silver Hill Hospital, Emergency Medical Services (EMS), Community Emergency Response Team (CERT), and the Health Department. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the Town of New Canaan.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow public review and comment on the draft report. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each

municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. Lastly, Mr. Sachnin added that specific details would be sorted out well in advance of the meeting, recommending a call between the HMP advisory committee and TNC to ensure that the region and its municipalities receive workshops most suited to their needs.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the Town of New Canaan to ensure effective communication and the greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached.

4. New Canaan Hazards

The group next discussed natural hazards of concern in New Canaan, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. New Canaan results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. New Canaan Critical Assets and Infrastructure

A review of the existing Town of New Canaan assets and infrastructure was conducted using GIS data. Such data was previously obtained through extensive work with New Canaan and outreach to other applicable stakeholders. The participants reviewed two maps depicting municipal and community assets and marked up the maps accordingly, additional assets and critical infrastructure included: School House Apartments (senior housing), XXXXX (special needs housing), the 1st district water company, Silver Hill Hospital, a CL&P substation, the New Canaan Inn (Assisted Living), and the Waveny Care Center. Mr. Sachnin agreed to add the requested assets to the HMP/PDM project map products.

6. Mitigation Strategies

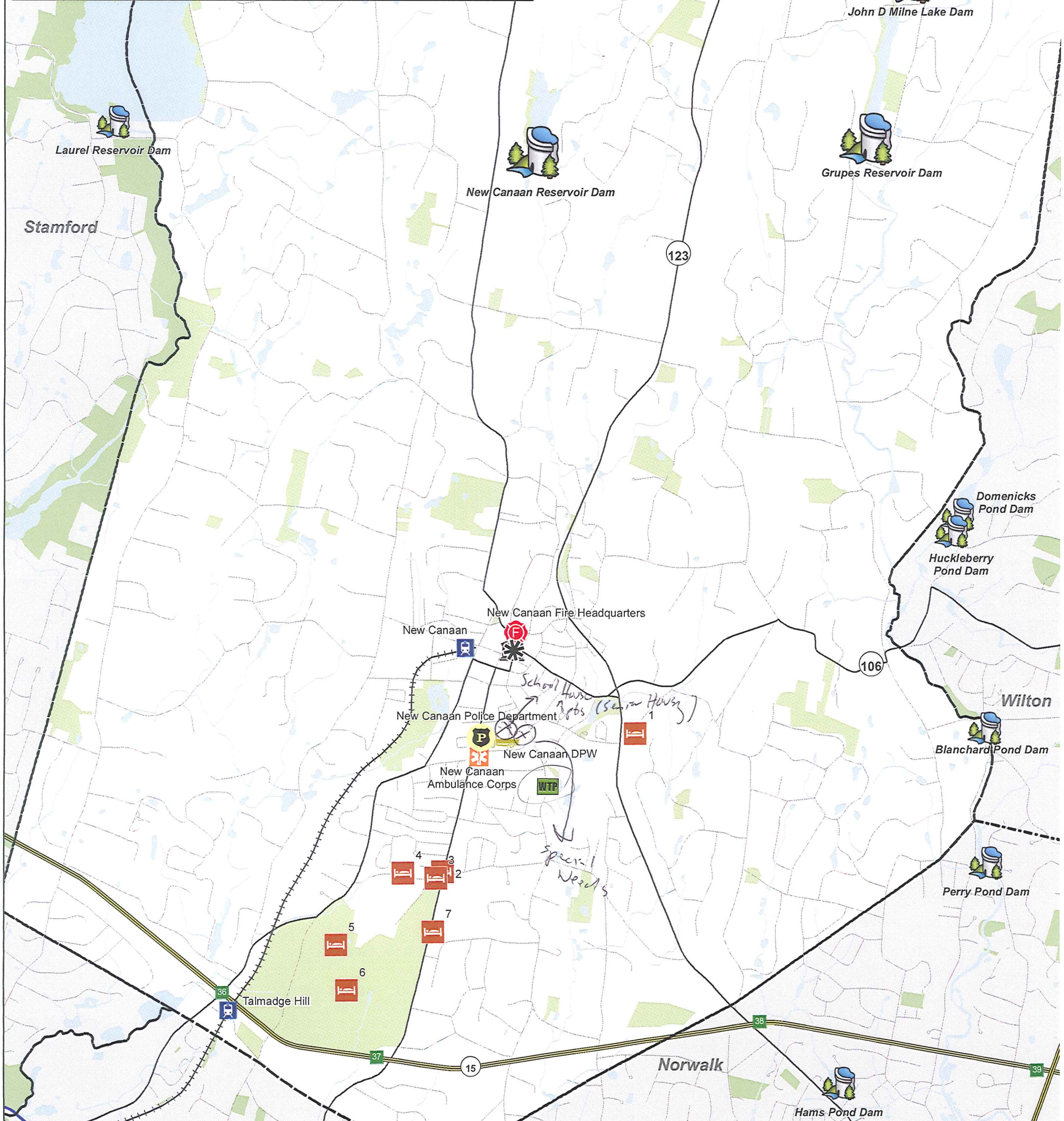
The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. The group next discussed the list of 2016 mitigation strategies; Mr. Mann requested that the maintenance dredging of Mill and Mead ponds be added to the 2016 list, indicating that this was a high priority of DPW. Minor changes were made to existing strategies, which were then reprioritized and added to the new 2016 list.

The meeting ended at 3:45 pm.

New Canaan Area Dams by Hazard Potential and Municipal Resources

Lewisboro

Number	Name	Capacity	Handicap	Pet	Generator
1	East School	267	Yes	N/A	No
2	South School	425	Yes	N/A	Yes
3	Saxe Middle School	2000	Yes	N/A	Yes
4	New Canaan High School	1066	Yes	N/A	No
5	Lapham Community Center	150	Yes	N/A	No
6	Waveny House	450	No	N/A	No
7	New Canaan YMCA	50	N/A	N/A	No



Municipal Resources and Infrastructure

Emergency Operations Center (EOC)	Town Hall	Highway Exit
Police	Shelter	Highway
Fire	Railroad Station	Limited Access Road
Emergency Medical Services (EMS)	Railroad	Interstate
Wastewater Treatment Plant	Open Space	Local Road
Public Works (DPW)	Water	Municipal Boundary

0 0.55 1.1 1.65 Miles

Area Dams (Class B or Higher)

Class B - Significant Hazard Potential

Class C - High Hazard Potential (most extreme CT classification)

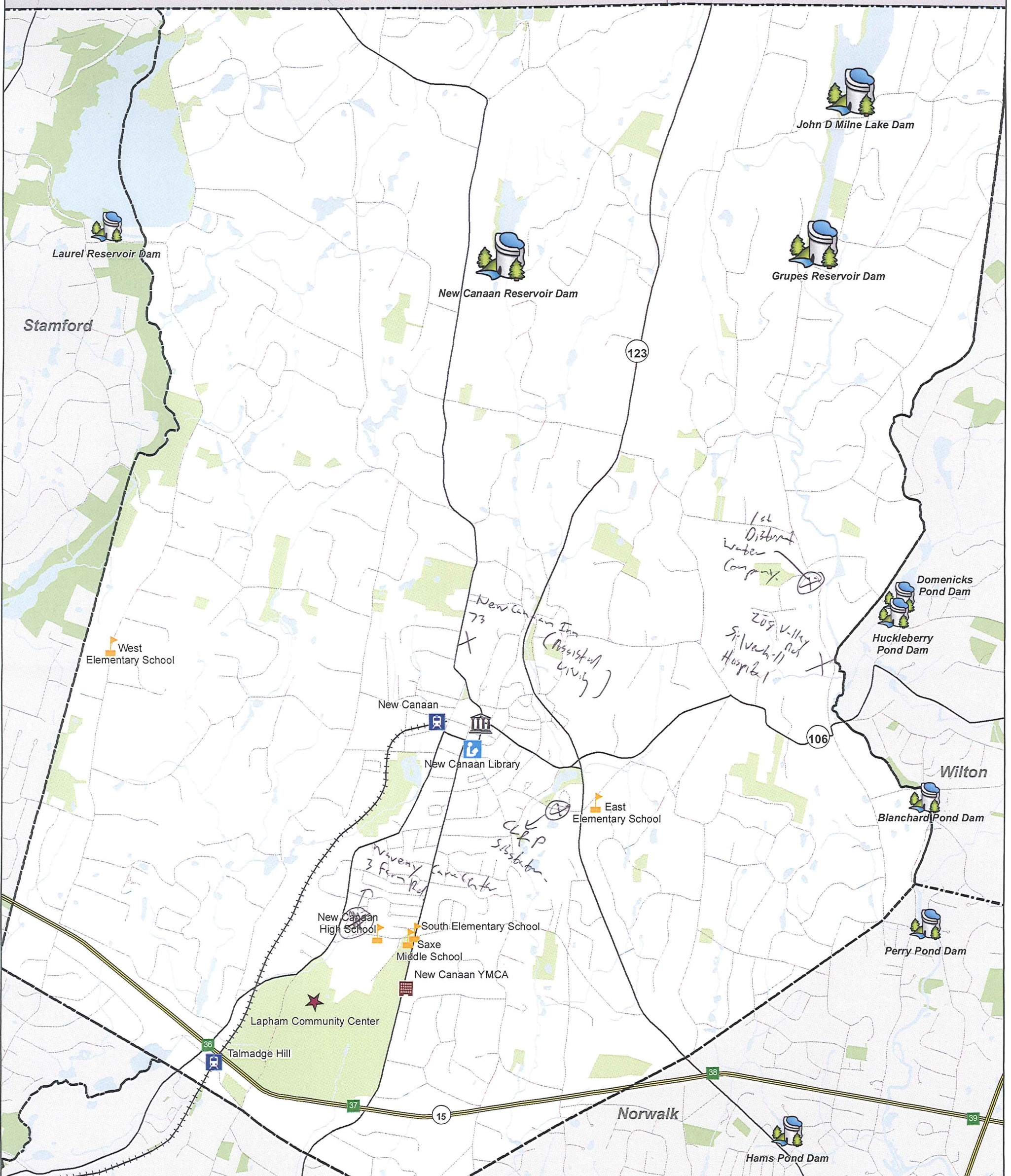
SOUTH WESTERN REGIONAL PLANNING AGENCY

Disclaimer: This Map is for general planning purposes only.

Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teletlas; Southwestern Regional Planning Agency; Town of New Canaan

New Canaan Area Dams by Hazard Potential and Community Resources

Lewisboro



SWRPA 50 YEARS
SOUTH WESTERN REGIONAL PLANNING AGENCY

Disclaimer: This Map is for general planning purposes only.

Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; TeleAtlas; Southwestern Regional Planning Agency, Town of New Canaan

Area Dams (Class B or Higher)

Class B - Significant Hazard Potential

Class C - High Hazard Potential (most extreme CT classification)

New Canaan Community Resources

Public School	Town Hall	Highway
Community and Senior Center	Railroad Station	Limited Access Road
Library	Railroad	Interstate
YMCA	Highway Exit	Local Road
Open Space	Water	Municipal Boundary

0 0.55 1.1 1.65 Miles

Appendix A-2.5
Norwalk Meetings

To: 2016 PDM/HMP Norwalk Appointees, Other Norwalk Municipal Staff

From: Robert Sachnin, Regional Planner

Date: July 10, 2014

Re: **PDM/HMP Norwalk Individual Meeting, Thursday July 17, 2014 – Time: 2:00 pm**

The individual City of Norwalk PDM/HMP meeting will commence the afternoon of Thursday, July 17, 2014 at 2:00 pm.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Norwalk Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Norwalk: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: Norwalk Critical Resources
- 6. Figure 2: Norwalk Care Facilities
- 7. Figure 3: Norwalk Community Resources
- 8. Figure 4: Norwalk Housing

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

July 17, 2014

Time: 2 pm - 4 pm

, Location: Norwalk Fire Department/EOC

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	R.S.	
Chief Denis McCarthy	Norwalk	DMC	
Michele DeLuca	Norwalk	MD	
Mike Greene	Norwalk		
Harold Alvord	Norwalk	H.A.	
Mike Yeosock	Norwalk	MY	
Alexis Cherichetti	Norwalk		
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
City of Norwalk Individual Meeting: Norwalk Fire HQ, Thursday July 17, 2014–2:00 to 4:00 pm**

Present: Chief Denis McCarthy, Ms. Michele DeLuca, Mr. Harold Alvord, Mr. Michael Yeosock, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 2:04 pm, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. While progress to date was limited, the municipal representatives agreed to jointly review the worksheets and complete any sections for which they had information for. He asked that the town representatives complete them as expeditiously as possible, and to the best of their respective abilities. Mr. Sachnin also agreed to forward all applicable worksheets to Planning and Conservation Departments to complete their applicable sections.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Norwalk-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following Norwalk stakeholders: Housing Authority, Board of Education, Norwalk Hospital, Redevelopment Agency, Maritime Aquarium, Seaport Association, Norwalk Transit District, Norwalk Taxing Districts/Utilities. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the City of Norwalk.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow the public to comment on the draft report development. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each

municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. Lastly, Mr. Sachnin added that specific details would be sorted out well in advance of the meeting, recommending a call between the HMP advisory committee and TNC to ensure that the region and its municipalities receive workshops most suited to their needs.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the City of Norwalk to ensure effective communication and the greatest possible turnout by the public. City suggestions for an individual meeting included conducting a session before or during a Board of Selectmen meeting, in hopes it would yield a greater turnout. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached. Some concern was raised regarding individual meetings and feedback, citing past experiences where such interactions were primarily negative and not constructive. Mr. Sachnin agreed to explore the potential to hold an alternative form of public participation, and one idea that surfaced was to make the plan available at local libraries, in conjunction with a specific date/time where a representative would be onsite to answer any questions the general public may have. Mr. Sachnin agreed to look into such measures to ensure consistency with the regulatory requirements of the HMP. All participants agreed to revisit this as time neared.

4. Norwalk Hazards

The group next discussed natural hazards of concern in Norwalk, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Wilton results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. Norwalk Critical Assets and Infrastructure

A review of the existing City of Norwalk assets and infrastructure was conducted using GIS data. Such data was previously obtained through extensive work with Norwalk and outreach to other applicable stakeholders. The participants reviewed four variations of maps depicting the assets. Chief McCarthy asked the asset and infrastructure list used to prepare the maps be provided, which would assist the confirmation of appropriate assets and infrastructure to include in the report mapping. Mr. Sachnin agreed to submit the list, and asked that following a review by the City of Norwalk, final items be provided to Mr. Sachnin.

6. Mitigation Strategies

The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. Follow ups will be made with Planning and Conservation regarding updates to certain strategies that could not be answered during the meeting. A decision was made to identify new 2016 strategies at a later meeting, after Planning and Conservation have had opportunities to review and comment on the 2011 strategies.

The meeting ended at 4 pm.



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 3, 2014
TO: Norwalk HMP Advisory Committee and Staff
FROM: Robert Sachnin, Mike Towle
RE: Norwalk Individual Meeting: Wednesday December 10, 2014, 2:30 pm

Agenda: 12/10/14 Norwalk Individual HMP Meeting

Location: Norwalk Fire HQ, 121 Connecticut Ave, 3rd Floor

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Norwalk-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Norwalk 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Norwalk Capabilities Text

HMP Followup Meeting

December 10, 2014

2:30 - 3:30 pm

11:00 AM - Norwalk - City Hall, DPW - 2nd Floor

Name:	Title:	Municipality:	E-mail and Phone:
Rob Sechin	Sr. Regional Planner	WUOG/SWPPA	
Hal Alvord	Director of Public Works	Norwalk	halvord@norwalkct.org 203-854-7970
Mike Yewuch	Senior Engineer	Norwalk	MYEWUCH@NORWALKCT.ORG 203-859-7899
Denis McCarthy	EMD	Norwalk	DMcCarthy@norwalkct.org
Michelle Deluca	Dep EMD	"	Mdeluca@norwalkct.org

Appendix A-2.6
Stamford Meetings

To: 2016 PDM/HMP Stamford Appointees, Other Stamford Municipal Staff

From: Robert Sachnin, Senior Regional Planner

Date: July 25, 2014

Re: PDM/HMP Stamford Individual Meeting, Friday August 1, 2014 – Time: 10:00 am

The individual City of Stamford PDM/HMP meeting will commence the morning of Friday, August 1, 2014 at 10:00 am.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Stamford Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Stamford: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1, 2, and 3
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

1. Stakeholder List
2. Hazards Summary Worksheet
3. Update to 2011 Mitigation Strategies
4. New Mitigation Strategies

Figures

5. Figure 1: Stamford Municipal Resources
6. Figure 2: Stamford Community Resources
7. Figure 3: Stamford Transportation Resources

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

August 1, 2014

Time: 10:00 am - 12:15 pm

, Location: SWRPA

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	RLS	
Erin McKenna	Stamford	EM	
Captain Tom Lombardo	Stamford	TZ	
Lou Casolo	Stamford		
Ted Jankowski	Stamford	TJ	via phone
Michael Handler	Stamford		
Ernie Orgera	Stamford		
Elizabeth Rodriguez	Stamford	ER	eRoc
Karen Commarota	Stamford		
Mani Poola	Stamford		
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
City of Stamford Individual Meeting: SWRPA, Friday August 1, 2014 10:00 am to 12:15 pm**

Present: Captain Tom Lombardo, Ms. Erin McKenna, Mr. Ted Jankowski (via phone), Ms. Elizabeth Rodriguez, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 10:03 am, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. Mr. Sachnin explained the purpose of worksheets 4.1 and 4.2, which were to assess community capabilities and gaps with respect to hazard mitigation. He added that information from the worksheets would be added to the report, and highlighted the need for inter-departmental assistance in completing all sections of the brief forms.

Some participants were unfamiliar with the worksheets, which in response, Mr. Sachnin agreed to distribute electronic copies to all participants. He then asked that the city representatives complete them as expeditiously as possible, and to the best of their respective abilities. He also agreed to help reach out to certain municipal departments, if needed.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Stamford-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following Stamford Stakeholders: Fairfield Business Council (and Stamford 2030), Chamber of Commerce, Downtown Special Services District, Stamford Hospital, Aquarion, Yankee Gas. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the City of Stamford.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow public review and comment on the draft report. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to

comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. In the overview, Mr. Sachnin explained the “participatory mapping” component of the workshop, where participants will draw key assets and vulnerable areas on map. Ms. McKenna inquired as to the benefits of having a map without key infrastructure and hazards mapped, to which Mr. Sachnin highlighted the blank maps would help demonstrate key concerns of residents and stakeholders alike, which may or may not differ from the municipality’s. He further explained that the primary benefit was the greater exchange of information and understanding between residents, stakeholders, and municipal staff, a key project benefit of the HMP plan. Lastly, Mr. Sachnin added that specific details would be sorted out well in advance of the meeting, recommending a call between the HMP advisory committee and TNC to ensure that the region and its municipalities receive workshops most suited to their needs.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the City of Stamford to ensure effective communication and the greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA. Thoughts for the individual meeting could include a presentation and discussion with the public regarding plan activities.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached.

4. Stamford Hazards

The group next discussed natural hazards of concern in Stamford, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA’s March 2013 Local Mitigation Planning Handbook. Stamford results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan. Captain Lombardo provided an overview of key hazards and associated impacts to Stamford, citing historical evidence where applicable. He added that Stamford has many small private dams, but with respect to impacts, there were four principal dams within the town. The effects of Hurricanes and flooding felt within the town were also discussed, included down trees and utilities, which can result in power outages/issues. Captain Lombardo added that salt water intrusion from coastal flooding at times worked to exacerbate the integrity of previously inundated utilities. Erosion, particularly along the coast, was a concern, with the group adding the mitigation of coastal erosion was important, given the existence of sea walls.

5. Stamford Critical Assets and Infrastructure

A review of the existing City of Stamford assets and infrastructure was deferred in the interest of time. Captain Lombardo suggested the team contact Cindy Barber to assist with the GIS data. Mr. Sachnin added that the release of any GIS data for project purposes would require approval at higher levels, and asked that the municipal representatives assist with this effort. Mr. Sachnin also

highlighted that the HMP/PDM would be a public document, and the inclusion of some assets and infrastructure should be considered, in case anything was security sensitive.

Ms. Rodriguez agreed to provide senior housing data, and any other data deemed relevant by the Health Department, such as assisted living or shelters. Mr. Jankowski and Captain Lombardo agreed to revisit key assets and infrastructure of importance to Emergency Management. Mr. Sachnin agreed to add any assets/infrastructure provided by Stamford to the HMP/PDM project map products.

6. Mitigation Strategies

The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. In the interest of time, the group decided to address 2016 mitigation strategies at a later date. The participants highlighted a few key new mitigation strategies to consider, including seeking new generators for public buildings, retrofitting/reinforcing existing coastal utilities to make them more resilient, which the group agreed to add as part of the 2016 strategies. Mr. Jankowski also provided additional strategies for inclusion into the report, including: Weather monitoring equipment along the coast, in mid-Stamford, and in northern Stamford. He added that such real-time weather reporting would also greatly assist first responders navigate to/from emergencies. Other suggestions included, but were not limited to: exploring the feasibility of a new EOC in a more resilient area, possibly in conjunction with the new police headquarters, and 911 communications center. Lastly, the consideration of better livable space for employees at the Army Corps hurricane barrier station was discussed.

The meeting ended at 12:15 pm.



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 3, 2014
TO: Stamford HMP Advisory Committee and Staff
FROM: Robert Sachnin, Mike Towle
RE: Stamford Individual Meeting: Thursday December 11, 2014, 11:15am

Agenda: 12/11/14 Stamford Individual HMP Meeting

Location: WCCOG/SWRPA Offices, Stamford Government Center, 3rd Floor

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Stamford-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Stamford 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Stamford Capabilities Text

HMP Followup Meeting

December 11, 2014

11:15 AM - Stamford End 1:00 pm

Name:	Title:	Municipality:	E-mail and Phone:
Rob Suchnin	Sr. Program Planner	WCCOG/SWRPA	
Tom Lombardo	EMD	STAMFORD	
Erin McKenne	Assoc. Planner	City of Stamford	
Rick Talamelli	Env. Planner	City of Stamford	rtalamelli@ci.stamford.ct.us 203 9774965
Mike Towle	Reg Planner	WCCOG	
Cindy Farber	GIS Coordinator	City of Stamford	

Appendix A-2.7
Weston Meetings

To: 2016 PDM/HMP Weston Appointees, Other Weston Municipal Staff

From: Robert Sachnin, Senior Regional Planner

Date: July 25, 2014

Re: **PDM/HMP Weston Individual Meeting, Wednesday July 30, 2014 – Time: 1:00 pm**

The individual Town of Weston PDM/HMP meeting will commence the afternoon of Wednesday, July 30, 2014 at 1:00 pm.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Weston Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Weston: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: Weston Municipal Resources
- 6. Figure 2: Weston Community Resources

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

July 30, 2014

Time: 1pm - 3pm

, Location: Weston Town Hall

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	YLS	
Sgt. Michael Ferullo	Weston		
Ms. Tracy Kulikowski	Weston	TDK	
Mr. David Pattee	Weston		
Chief John Pokorny	Weston	JCP	
Mr. Joe Lametta	Weston		
Mr. John Conte	Weston	JRC	
Ms. Joan Lewis	Weston		
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Weston Individual Meeting: Weston Town Hall, Wednesday July 30, 2014 1:00pm to 3:00
pm**

Present: Ms. Tracy Kulikowski, Chief John Pokorny, Mr. John Conte, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 1:00 pm, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. Ms. Kulikowski distributed a printout of the worksheets received at the planning directors meeting, as some participants were unfamiliar with them. The group briefly discussed the contents of the worksheets and need for input by multiple municipal departments for completion. Mr. Sachnin explained that the purpose of such worksheets were to determine both the town’s existing community capabilities with respect to hazard mitigation planning, as well as to identify gaps that may be addressed in future planning efforts. Mr. Sachnin agreed to distribute electronic copies to all participants, asking that the town representatives complete them as expeditiously as possible, and to the best of their respective abilities. He also agreed to help reach out to certain municipal departments, if needed.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Weston-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following Weston Stakeholders: Aquarion Water Company, Emergency Medical Services, Aspetuck Land Trust (David Brant), Weston Shopping Center (property manager), Board of Education (Facilities Director), Town of Weston Shelter - Water Supply provider. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the Town of Weston.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow public review and comment on the draft report. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to

comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. Lastly, Mr. Sachnin added that specific details would be sorted out well in advance of the meeting, recommending a call between the HMP advisory committee and TNC to ensure that the region and its municipalities receive workshops most suited to their needs.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the Town of Weston to ensure effective communication and the greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA. The municipal representatives highlighted that a good opportunity for Weston individual meetings would be alongside a Board of Selectman meeting, a public event which could include a presentation and discussion with the public regarding plan activities.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached.

4. Weston Hazards

The group next discussed natural hazards of concern in Weston, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Weston results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan. Key hazards discussed included impacts resulting from a breach at the Samuel Senior Dam. The effects of Hurricanes felt within the town were also discussed, included down trees and utilities, which can result in lengthy power outages/issues.

5. Weston Critical Assets and Infrastructure

A review of the existing Town of Weston assets and infrastructure was conducted using GIS data. Such data was previously obtained through extensive work with Weston and outreach to other applicable stakeholders. The participants reviewed two maps depicting municipal and community assets and marked up the maps accordingly, additional assets and critical infrastructure included: Weston Intermediate School, Aspetuck County Club, Weston Shopping Center, Cobbs Mill Restaurant, Field Club (private club). Many commercial and private entities were included because of the volume of people they often house during certain events. Weston Shopping Center was included because it houses many of the resources residents seek, such as food, banking, and hardware (tools/equipment). Mr. Sachnin agreed to add the requested assets to the HMP/PDM project map products.

6. Mitigation Strategies

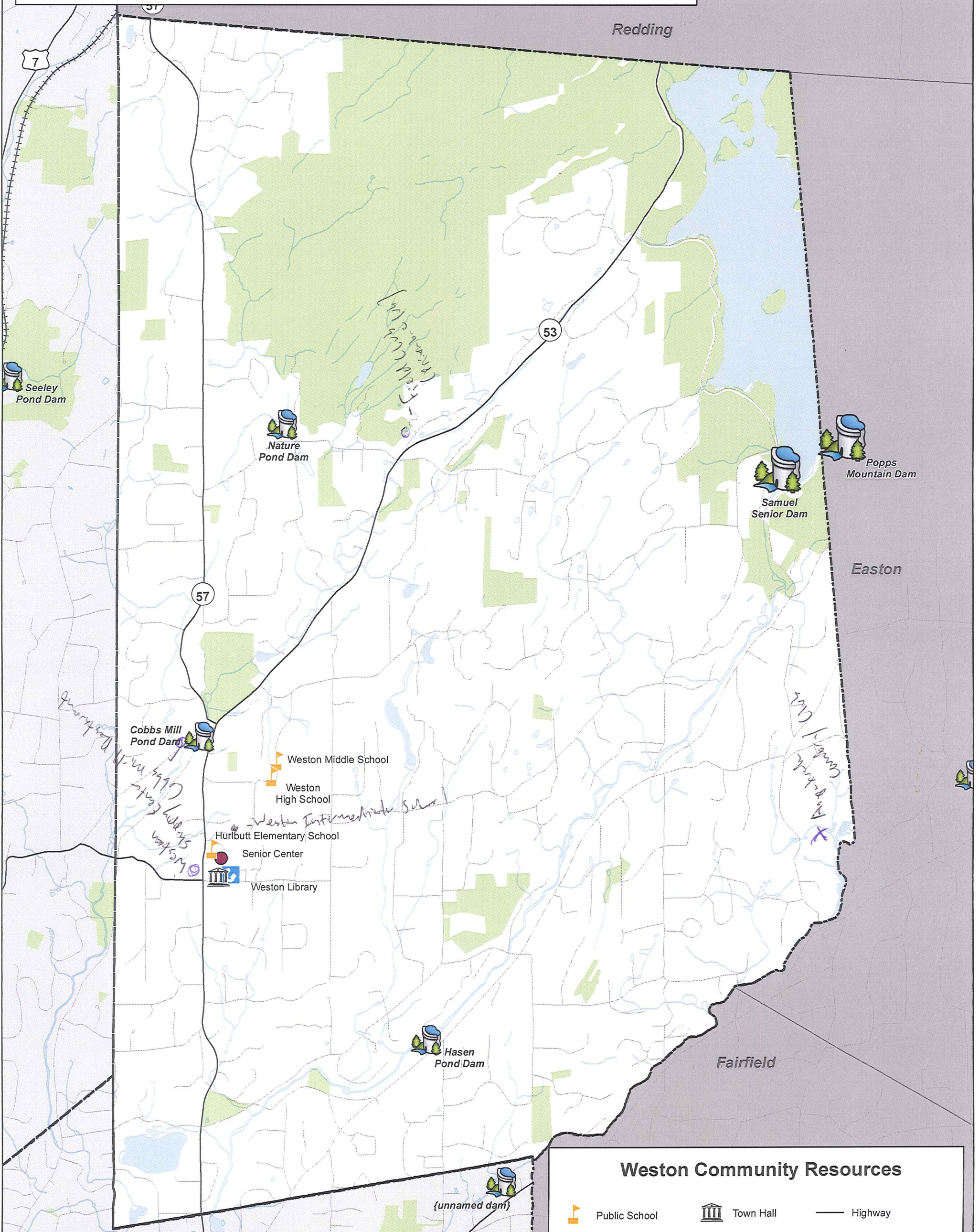
The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. In the interest of time, the group decided to address 2016 mitigation strategies at a later date. Chief Pokorny had earlier discussed the importance and need for maintenance of

existing fire ponds, as well as new locations, which the group agreed to add as part of the 2016 strategies.

The meeting ended at 3:00 pm.

DRAFT

Weston Area Dams by Hazard Potential and Community Resources



SWRPA 50 YEARS
SOUTH WESTERN REGIONAL PLANNING AGENCY

Disclaimer: This Map is for general planning purposes only.
Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Southwestern Regional Planning Agency, Town of Weston

Area Dams (Class B or Higher)

- Class B - Significant Hazard Potential
- Class C - High Hazard Potential (most extreme CT classification)

Weston Community Resources

Public School	Town Hall	Highway
Library	Railroad Station	Limited Access Road
Open Space	Railroad	Interstate
Senior Center	Highway Exit	Local Road
Water	Municipal Boundary	

0 1 2 Miles



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 3, 2014
TO: Weston HMP Advisory Committee and Staff
FROM: Rob Sachnin, Mike Towle
RE: Weston Individual Meeting: Wednesday December 17, 2014, 2:30 pm

Agenda: 12/17/14 Weston Individual HMP Meeting

Location: Weston Town Hall

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Weston-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Weston 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Weston Capabilities Text

HMP Followup Meeting

December 17, 2014

2:30 PM - Weston

Name:	Title:	Municipality:	E-mail and Phone:
Rob Schmitt	Sri Regional Plan	WCCOG/SWRPA	
Mike Towle	Regional Plan	WCCOG	
Mike Faruqi	EMD	WESTON	
John Pokorny	Fire ^{marshal} chief	Weston	j.pokorny@westonct.gov
DAVID PATTEE	CONSERVATION PLANNER	WESTON	DPATTEE@WESTONCT.GOV
JOHN CONTE	TOWN ENGINEER	WESTON	J.CONTE@WESTONCT.GOV
Tracy Kulikowski	Land Use Director	Weston	tkulikowski@westonct.gov

Appendix A-2.8
Westport Meetings

To: 2016 PDM/HMP Westport Appointees, Other Westport Municipal Staff

From: Robert Sachnin, Regional Planner

Date: June 30, 2014

Re: **PDM/HMP Westport Individual Meeting, Tuesday July 1, 2014 – Time TBD**

The individual Town of Westport PDM/HMP meeting will commence the afternoon of Tuesday, July 1, 2014. Specific time and locations will be determined by the group, on Tuesday morning.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Westport Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Westport: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

1. Stakeholder List
2. Hazards Summary Worksheet
3. Update to 2011 Mitigation Strategies
4. New Mitigation Strategies

Figures

5. Figure 1: Westport Community Resources
6. Figure 2: Westport Municipal Resources

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

July 1, 2014

Time: 2 pm - 4:30 pm

, Location: Westport Fire HQ

Name:	Municipality/Agency	Initial:	Notes:
Mr. Robert Sachnin	SWRPA	R.S.	
Chief Andrew Kingsbury	Westport	AK	
Deputy Chief Robert Kepchar	Westport	RK	
Michelle Perillie	Westport	MCP	
Alicia Mozian	Westport		
Other Attendees:			

2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Westport Individual Meeting: Westport Fire HQ
Tuesday July 1, 2014 – 2:00 pm to 4:00 pm

Present: Chief Andrew Kingsbury, Deputy Chief Robert Kepchar, Ms. Michelle Perillie, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 2:03 pm, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting, and were subsequently completed by Ms. Perillie, who handed the worksheets to Mr. Sachnin for integration into the HMP Update.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Westport-specific stakeholders should be added to the list. Chief Kingsbury, Deputy Chief Kepchar and Ms. Perillie unanimously agreed that adding the “Downtown Merchants” would be worthwhile, which was noted and added to the stakeholder distribution list for all future HMP correspondence.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, which included at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow the public to comment on the draft report development. Lastly, a third round of public involvement and outreach would be conducted allowing each municipality and its general public to comment on the plan document prior to a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. He added that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the Town of Westport to ensure effective communication and the

greatest possible turnout by the public. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue.

4. Westport Hazards

The group next discussed natural hazards of concern in Westport, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Westport results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. Westport Critical Assets and Infrastructure

A review of the existing Town of Westport assets and infrastructure was conducted using GIS data previously obtained through extensive work with Westport and outreach to other applicable stakeholders. Key updates included revising the shelter locations to reflect the most current conditions, which are Staples and Long Lots High Schools, as well as the Westport Senior Center. Minor changes to the labeling of Fire stations (station #6 should be #4 and vice versa) and labeling the Canal Park affordable housing complex were also conducted.

6. Mitigation Strategies

The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. About 70% of the 2011 strategies were completed, with Ms. Perillie agreeing to reach out to DPW and Conservation Departments for strategies specifically related to those departments. A decision was made to revisit the 2011 strategies and the identification of new 2016 strategies at another meeting, which was scheduled for Tuesday, 7/22.

The meeting ended at 4:17 pm.

To: 2016 PDM/HMP Westport Appointees, Other Westport Municipal Staff

From: Robert Sachnin, Senior Regional Planner

Date: July 17, 2014

Re: PDM/HMP Westport Individual Meeting: Part 2, Tuesday July 22, 2014 – Time 10:00 am

The individual Town of Westport PDM/HMP meeting will commence the afternoon of Tuesday, July 22, 2014 at 10:00 am. The meeting will be located at Westport Town Hall.

The agenda for the meeting follows:

1. Updates and Announcements

2. Mitigation Strategies

a. 2011 Mitigation Strategy Implementation

- i. Group will complete updates to the 2011 mitigation strategies

b. 2016 Mitigation Strategies

- i. Group will confirm appropriate 2011 ongoing strategies to incorporate into 2016 strategy
- ii. Group will identify and prioritize new 2016 mitigation strategies (where applicable)
1. Will utilize the “STAPLEE” method
 2. Include associated goals, objectives and actions (where applicable)
- iii. Group will reorganize and make appropriate edits to official 2016 mitigation strategy table, including:
1. ensuring that all identified hazards have at least one mitigation action strategy
 2. there exists one action dealing with:
 - a. existing structures
 - b. new development

3. Attachments

Tables/Worksheets

1. Westport Hazards Summary Worksheet
2. Update to 2011 Mitigation Strategies
3. New “Draft” 2016 Mitigation Strategies

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

July 22, 2014

Time: 10:00 am - 12:15 pm

, Location: Westport Town Hall

Name:	Municipality/Agency	Initial:	Notes:
Mr. Robert Sachnin	SWRPA	R.S.	
Chief Andrew Kingsbury	Westport	AK	
Deputy Chief Robert Kepchar	Westport		
Michelle Perillie	Westport	MP	
Alicia Mozian	Westport	AM	
Pete Ratkiewicz	WESTPORT.	PR	
Other Attendees:			

To: 2016 PDM/HMP Westport Appointees, Other Westport Municipal Staff

From: Robert Sachnin, Senior Regional Planner

Date: August 20, 2014

Re: PDM/HMP Westport Individual Meeting: Part 3, Thursday August 21, 2014 – Time 9:15 am

The individual Town of Westport PDM/HMP meeting will commence the afternoon of Thursday, August 21, 2014 at 9:15am. The meeting will be located at Westport Town Hall.

The agenda for the meeting follows:

- 1. Updates and Announcements**
- 2. Overview of Existing Work Products**
 - a. Hazard Summary – Westport
 - b. Capability Assessment and Safe Growth Worksheets - Westport
- 3. Mitigation Strategies**
 - a. 2016 Mitigation Strategies
 - i. Group will identify and prioritize new 2016 mitigation strategies (where applicable)
 1. Will utilize the “STAPLEE” method
 2. Include associated goals, objectives and actions (where applicable)
 - ii. Group will reorganize and make appropriate edits to official 2016 mitigation strategy table, including:
 1. ensuring that all identified hazards have at least one mitigation action strategy
 2. there exists one action dealing with:
 - a. existing structures
 - b. new development

4. Attachments

Tables/Worksheets

1. Westport Hazard Summary
2. Westport Capability Assessment and Safe Growth Audit
3. Finalize and Prioritize New 2016 Mitigation Strategies

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting

August 21, 2014

Time: 9:15 am - 11:15 am, Location: Westport Town Hall

Name:	Municipality/Agency	Initial:	Notes:
Mr. Robert Sachnin	SWRPA	R.S.	
Mr. Mike Towle	SWRPA	M.T.	
Chief Andrew Kingsbury	Westport	A.K.	
Deputy Chief Robert Kepchar	Westport		
Ms. Michelle Perillie	Westport	MCP	
Ms. Alicia Mozian	Westport	AMM	
Mr. Pete Ratkewich	Westport		
<i>Michael Vuceli</i>	<i>WWHD</i>	<i>[Signature]</i>	
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Westport Individual Meeting: Westport Town Hall, Thursday August 21, 2014 – 9:15
am to 11:15 am**

Present: Chief Andrew Kingsbury, Ms. Michelle Perillie, Ms. Alicia Mozian, Mr. Michael Vincelli, Mr. Michael Towle, Mr. Robert Sachnin

1. Updates and Announcements

Mr. Sachnin began the meeting at 9:20 am, and the group introduced themselves. Mr. Sachnin also gave a summary on a recent presentation for the COAST tool which provides cost benefit results on a parcel level for flood mitigation strategies.

2. Overview of Existing Work Products

a. Hazard Summary – Westport

The town briefly discussed their identified hazards to date, and a discussion as to possible additions ensued. Upon hearing hazards included in other towns Following this discussion,

b. and after careful thought of Westport-specific hazards, the group unanimously agreed to include droughts, extreme heat and cold events to their hazard summary. Chief Kingsbury and Mr. Vincelli suggested to include a “severe storm” category to account for intense storms not covered by the other hazard categories, the group unanimously agreed to add this to their hazards summary worksheet for the Town of Westport. The group unanimously agreed to not include Tsunami in their hazard summary. The belief is that protection from the long island and the shallow waters of the eastern continental shelf prevents such hazard events from occurring.

c. Capability Assessment and Safe Growth Worksheets – Westport

Tabled for another time

3. 2016 Mitigation Strategies

Mr. Robert Sachnin walked the group through the rating process which includes a 3 point scale (high, medium, or low priorities) used to identify priorities for each listed action. After defining each type of priority and providing examples of costs and benefits, the group then began rating each action item included Westport’s Mitigation Strategies. After rating 16 actions and approaching the end of the allotted time, Ms. Michelle Perillie suggested targeting specific actions which required input from the collective departments. SWRPA agreed to compile these 2016 strategy results, which will be sent to the town. All town officials agreed to populate their respective sections on their own time, and submit the results back to SWRPA for inclusion in the HMP update.

The meeting ended at 11:15 am.

Appendix A-2.9
Wilton Meetings

To: 2016 PDM/HMP Wilton Appointees, Other Wilton Municipal Staff

From: Robert Sachnin, Regional Planner

Date: July 15, 2014

Re: PDM/HMP Wilton Individual Meeting, Wednesday July 16, 2014 – Time: 9:00 am

The individual Town of Wilton PDM/HMP meeting will commence the morning of Wednesday, July 15, 2014 at 9:00 am.

The agenda for the meeting follows:

- 1. Introductions and Overview**
- 2. Status of Worksheets (handed out at Kick-off Meeting, and June Planning Directors Meeting)**
 - a. 4.1: Capability Assessment Worksheet
 - b. 4.2: Safe Growth Audit
 - c. 4.3: National Flood Insurance Program (NFIP) Worksheet
- 3. List of Stakeholders and Outreach Strategy – very brief discussion**
 - a. Stakeholder List – anyone missing?
 - i. Attachment #1: List of Stakeholders and Additional Advisory Committee Members
 - b. Outreach Strategy
 - i. Striking the balance between Municipal “Cluster” Workshops and Individual Municipal Meetings
- 4. Wilton Hazards**
 - a. Group will complete Attachment #2: Hazards Summary Worksheet
- 5. Wilton: Critical Assets and Infrastructure**
 - a. Group will confirm municipal assets and infrastructure, for inclusion in PDM/HMP report, adding/deleting elements, based on Figures 1 and 2
- 6. Mitigation Strategies**
 - a. Existing Mitigation Strategies

- i. Group will complete Attachment #3: Update to 2011 Mitigation Strategies
- b. New Mitigation Strategies (time permitting)
 - i. Group will complete Attachment #4 “New Mitigation Strategies”

7. Attachments

Tables/Worksheets

- 1. Stakeholder List
- 2. Hazards Summary Worksheet
- 3. Update to 2011 Mitigation Strategies
- 4. New Mitigation Strategies

Figures

- 5. Figure 1: Wilton Community Resources
- 6. Figure 2: Wilton Municipal Resources

2016 Pre-disaster Mitigation/Hazard Mitigation Plan Update Meeting
July 15, 2014

Time: 9 am - 11:15 am

, Location: Wilton Fire Department

Name:	Municipality/Agency	Initial:	Notes:
Robert Sachnin	SWRPA	R.S.	
Chief Ronald Kanterman	Wilton	<i>[Signature]</i>	
Deputy Chief Mark Amatrudo	Wilton	<i>[Signature]</i>	
Pat Sesto	Wilton	<i>[Signature]</i>	
Robert Nerney	Wilton	<i>[Signature]</i>	
Tom Thurkettle	Wilton		
<i>Mike Vercelli</i>	<i>Wilton</i>	<i>[Signature]</i>	
Other Attendees:			

**2016 Hazard Mitigation Plan (HMP) Update (formerly Pre-Disaster Mitigation Plan or PDM)
Town of Wilton Individual Meeting: Wilton Fire Training Room
Wednesday July 16, 2014 – 9:00 am to 11:15 am**

Present: Chief Ronald Kanterman, Deputy Chief Mark Amatrudo, Ms. Patricia Sesto, Mr. Robert Nerney, Mr. Michael Vincelli, Mr. Robert Sachnin

1. Introduction

Mr. Sachnin began the meeting at 9:03 am, and the group introduced themselves.

2. Status of worksheets

- a. The group next discussed the status of FEMA worksheets “4.1: Capabilities Assessment Worksheet”, “4.2 Safe Growth Audit”, and “4.3: National Flood Insurance Program (NFIP) Worksheet. The worksheets come from FEMA’s March 2013 “Local Mitigation Planning Handbook” and were previously handed out during the June 12th kick-off meeting and June 17th planning directors meeting. Some members of the town were unaware of the worksheets, so Mr. Sachnin agreed to resend the documents. He asked that the town representatives complete them as expeditiously as possible, and to the best of their respective abilities.

3. List of Stakeholders and Outreach Strategy

a. Stakeholder List:

The group next discussed the list of stakeholders, which was developed and vetted with the Regional Advisory Group at the June 12th kick-off meeting. Mr. Sachnin proceeded by asking if any Wilton-specific stakeholders should be added to the list, highlighting that such entities would be frequently kept abreast of plan development activities, including the option to comment on the plan itself, but would not steer plan development like the advisory committee. The group unanimously agreed to add the following Wilton stakeholders: Community Emergency Response Team (CERT), South Norwalk Electric and Water (SNEW), Aquarion, and Yankee Gas. Chief Kanterman also requested that the new Town of Wilton Facilities Director (once hired) should be added to the Advisory Committee, an action which the group agreed was important given the scope of work entailed as part of that position. Mr. Sachnin noted the additions and explained that the aforementioned stakeholders would be added to the stakeholder distribution list for all future HMP correspondence, once the appropriate contact information was provided by the Town of Wilton.

b. Outreach Strategy:

Mr. Sachnin provided an overview of the proposed outreach strategy, including at least three “cluster” workshops with The Nature Conservancy (TNC), which would then be supplemented with individual municipal public meetings to allow the public to comment on the draft report development. Lastly, a third round of public involvement and outreach would be conducted, allowing each municipality, its stakeholders and general public to comment on the plan in advance of a final submission to the State of Connecticut and FEMA.

Mr. Sachnin further explained the TNC meetings, although clustered to contain multiple municipalities, would provide clear and distinctly separate opportunities for each municipality to identify vulnerable areas and assets, in conjunction with identifying mitigation strategies and techniques to help make each municipality more resilient to the hazards they individually identified. Results of the workshops would be incorporated into the Hazard Mitigation Plan Update, to the extent possible and applicable. Ms. Sesto expressed some concern regarding the public perception of such a workshop, creating the potential for a misunderstanding that such efforts would only involve natural hazard elements, and not actual damages associated from the hazards, citing houses that could be at risk to flooding as an example. Mr. Sachnin acknowledged the concern and spoke to the importance of a clear, concise, message announcing the workshops.

Mr. Sachnin also explained that the individual municipal meetings provided another forum to provide the public an opportunity to review and comment on project work, and meeting specifics would be agreed upon with the Town of Wilton to ensure effective communication and the greatest possible turnout by the public. Town suggestions for an individual meeting included conducting a session before or during a Board of Selectmen meeting, in hopes it would yield a greater turnout. The final individual meeting would be conducted following any changes to a draft document, in order to provide one last opportunity for public review and comment before the final report is submitted to the state and FEMA.

The group unanimously agreed that this was a sufficient strategy to pursue, and would explore the individual meeting specifics as the time approached.

4. Wilton Hazards

The group next discussed natural hazards of concern in Wilton, which led to the completion of Worksheet 5.1: Hazards Summary Worksheet. This worksheet also comes from FEMA's March 2013 Local Mitigation Planning Handbook. Wilton results from Worksheet 5.1 will be incorporated into the Hazard Mitigation Plan.

5. Wilton Critical Assets and Infrastructure

A review of the existing Town of Wilton assets and infrastructure was conducted using GIS data. Such data was previously obtained through extensive work with Wilton and outreach to other applicable stakeholders. The participants reviewed two variations of maps depicting the assets. A list of key assets and infrastructure was provided by Chief Kanterman, and the group agreed that a good approach was to map such asset locations, but strike any specific details such as owner name or contact information. Ms. Sesto recommended the locations of the utility transition and substations be included, and Mr. Nerney added the DOT and DPW facilities would be important structures to include. Mr. Sachnin asked the municipal representatives to provide names and addresses for all additional assets not already mapped or including in the list provided by Wilton Fire, stating that once received, SWRPA would add this to the mapping efforts.

6. Mitigation Strategies

The group next reviewed the 2011 mitigation strategies line by line, indicating updates and any progress made. Follow ups will be made to DPW for updates to certain strategies that could not be answered during the meeting. A decision was made to identify new 2016 strategies at a later meeting.

The meeting ended at 11:15 am.



WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

888 Washington Boulevard, 3rd Floor, Stamford, CT 06901
Brookfield Office (203) 775-6256 – Stamford Office (203) 316-5190

DATE: December 9, 2014
TO: Wilton HMP Advisory Committee and Staff
FROM: Robert Sachnin, Mike Towle
RE: Wilton Individual Meeting: Monday December 15, 2014, 11:00 am

Agenda: 12/15/14 Wilton Individual HMP Meeting

Location: Wilton Town Hall Complex

1. **Updates and Announcements**
 - a. Proposed Draft Deadline
 - b. Public Comment Period and Associated Actions
 - c. Wilton-specific Capabilities
2. **2016 Mitigation Strategies**
3. **Other**

Attachments:

1. Wilton 2016 Mitigation Strategies
2. STAPLEE Reference Sheet
3. Wilton Capabilities Text

**HMP Followup Meeting
December 15, 2014
11:00 AM - Wilton**

Name:	Title:	Municipality:	E-mail and Phone:
Michael Towle	Regional Planner	WCCOG	—
Rob Suchman	Sr. Regional Planner	WCCOG / SWRAA	
John Dennis	Senior Planner	Wilton	
Dan K... ...	Chief	Wilton	
Mark	Wilton	

Appendix A-3
Outreach Strategy

Appendix A-3.1
Stakeholder and Public Engagement

Hazard Mitigation Survey Outreach

FOR IMMEDIATE RELEASE – November 10, 2014

CONTACT: Rob Sachnin – Senior Regional Planner
Western Connecticut Council of Governments (WCCOG)
South Western Regional Planning Agency (SWRPA)
(203) 316-5190

Now Available: Natural Hazard Survey for South Western Region

A Natural Hazard Survey has just been released to solicit public feedback regarding natural hazards in the South Western Region. The survey aims to identify the natural hazards of greatest public concern, including vulnerable locations and potential mitigation opportunities.

The Western Connecticut Council of Governments (WCCOG, formerly SWRPA) is issuing this survey in conjunction with its ongoing Hazard Mitigation Plan (HMP) efforts, a key planning document which keeps participating municipalities eligible for many types of Federal Emergency Management Agency (FEMA) funding. The eight HMP municipalities include: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton.

South Western Connecticut has experienced an array of extreme weather events in recent years. The resulting damage and financial impacts have spurred a sense of urgency to increase resilience to such natural hazards. WCCOG, its municipalities and key stakeholders have worked tirelessly to better prepare the area, and seek public input to ensure adequate preparedness for future disasters.

Survey results will be utilized to help protect the region against the impacts of extreme weather and climate change, providing emergency responders and key decision maker's greater understanding of public perception to natural hazards, including vulnerabilities. This information is vital, and provides opportunities to more effectively target outreach and education efforts in local communities, while also confirming critical vulnerable areas suitable for mitigation measures. Such efforts increase overall public safety, reduce vulnerability to key assets and infrastructure, while also reducing human and financial impacts associated with natural disasters, consistent with HMP goals and objectives.

“A key component to natural hazard mitigation is getting the right people at the table. The Natural Hazard Mitigation Survey provides an unparalleled opportunity to cast a wider net and better involve the public.” said Robert Sachnin, Senior Regional Planner at WCCOG and HMP project manager. “These are the people who are directly affected by disasters, and it's important that their voices are heard. The public's feedback concurrently assists emergency responders, so it's really a win/win for the community.”

The survey can be found here:

https://docs.google.com/forms/d/1L2l_wL8TR9APXwAPIM9QPQDzL1HTTDwh7irFEngEc8Q/viewform?edit_requested=true

Additional HMP information found at WCCOG/SWRPA's website:

<http://www.swrpa.org/default.aspx?Regional=268>.

###

Robert Sachnin

From: Robert Sachnin
Sent: Monday, November 10, 2014 10:06 AM
To: 'nancy@nancyonnorwalk.com'; 'Tribuna Newspaper (tribunanews@gmail.com)'; 'ads@lavozhispanact.com'; 'Fairfield Minuteman (editor@fairfieldminuteman.com)'; 'Kaomi Goetz (kaomig@wshu.org)'; 'itsrelevant.com (support@itsrelevant.com)'; 'Connecticut Haitian Voice (admin@haitianvoice.com)'; 'Fairfield County Independent (advertising@fairfieldcountyind.com)'; 'Aaron Boyd (aaron@patch.com)'; 'Kathryn Hauser (khauser@news12.com)'; 'Melvin Mason (mmason@TheDailyNewCanaan.com)'; 'Kevin Zimmerman (kzimmerman@TheDailyWilton.com)'; 'Samantha Henry (shenry@TheDailyWeston.com)'; 'Vanessa Inzitari (vinzitari@TheDailyWestport.com)'; 'Norwalk Daily Voice (cdonahue@dailyvoice.com)'; 'Casey Donahue (cdonahue@dailyvoice.com)'; 'Stamford Daily Voice (FMacEachern@dailyvoice.com)'; 'Greenwich Daily Voice (FMacEachern@dailyvoice.com)'; 'Barbara Heins'; 'Barbara Heins (barbara.heins@patch.com)'; 'David Gurliacci'; 'Barbara Heins'; 'cathryn.j.prince'; 'David Gurliacci (david.gurliacci@patch.com)'; 'Harold F. Cobin (hcobin@snet.net)'; 'Ken Borsuk (kborsuk@greenwich-post.com)'; 'Greenwich Time City Desk (gtcitydesk@scni.com)'; 'Albert Yuravich (albert.yuravich@scni.com)'; 'Westport Now (editor@westportnow.com)'; 'David Gurliacci (david.gurliacci@patch.com)'; ' (editor@westportminuteman.com)'; 'Greenwich Post (editor@greenwich-post.com)'; 'Darien Times'; 'Ashley Varese (avarese@bcnnew.com)'; 'Martin Cassidy (martin.cassidy@scni.com)'; 'Wendy Corey (wendy.corey@coxradio.com)'; 'Jeremy Soulliere (jsoulliere@thehour.com)'; 'Fran Schneidau (fransch@optonline.net)'; 'Avery, Dominique (Dominique.Avery@cga.ct.gov)'; 'Moore, Jim (metro_hfd@metronetworks.com)'; 'Hour, The (news@thehour.com)'; 'jkram@nhregister.com'; 'kadden@nytimes.com'; 'rkoch@thehour.com'; 'Tony Savino (tony.savino@wgch.com)'; 'Weston Forum/Redding Pilot/Ridgefield (editor@thewestonforum.com)'; 'news12ct@news12.com'; 'features@nhregister.com'; 'peappl@nytimes.com'; 'newstips@nbc30.com'; 'nhutson@newstimes.com'; 'mnicefaro@conntact.com'; 'delucia@courant.com'; 'Gail Hunt (ghunt@wshu.org)'; 'Iproberg@news12.com'; 'Kirk Lang (jdoody@bcnnew.com)'; 'jschwing@ctpost.com'; 'Jeannette Ross (editor@wiltonbulletin.com)'; 'Greenwich Citizen (gcitizen@bcnnew.com)'; 'WGCHnews@aol.com'; 'Channel 3 News (newsdesk3@wfsb.com)'; 'WTNH Channel 8 (news8@wtnh.com)'; 'rvarnon@ctpost.com'; 'jonathan.lucas@scni.com'; 'News 12 (news12ct@news12.com)'; 'Jim Nash (jsoulliere@thehour.com)'
Cc: Michael Towle
Subject: **For Immediate Release** Release of South Western Region's Natural Hazard Mitigation Survey
Attachments: 14-1110_NaturalHazardSurvey_Media release.pdf

Good Morning,

Please publish the attached media release regarding the South Western Region's Natural Hazard Mitigation Survey. The survey is intended to solicit public feedback regarding natural hazards in the area, including those hazards of greatest concern, vulnerable areas, and possible opportunities for mitigation. Such efforts will be incorporated into the region's Hazard Mitigation Plan Update.

A link to the survey itself is provided below, as well as in the media release:

https://docs.google.com/forms/d/1L2l_wL8TR9APXwAPIM9QPQDzL1HTTDwh7irFEngEc8Q/viewform?edit_requested=true

Thank you for your assistance in this matter,

Robert Sachnin, AICP
Senior Regional Planner
Western CT Council of Governments (WCCOG)
South Western Regional Planning Agency (SWRPA)



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What Are the Natural Hazards in Wilton?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 10, 2014 at 8:28 am | ☐ | ☐



The effects of Superstorm Sandy and Hurricane Irene remain all too vivid in local residents' memories and many are still dealing with the impact of the storms.

The Western Connecticut Council of Governments (WCCOG, formerly the South Western Regional Plan Association) announced on Monday it is conducting a Natural Hazard Survey to solicit public feedback about natural hazards in the South Western Region of Fairfield County. The survey aims to identify the natural hazards of greatest public concern, including vulnerable locations and potential mitigation opportunities.

WCCOG is conducting the survey in conjunction with its ongoing Hazard Mitigation Plan (HMP) efforts, a key planning document which keeps participating municipalities eligible for many types of Federal Emergency Management Agency (FEMA) funding. The eight HMP municipalities include: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton.

South Western Connecticut has experienced an array of extreme weather events in recent years. The resulting damage and financial impacts have spurred a sense of urgency to increase resilience to such natural hazards. WCCOG, its municipalities and key stakeholders have worked to better prepare the area, and seek public input to ensure adequate preparedness for future disasters.

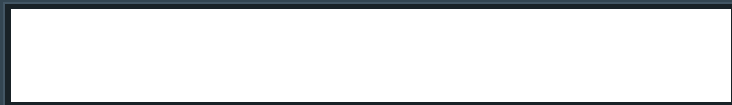
Survey results will be utilized to help protect the region against the impacts of extreme weather and climate change, providing emergency responders and key decision maker's greater understanding of public perception to natural hazards, including vulnerabilities. This information is vital, and provides opportunities to more effectively target outreach and education efforts in local communities, while also confirming critical vulnerable areas suitable for mitigation measures. Such efforts increase overall public safety, reduce vulnerability to key assets and infrastructure, while also reducing human and financial impacts associated with natural disasters, consistent with HMP goals and objectives.

"A key component to natural hazard mitigation is getting the right people at the table. The Natural Hazard Mitigation Survey provides an unparalleled opportunity to cast a wider net and better involve the public." said Robert Sachnin, Senior Regional Planner at WCCOG and HMP project manager. "These are the people who are directly affected by disasters, and it's important that their voices are heard. The public's feedback concurrently assists emergency responders, so it's really a win/win for the community."

The survey can be found here:

https://docs.google.com/forms/d/1L2l_wL8TR9APXwAPIM9QPQDzL1HTTDwh7irFEngEc8Q/viewform?edit_requested=true

Additional HMP information found at WCCOG/SWRPA's website: <http://www.swrpa.org/default.aspx?Regional=268>.



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WCCOG is conducting a consult in conjunction with a ongoing Hazard Mitigation Plan (HMP) efforts, a pivotal formulation request that keeps participating municipalities authorised for many forms of Federal Emergency Management Agency (FEMA) funding. The 8 HMP municipalities include: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton.

South Western Connecticut has gifted an array of impassioned continue events in new years. The resulting damage and financial impacts have spurred a clarity of coercion to boost resilience to such healthy hazards. WCCOG, a municipalities and pivotal stakeholders have worked to improved ready a area, and seek public submit to safeguard adequate preparedness for destiny disasters.

Survey formula will be employed to assistance strengthen a segment opposite a impacts of impassioned continue and climate change, providing puncture responders and pivotal preference maker's larger bargain of open notice to natural hazards, including vulnerabilities. This information is vital, and provides opportunities to some-more effectively target overdo and preparation efforts in internal communities, while also confirming vicious exposed areas suitable for slackening measures. Such efforts boost altogether open safety, revoke disadvantage to pivotal resources and infrastructure, while also shortening tellurian and financial impacts compared with healthy disasters, unchanging with HMP goals and objectives.

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"A pivotal member to healthy jeopardy slackening is removing a right people during a table. The Natural Hazard Mitigation Survey provides an forlorn event to expel a wider net and improved engage a public." said

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Robert Sachnin, Senior Regional Planner during WCCOG and HMP plan manager. "These are a people who are directly influenced by disasters, and it's critical that their voices are heard. The public's feedback concurrently assists puncture responders, so it's unequivocally a win/win for a community."

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<http://www.swrpa.org/default.aspx?Regional=268>.

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What Are the Natural Hazards in Weston?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 10, 2014 at 11:14 am | ☐ | ☐



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What Are the Natural Hazards in Stamford?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 10, 2014 at 8:26 am | ☐ | ☐



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What Are the Natural Hazards in Norwalk?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 11, 2014 at 8:36 pm | ☐ | ☐



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Additional HMP information found at WCCOG/SWRPA's website: <http://www.swrpa.org/default.aspx?Regional=268>.



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What Are the Natural Hazards in New Canaan?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 10, 2014 at 8:26 am | ☐ | ☐



The effects of Superstorm Sandy and Hurricane Irene remain all too vivid in local residents' memories and many are still dealing with the impact of the storms.

The Western Connecticut Council of Governments (WCCOG, formerly the South Western Regional Plan Association) announced on Monday it is conducting a Natural Hazard Survey to solicit public feedback about natural hazards in the South Western Region of Fairfield County. The survey aims to identify the natural hazards of greatest public concern, including vulnerable locations and potential mitigation opportunities.

WCCOG is conducting the survey in conjunction with its ongoing Hazard Mitigation Plan (HMP) efforts, a key planning document which keeps participating municipalities eligible for many types of Federal Emergency Management Agency (FEMA) funding. The eight HMP municipalities include: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton.

South Western Connecticut has experienced an array of extreme weather events in recent years. The resulting damage and financial impacts have spurred a sense of urgency to increase resilience to such natural hazards. WCCOG, its municipalities and key stakeholders have worked to better prepare the area, and seek public input to ensure adequate preparedness for future disasters.

Survey results will be utilized to help protect the region against the impacts of extreme weather and climate change, providing emergency responders and key decision maker's greater understanding of public perception to natural hazards, including vulnerabilities. This information is vital, and provides opportunities to more effectively target outreach and education efforts in local communities, while also confirming critical vulnerable areas suitable for mitigation measures. Such efforts increase overall public safety, reduce vulnerability to key assets and infrastructure, while also reducing human and financial impacts associated with natural disasters, consistent with HMP goals and objectives.

"A key component to natural hazard mitigation is getting the right people at the table. The Natural Hazard Mitigation Survey provides an unparalleled opportunity to cast a wider net and better involve the public." said Robert Sachnin, Senior Regional Planner at WCCOG and HMP project manager. "These are the people who are directly affected by disasters, and it's important that their voices are heard. The public's feedback concurrently assists emergency responders, so it's really a win/win for the community."

The survey can be found here:

https://docs.google.com/forms/d/1L2l_wL8TR9APXwAPIM9QPQDzL1HTTDwh7irFEngEc8Q/viewform?edit_requested=true

Additional HMP information found at WCCOG/SWRPA's website: <http://www.swrpa.org/default.aspx?Regional=268>.



Share your local photos on Patch #GreenwichPatch

What Are the Natural Hazards in Greenwich?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

Updated November 10, 2014 at 8:25 am



The effects of Superstorm Sandy and Hurricane Irene remain all too vivid in local residents' memories and many are still dealing with the impact of the storms.

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The survey can be found here:

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Additional HMP information found at WCCOG/SWRPA's website: <http://www.swrpa.org/default.aspx?Regional=268>.



Share your local photos on Patch ☐ #DarienCTPatch

What Are the Natural Hazards in Darien?

Residents can weigh in on a regional survey soliciting feedback on what natural hazards are of concern to them so towns can better prepare.

By Barbara Heins (Patch Staff)

☐ Updated November 11, 2014 at 3:29 pm | ☐ | ☐



The effects of Superstorm Sandy and Hurricane Irene remain all too vivid in local residents' memories and many are still dealing with the impact of the storms.

The Western Connecticut Council of Governments (WCCOG, formerly the South Western Regional Plan Association) announced on Monday it is conducting a Natural Hazard Survey to solicit public feedback about natural hazards in the South Western Region of Fairfield County. The survey aims to identify the natural hazards of greatest public concern, including vulnerable locations and potential mitigation opportunities.

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The survey can be found here:

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Additional HMP information found at WCCOG/SWRPA's website: <http://www.swrpa.org/default.aspx?Regional=268>.

Hazard Mitigation Workshop Outreach

Robert Sachnin

From: Robert Sachnin
Sent: Monday, October 20, 2014 10:12 AM
To: brigitte.ndikum-nyada@fema.dhs.gov; 'Marilyn.Hilliard@fema.dhs.gov'; 'Urbansky, Edward'; Gutowski, Teresa; 'Michaels, Karen'; 'eeb6@westchestergov.com'; David Hannon; 'Mark Hoover'; Mark Goetz
Cc: Floyd Lapp; Michael Towle; 'Adam W. Whelchel'; 'Amanda Ryan'; Patricia Payne; Donna Stone
Subject: South Western Region Hazard Mitigation Workshops
Attachments: 14-1008_Workshop Invitation Letter or Email.docx

Good Morning Everyone,

Hope you all had wonderful weekends. Please be advised that SWRPA/WCCOG has partnered with The Nature Conservancy (TNC) to conduct four Hazard Mitigation Workshops within the South Western Region. The groupings were based on a variety of factors, including comparable hazard profiles, geographic similarities and vulnerabilities, as well as previous working relationships/shared resources/services with respect to hazard mitigation. Below please find the Workshop dates and associated regions, all workshops will run from 8:45am to 1:30 pm:

- ***November 18, 2014:** New Canaan, Wilton, Weston – Wilton Town Hall, Meeting Room A
- ***November 24, 2014:** Darien, Norwalk, Westport – Norwalk Community Room 128, Norwalk City Hall
- **December 1, 2014:** Stamford – 6th Floor Safety Training Room, Stamford Government Center
- **December 18, 2014:** Greenwich – Town Hall Meeting Room, Greenwich Town Hall

*Although workshop contains multiple municipalities, each municipality will sit at their own table(s) so that their specific/individual municipal concerns and input are appropriately captured.

A sample invite is attached, to provide perspective on Workshop format and objectives. Lastly, those adjacent communities/regions have also been copied on this correspondence, and a representative is welcome to join the workshop so long as they RSVP, details are provided below:

RSVP Contact: Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

Thanks and feel free to reach out with any questions or concerns.

Best Regards,

Robert Sachnin, AICP
Senior Regional Planner
Western CT Council of Governments (WCCOG)
South Western Regional Planning Agency (SWRPA)
Telephone: (203) 316-5190
Direct: (203) 965-4971
Fax: (203) 316-4995
Email: Sachnin@swrpa.org

Robert Sachnin

From: Robert Sachnin
Sent: Monday, October 27, 2014 8:30 AM
To: 'Stephen G. Walko (stephen.walko@housegop.ct.gov)'; 'Thomas O'Dea (tom.odea@housegop.ct.gov)'; 'Dan Fox (Dan.Fox@cga.ct.gov)'; 'Toni.Boucher@cga.ct.gov'; 'Bruce Morris (Bruce.Morris@cga.ct.gov)'; 'Christopher Perone (Chris.Perone@cga.ct.gov)'; 'John McKinney (John.McKinney@cga.ct.gov)'; 'Tong William (William.Tong@cga.ct.gov)'; 'Jonathan Steinberg (Jonathan.Steinberg@cga.ct.gov)'; 'Honorable L. Scott Frantz (Scott.Frantz@cga.ct.gov)'; 'Terrie Wood (Terrie.Wood@cga.ct.gov)'; 'Gerald Fox (Gerald.Fox@cga.ct.gov)'; 'Carlo Leone (Carlo.Leone@cga.ct.gov)'; 'Kim Fawcett (Kim.Fawcett@cga.ct.gov)'; 'John Shaban (John.Shaban@housegop.ct.gov)'; 'Livvy Floren (Livvy.Floren@housegop.ct.gov)'; 'Richard Blumenthal (richard_blumenthal@blumenthal.senate.gov)'; 'Michael Molgano (Michael.Molgano@cga.ct.gov)'; 'Patricia Miller (Patricia.Miller@cga.ct.gov)'; 'Gail Lavielle'; 'Alfred Camillo (Fred.Camillo@cga.ct.gov)'; 'Robert B. Duff (Duff@senatedems.ct.gov)'
Cc: Floyd Lapp; Michael Towle; 'Adam W. Whelchel'
Subject: FEMA Funding and Hazard Mitigation
Attachments: 14-1008_Workshop Invitation Letter or Email.docx

Contacts: Stephen G. Walko - 150th District; Thomas O'Dea - 125th District; Daniel J. Fox - 148th District; Toni Boucher; Bruce V. Morris; Christopher Perone - District 137; John McKinney - 28th District; William Tong - 147th District; James Himes - (R) 4th District; Jonathan Steinberg - 136th District; Honorable L. Scott Frantz - 36th District; Terrie Wood - 141st District; Gerald M. Fox - 146th District; Carlo Leone - District 27; Kim Fawcett - 133rd District; John Shaban - 135th District; Livvy Floren - State Representative; Richard Blumenthal; Michael Molgano - 144th District (R); Patricia Miller - 145th District; Gail Lavielle - 143rd District; Alfred Camillo - 151st District; Robert B. Duff - 25th District

Good Morning Legislators,

As you know, the Hazard Mitigation Plan is a precursor to receiving many types of FEMA funding, which of course has been more critical than even in light of recent storm events such as Sandy and Irene.

SWRPA/WCCOG has partnered with The Nature Conservancy (TNC) and cordially invites you to attend one or more of a series of Hazard Mitigation Workshops in the South Western Region. The workshops serve to promote both intra- and inter-municipal coordination. A sample invite is attached, which provides perspective on Workshop format and objectives. Below please find the Workshop dates and associated regions, all workshops will run from 8:45am to 1:30 pm:

- ***November 18, 2014:** New Canaan, Wilton, Weston – Wilton Town Hall, Meeting Room A
- ***November 24, 2014:** Darien, Norwalk, Westport – Norwalk Community Room 128, Norwalk City Hall
- **December 1, 2014:** Stamford – 6th Floor Safety Training Room, Stamford Government Center
- **December 18, 2014:** Greenwich – Town Hall Meeting Room, Greenwich Town Hall

*Although workshop contains multiple municipalities, each municipality will sit at their own table(s) so that their specific/individual municipal concerns and input are appropriately captured.

We hope you can join us for this unprecedented hazard mitigation forum, a first for the region. If interested, please see RSVP information below:

RSVP Contact: Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

Thanks and feel free to reach out any questions or concerns.

Best Regards,

Robert Sachnin

From: Robert Sachnin
Sent: Tuesday, November 04, 2014 2:28 PM
To: 'Fromson, Roxane M'
Cc: Michael Towle
Subject: WCCOG/SWRPA Hazard Mitigation Workshops
Attachments: 14-1008_Workshop Invitation Letter or Email_Norwalk.docx

Good Afternoon Roxane,

Hope you are well and had a wonderful weekend. Mike and I wanted to personally let you know that we have partnered with The Nature Conservancy (TNC) to conduct four Hazard Mitigation Workshops within the South Western Region. We would welcome yourself and any other CTDOT representatives at any of the workshops. DEMHS Hazard Mitigation will be attending the 11/24 and 12/18. Below please find the Workshop dates and associated regions, all workshops will run from 8:45am to 1:30 pm:

- ***November 18, 2014:** New Canaan, Wilton, Weston – Wilton Town Hall, Meeting Room A
- ***November 24, 2014:** Darien, Norwalk, Westport – Norwalk Community Room 128, Norwalk City Hall
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A sample invite is attached, to provide perspective on Workshop format and objectives. RSVP details are provided below:

RSVP Contact: Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

Thanks and feel free to reach out with any questions or concerns!

Best Regards,

Robert Sachnin, AICP
Senior Regional Planner
Western CT Council of Governments (WCCOG)
South Western Regional Planning Agency (SWRPA)
Telephone: (203) 316-5190
Direct: (203) 965-4971
Fax: (203) 316-4995
Email: Sachnin@swrpa.org

Robert Sachnin

From: Robert Sachnin
Sent: Monday, October 20, 2014 3:45 PM
To: Kenny, Robert; christopher.ackley@ct.gov
Cc: 'DeLuca, Michele'; 'aschirillo@yahoo.com'
Subject: FW: South Western Region Hazard Mitigation Workshops
Attachments: 14-1008_Workshop Invitation Letter or Email.docx

Bob and Chris,

Hope you both are well, how's life? I wanted to pass the information below along to you as well. Considering your involvement in Region 1, you may find the workshops beneficial. RSVP contact information is provided below, and please do not hesitate to reach out with any questions or concerns.

Thanks and have a great day!

Best Regards,

Rob

From: Robert Sachnin
Sent: Monday, October 20, 2014 10:12 AM
To: brigitte.ndikum-nyada@fema.dhs.gov; 'Marilyn.Hilliard@fema.dhs.gov'; 'Urbansky, Edward'; Gutowski, Teresa; 'Michaels, Karen'; 'eeb6@westchestergov.com'; David Hannon; 'Mark Hoover'; Mark Goetz
Cc: Floyd Lapp; Michael Towle; 'Adam W. Whelchel'; 'Amanda Ryan'; Patricia Payne; Donna Stone
Subject: South Western Region Hazard Mitigation Workshops

Good Morning Everyone,

Hope you all had wonderful weekends. Please be advised that SWRPA/WCCOG has partnered with The Nature Conservancy (TNC) to conduct four Hazard Mitigation Workshops within the South Western Region. The groupings were based on a variety of factors, including comparable hazard profiles, geographic similarities and vulnerabilities, as well as previous working relationships/shared resources/services with respect to hazard mitigation. Below please find the Workshop dates and associated regions, all workshops will run from 8:45am to 1:30 pm:

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RSVP Contact: Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

Thanks and feel free to reach out with any questions or concerns.

Robert Sachnin

From: Robert Sachnin
Sent: Monday, November 03, 2014 12:28 PM
To: Nancy Upton
Cc: Michael Towle
Subject: New Canaan Hazard Mitigation Workshop
Attachments: 14-1008_Workshop Invitation Letter or Email_NewCanaan.docx

Good Afternoon Nancy,

Hope you are well, as a member of New Canaan CERT, Mike and I would like to formally invite you to an upcoming (11/18) Hazard Mitigation Workshop, details are attached.

If you can attend you can RSVP by simply replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative.

Thanks and talk soon,

Robert Sachnin, AICP
Senior Regional Planner
Western CT Council of Governments (WCCOG)
South Western Regional Planning Agency (SWRPA)
Telephone: (203) 316-5190
Direct: (203) 965-4971
Fax: (203) 316-4995
Email: Sachnin@swrpa.org

Robert Sachnin

From: David M. Reed, MD, MPH, MBA <drgadjet@yahoo.com>
Sent: Tuesday, November 04, 2014 2:14 PM
To: Michael Towle
Subject: Re: New Canaan Hazard Mitigation Workshop

I will not be able to attend.

In looking over the program it looks most appropriate for Mike Handler our Director of Emergency Preparedness.

DMR

David M. Reed,MD,MPH,MBA,FACS

46 Pequot Lane
New Canaan, CT 06840
Tel/FAX: (203) 966-1808
Cell: (203) 273-2224

From: Michael Towle <Towle@swrpa.org>
To: "DReedmd@gmail.com" <DReedmd@gmail.com>
Cc: Robert Sachnin <Sachnin@swrpa.org>
Sent: Tuesday, November 4, 2014 12:07 PM
Subject: New Canaan Hazard Mitigation Workshop

Good Afternoon Dr. Reed,

I Hope this email finds you well. The New Canaan Health Department is a key stakeholder during a natural disaster, and as such Rob and I would like to formally invite you to an upcoming (11/18) Hazard Mitigation Workshop (details are attached).

If you can attend you can RSVP by simply replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative.

Thanks and talk soon,

Michael Towle

Regional Planner
Western Connecticut Council of Governments (WCCOG formerly SWRPA)
888 Washington Blvd. 3rd Floor
Stamford CT 06901
Phone: (203) 965-4975
Email: towle@swrpa.org

Robert Sachnin

From: School House <SchoolHouse@ehmchm.org>
Sent: Wednesday, November 05, 2014 10:52 AM
To: Michael Towle
Subject: RE: New Canaan Hazard Mitigation Workshop Tuesday 11/18/2014

I'm planning on attending.

Tatiana De Jesus
Schoolhouse Apartments

From: Michael Towle [Towle@swrpa.org]
Sent: Tuesday, November 04, 2014 4:18 PM
To: School House
Cc: Robert Sachnin
Subject: New Canaan Hazard Mitigation Workshop Tuesday 11/18/2014

To School House Apartment Representatives,

Tatiana directed me to this email address and I hope it finds you well. I wanted to inform you of an upcoming hazard mitigation workshop for New Canaan. The workshop brings together municipal staff and community stakeholders to discuss natural disaster resilience and mitigation. The School House Apartments has been identified as a key stakeholder for natural disasters and we'd love to incorporate the senior housing perspective for hazard planning.

Rob and I would like to formally invite you to an upcoming (11/18) Hazard Mitigation Workshop, details are attached. If you can attend you can RSVP by replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative.

Don't hesitate to reach out to Rob or I if you have any questions.

Thanks and talk soon,

Michael Towle
Regional Planner
Western Connecticut Council of Governments (WCCOG formerly SWRPA)
888 Washington Blvd. 3rd Floor
Stamford CT 06901
Phone: (203) 965-4975
Email: towle@swrpa.org<mailto:towle@swrpa.org>

Robert Sachnin, AICP
Senior Regional Planner
Western CT Council of Governments (WCCOG) South Western Regional Planning Agency (SWRPA)
Telephone: (203) 316-5190
Direct: (203) 965-4971
Fax: (203) 316-4995
Email: Sachnin@swrpa.org<mailto:Sachnin@swrpa.org>

Robert Sachnin

From: Mike Behm <mbehm@silverhillhospital.org>
Sent: Tuesday, November 04, 2014 12:54 PM
To: Michael Towle
Subject: RE: New Canaan Hazard Mitigation Workshop

Did not find the attachment.

Mike Behm
Safety Officer
Silver Hill Hospital
203-801-2258
mbehm@silverhillhospital.org

From: Michael Towle [mailto:Towle@swrpa.org]
Sent: Tuesday, November 04, 2014 12:30 PM
To: Mike Behm
Cc: Robert Sachnin
Subject: RE: New Canaan Hazard Mitigation Workshop

Good Afternoon Mike,

Hope you are well, I wanted to follow up with the message I left you and provide some more info on this hazard mitigation workshop. The town of New Canaan has identified Silver Hill Hospital as a key asset and stakeholder in the case of Natural Disaster, so Rob and I would like to formally invite you to an upcoming (11/18) Hazard Mitigation Workshop, details are attached.

If you can attend you can RSVP by simply replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative. If you have any questions don't hesitate to call or email me.

Thanks and talk soon,

Michael Towle

Regional Planner

Western Connecticut Council of Governments (WCCOG formerly SWRPA)

888 Washington Blvd. 3rd Floor

Stamford CT 06901

Phone: (203) 965-4975

Email: towle@swrpa.org

Robert Sachnin, AICP

Senior Regional Planner

Western CT Council of Governments (WCCOG)

South Western Regional Planning Agency (SWRPA)

Telephone: (203) 316-5190

Direct: (203) 965-4971

Fax: (203) 316-4995

Robert Sachnin

From: Dennis Huntley <dhuntley@waveny.org>
Sent: Tuesday, November 04, 2014 4:38 PM
To: Michael Towle; awhelchel@tnc.org
Cc: Robert Sachnin; Ron Bucci
Subject: RE: New Canaan Hazard Mitigation Workshop

Good afternoon Michael and Adam,
It would be my pleasure to attend this workshop. I look forward to meeting other community members and discussing this very important issue.
Thank you for your cordial invitation.
Sincerely,

Dennis K. Huntley
Director of Facility Operations
Waveny Health Care Center
3 Farm Rd.
New Canaan, CT 06840
Dhuntley@waveny.org
Office: 203-594-5210
Cell: 203-604-3541



From: Michael Towle [mailto:Towle@swrpa.org]
Sent: Tuesday, November 04, 2014 4:04 PM
To: Dennis Huntley
Cc: Robert Sachnin
Subject: New Canaan Hazard Mitigation Workshop

Good Afternoon Dennis Huntley,

I Hope this email finds you well. This is the follow up to the voicemail I left in regards to the New Canaan Hazard Mitigation Workshop. The workshops bring together municipal staff and community stakeholders to discuss natural disaster resilience and mitigation. The Waveny Care Center has been identified as a key stakeholder for natural disasters and we'd love to incorporate the Waveny LifeCare perspective for hazard planning.

Rob and I would like to formally invite you to an upcoming (11/18) Hazard Mitigation Workshop, details are attached. If you can attend you can RSVP by replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative.

Don't hesitate to reach out to Rob or I if you have any questions.

Thanks and talk soon,

Michael Towle

Robert Sachnin

From: Michael Towle
Sent: Thursday, November 06, 2014 2:26 PM
To: 'Michaels, Karen'; Ifkovic, Diane
Cc: Sattler, David; Robert Sachnin
Subject: RE: attendance at the 11/18 and 11/24 planning meetings

Hello Karin and Diane,

I'm so excited that you can make it for the 11/18/2014 Hazard Mitigation workshop (and Diane for the 11/24 as well)! Your expertise and experience in all things "natural hazard" is going to be a huge asset to the workshops. Thank you so much for RSVP'ing. Rob and I look forward to seeing you there!

Best,

Michael Towle
Phone: (203) 965-4975
Email: towle@swrpa.org

From: Michaels, Karen [<mailto:Karen.Michaels@ct.gov>]
Sent: Thursday, November 06, 2014 12:34 PM
To: Michael Towle
Cc: Ifkovic, Diane; Sattler, David
Subject: attendance at the 11/18 and 11/24 planning meetings

Hi Michael,

Thank you for the invitation to attend your series of planning meetings for you HMP Update. Diane and I will be attending the 11/18/14 meeting and Diane will also attend the 11/24/14 meeting.

Looking forward to seeing all of you at the former SWRPA and attending the meeting.

Sincerely,

Karen

Karen A. Michaels
Environmental Analyst/Risk MAP Coordinator
Flood Management
Inland Water Resources Division
Bureau of Water Protection and Land Reuse
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127
P: 860.424.3779 | F: 860.424.4054 | E: karen.michaels@ct.gov

Robert Sachnin

From: Michael Towle
Sent: Tuesday, November 25, 2014 9:52 AM
To: lissette.andino@nu.com
Cc: Robert Sachnin
Subject: RE: Hazard Mitigation Workshops

Good morning Lissette,

I hope this message finds you well. We missed you at yesterday's workshop and I meant to follow up and ask, 'which Monday you were referring to?' If you have the opportunity, next Monday, Dec 1st is the Stamford Hazard Mitigation Workshop and we'd love to have you there.

I've reposted the details for our remaining workshops below, please feel free to reach out if you have any questions,

3. Monday 12/1/2014 w/ Stamford @ Stamford Government Center, 6th Floor Safety Training Room
4. Thursday 12/18/2014 w/ Greenwich @ Greenwich Town Hall, Town Hall Meeting Room

Sincerely,

Michael Towle
Phone: (203) 965-4975
Email: towle@swrpa.org

From: lissette.andino@nu.com [mailto:lissette.andino@nu.com]
Sent: Friday, November 21, 2014 11:36 AM
To: Michael Towle
Subject: Re: Hazard Mitigation Workshops

Hi Michael,

I am available to attend part of the workshop on Monday. See you there.

Warmest Regards,
Lissette

Lissette Andino

Manager, Community Relations and Economic Development-Connecticut | Northeast Utilities |
PO Box 270, Hartford, CT 06146 | ☎ 203.845.3466(office) | ☎ 203.845.3622(fax) | ☎ 203.733.4547(cell)
✉ Lissette.andino@nu.com □ www.ct-p.com □ www.yankeegas.com □ www.nu.com

From: Michael Towle <Towle@swrpa.org>
To: Lissette Andino/NUS@NU, Tracey V. Alston/NUS@NU,
Cc: Robert Sachnin <Sachnin@swrpa.org>
Date: 11/04/2014 03:51 PM
Subject: Hazard Mitigation Workshops

Good Afternoon Lissette and Tracey,

I Hope this email finds you well. This is the follow up to the voicemail I left in regards to the Hazard Mitigation Workshops we're hosting for the South West Region. The workshops bring together municipal staff and community stakeholders to discuss natural disaster resilience and mitigation. We'd love to have North East Utilities represented at one or more of the workshops.

The dates of the workshops are:

1. Tuesday 11/18/2014 w/ New Canaan, Wilton, and Weston @ Wilton Town Hall, Meeting Room A
2. Monday 11/24/2014 w/ Darien, Norwalk, Westport @ Norwalk City Hall, Norwalk Community Room 128
3. Monday 12/1/2014 w/ Stamford @ Stamford Government Center, 6th Floor Safety Training Room
4. Thursday 12/18/2014 w/ Greenwich @ Greenwich Town Hall, Town Hall Meeting Room

I suspect first workshop on the list would be a good fit, since these towns are more remote and less resilient to power outages.

I've attached a flyer for the 11/18 workshop. If you can attend you can RSVP by replying to this e-mail and stating your intentions to go. If you cannot make it, please feel free to send a representative.

Don't hesitate to reach out to Rob or I if you have any questions.

Thanks and talk soon,

Michael Towle

Regional Planner

Western Connecticut Council of Governments (WCCOG formerly SWRPA)

888 Washington Blvd. 3rd Floor

Stamford CT 06901

Phone: (203) 965-4975

Email: towle@swrpa.org

Robert Sachnin, AICP

Senior Regional Planner

Western CT Council of Governments (WCCOG)

South Western Regional Planning Agency (SWRPA)

Telephone: (203) 316-5190

Direct: (203) 965-4971

Fax: (203) 316-4995

Email: Sachnin@swrpa.org

[attachment "14-1008_Workshop Invitation Letter or Email2.docx" deleted by Lissette Andino/NUS]

Robert Sachnin

From: Michael Towle
Sent: Friday, November 14, 2014 12:01 PM
To: tracey.alston@nu.com
Cc: Robert Sachnin
Subject: RE: Hazard Mitigation Workshops

Greetings Tracey,

I hope you are having a sunny fall day.

Our first hazard workshop is nearly upon us for Tuesday 11/18/2014 @ Wilton Town Hall, Meeting Room A and I wanted to follow up on our conversation about having potential North East Utilities' representatives for the event. NE Utilities would be strong asset to these workshops.

I hope to hear from you soon.

Sincerely,

Mike Towle
Regional Planner
WCCOG (Formerly [SWRPA](#) and [HVCEO](#))
Direct Line: 203-965-4975
Email: towle@swrpa.org

From: Michael Towle
Sent: Tuesday, November 04, 2014 3:51 PM
To: Lissette.andino@NU.com; tracey.alston@nu.com
Cc: Robert Sachnin
Subject: Hazard Mitigation Workshops

Good Afternoon Lissette and Tracey,

I Hope this email finds you well. This is the follow up to the voicemail I left in regards to the Hazard Mitigation Workshops we're hosting for the South West Region. The workshops bring together municipal staff and community stakeholders to discuss natural disaster resilience and mitigation. We'd love to have North East Utilities represented at one or more of the workshops.

The dates of the workshops are:

1. Tuesday 11/18/2014 w/ New Canaan, Wilton, and Weston @ Wilton Town Hall, Meeting Room A
2. Monday 11/24/2014 w/ Darien, Norwalk, Westport @ Norwalk City Hall, Norwalk Community Room 128
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Website Screen Capture: Hazard Mitigation Survey Overview and RSVP info

Hazard Mitigation Workshops (*NEW!*)

SWRPA has partnered with The Nature Conservancy (TNC) to conduct Hazard Mitigation Workshops for the region and each municipality. Workshop objectives seek to:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

The workshops will run from 8:45am to 1:30pm. The dates, locations, involved municipalities, and RSVP details are included below:

- ***November 18, 2014:** New Canaan, Wilton, Weston – Wilton Town Hall, Meeting Room A
- ***November 24, 2014:** Darien, Norwalk, Westport – Norwalk Community Room 128, Norwalk City Hall
- **December 1, 2014:** Stamford – 6th Floor Safety Training Room, Stamford Government Center
- **December 18, 2014:** Greenwich - Town Hall Meeting Room, Greenwich Town Hall

*Although workshop contains multiple municipalities, each municipality will sit at their own table(s) so that their specific/individual municipal concerns and input are appropriately captured.

RSVP: Dr. Adam Whelchel; 860-970-8442 or awhelchel@tnc.org

Space is limited, so please RSVP as soon as possible

Robert Sachnin

From: Robert Sachnin
Sent: Friday, November 14, 2014 2:29 PM
To: 'nancy@nancyonnorwalk.com'; 'Tribuna Newspaper (tribunanews@gmail.com)'; 'ads@lavozhispanact.com'; 'Fairfield Minuteman (editor@fairfieldminuteman.com)'; 'Kaomi Goetz (kaomig@wshu.org)'; 'itsrelevant.com (support@itsrelevant.com)'; 'Connecticut Haitian Voice (admin@haitianvoice.com)'; 'Fairfield County Independent (advertising@fairfieldcountyind.com)'; 'Aaron Boyd (aaron@patch.com)'; 'Kathryn Hauser (khauser@news12.com)'; 'Melvin Mason (mmason@TheDailyNewCanaan.com)'; 'Kevin Zimmerman (kzimmerman@TheDailyWilton.com)'; 'Samantha Henry (shenry@TheDailyWeston.com)'; 'Vanessa Inzitari (vinzitari@TheDailyWestport.com)'; 'Norwalk Daily Voice (cdonahue@dailyvoice.com)'; 'Casey Donahue (cdonahue@dailyvoice.com)'; 'Stamford Daily Voice (FMacEachern@dailyvoice.com)'; 'Greenwich Daily Voice (FMacEachern@dailyvoice.com)'; 'Barbara Heins'; 'Barbara Heins (barbara.heins@patch.com)'; 'David Gurliacci'; 'Barbara Heins'; 'cathryn.j.prince'; 'David Gurliacci (david.gurliacci@patch.com)'; 'Harold F. Cobin (hcobin@snet.net)'; 'Ken Borsuk (kborsuk@greenwich-post.com)'; 'Greenwich Time City Desk (gtcitydesk@scni.com)'; 'Albert Yuravich (albert.yuravich@scni.com)'; 'Westport Now (editor@westportnow.com)'; 'David Gurliacci (david.gurliacci@patch.com)'; ' (editor@westportminuteman.com)'; 'Greenwich Post (editor@greenwich-post.com)'; 'Darien Times'; 'Ashley Varese (avarese@bcnnew.com)'; 'Martin Cassidy (martin.cassidy@scni.com)'; 'Wendy Corey (wendy.corey@coxradio.com)'; 'Jeremy Soulliere (jsoulliere@thehour.com)'; 'Fran Schneidau (fransch@optonline.net)'; 'Avery, Dominique (Dominique.Avery@cga.ct.gov)'; 'Moore, Jim (metro_hfd@metronetworks.com)'; 'Hour, The (news@thehour.com)'; 'jkram@nhregister.com'; 'kadden@nytimes.com'; 'rkoch@thehour.com'; 'Tony Savino (tony.savino@wgch.com)'; 'Weston Forum/Redding Pilot/Ridgefield (editor@thewestonforum.com)'; 'news12ct@news12.com'; 'features@nhregister.com'; 'peappl@nytimes.com'; 'newstips@nbc30.com'; 'nhutson@newstimes.com'; 'mnicefaro@contact.com'; 'delucia@courant.com'; 'Gail Hunt (ghunt@wshu.org)'; 'lproberg@news12.com'; 'Kirk Lang (jdoody@bcnnew.com)'; 'jschwing@ctpost.com'; 'Jeannette Ross (editor@wiltonbulletin.com)'; 'Greenwich Citizen (gcitizen@bcnnew.com)'; 'WGCHnews@aol.com'; 'Channel 3 News (newsdesk3@wfsb.com)'; 'WTNH Channel 8 (news8@wtnh.com)'; 'rvarnon@ctpost.com'; 'jonathan.lucas@scni.com'; 'News 12 (news12ct@news12.com)'; 'Jim Nash (jsoulliere@thehour.com)'
Cc: Michael Towle
Subject: **For Media Only: Hazard Mitigation Workshop Invitation**

Good Afternoon,

You are invited to four upcoming South Western Region Hazard Mitigation Workshops. Specific time has been reserved for media interviews, and you are welcomed to also capture footage of the workshops, or interview participants.

1. **Tuesday 11/18/2014 w/ New Canaan, Wilton, Weston @ Wilton Town Hall, Meeting Room A**
(Interview times 8:30am-9:00am & after 1:30pm)
2. **Monday 11/24/2014 w/ Norwalk, Darien, Westport @ Norwalk City Hall, Norwalk Community Room 128** (8:30am-9:00am & after 1:15pm)
3. **Monday 12/1/2014 w/ Stamford @ Stamford Government Center, 6th Floor Safety Training Room**
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4. **Thursday 12/18/2014 w/ Greenwich @ Greenwich Town Hall, Town Hall Meeting Room** (Interview times 8:30am-9:00am & after 1:30pm)

The workshops seek to bring municipalities and key stakeholders to the table to discuss natural hazard risks, vulnerable areas, and potential opportunities for mitigation.

Thanks and hope you see you there,

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MENU



Area towns identify natural hazards

By [Jeanette Ross](#) and [Kimberly Donnelly](#) on November 26, 2014 in [Land Use](#) · 0 Comments

About author



[Jeanette Ross](#) and [Kimberly Donnelly](#)

Flooding, high winds, severe storms — all are serious hazards affecting Weston and neighboring towns.

To get a handle on the most serious problems, the Western Connecticut Council of Governments (WCCOG) is updating the Hazard Mitigation Plan used by towns in its region. The council includes the former Southwestern Regional Planning Agency (SWRPA), and it is managing the multi-jurisdictional plan required by the Federal Emergency Management Agency (FEMA). This plan keeps participating municipalities eligible for many types of FEMA funding, and it must be updated every five years.

Representatives from New Canaan, Weston and Wilton — including representatives from police, fire, planning, and environmental affairs — as well as the Nature Conservancy, the state Department of Energy and Environmental Protection (DEEP), Northeast Utilities, and South Norwalk Electric & Water (SNEW) gathered for a four-hour workshop in Wilton on Tuesday, Nov. 18. Also stopping in for a portion of the meeting was state Sen. Toni Boucher (R-26).

Robert Sachnin, a regional planner with WCCOG, said the focus of Tuesday's workshop was to "identify hazards and vulnerabilities" facing the towns and "how to mitigate and safeguard against those hazards."

Weston contingent

The Weston contingent consisted of Tracy Kulikowski, the town's land use director; Tom Failla, chairman of the Planning and Zoning Commission and a former Conservation Commission chairman; Fire Marshal and Chief John Pokorny; resident and planning expert Margaret Wirtenberg; and Cynthia Fawx, director of the Nature Conservancy's Devil's Den Preserve in Weston.

Ms. Kulikowski said the workshop was very productive, and helped town leaders identify top priority hazards and how to mitigate them. Grouping the three similar towns together was also helpful, she said, because they often experience similar issues.



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For Weston, Ms. Kulikowski said, those priorities included “anything that brings trees onto power lines,” such as wind, flooding, and severe storms, and onto local roads and the Samuel Senior Dam at the Saugatuck Reservoir.

Ms. Kulikowski said the Weston representatives’ strategies for dealing with these hazards included:

- The need for a more robust generator capable of powering the entire center of town, including town hall, the library, emergency services, at least some school facilities for use as an emergency shelter, and the commercial shopping center.
- Maintaining existing and identifying locations for new dry hydrants throughout town. Ms. Kulikowski said she believes the town needs to start thinking of these as “capital improvements” since the town is obligated to maintain them, even if they are on private property.
- Comprehensively looking at all town roads, including the 305 or so that are privately maintained. Part of that effort is making sure CL&P continues roadside tree maintenance. Ms. Kulikowski said she believes the highway department could benefit from using GIS (geographic information system) technology currently being developed for the town.
- Maintaining and expanding the volunteer Neighborhood Captain program, where individuals sign up to be responsible for communication in small neighborhood areas throughout town. Ms. Kulikowski said it might be time for the town to offer IT and Web support. “The other towns were definitely impressed with the amount of volunteer efforts in town,” Ms. Kulikowski said.

She said her biggest realization was the importance of providing power to the town center. Not only do people need a place to gather socially and to charge electronic devices, as they have in the past at town hall, she said, but the commercial center provides groceries and a pharmacy and can meet other essential needs, she said.

Public input

Part of the effort to update the Hazard Mitigation Plan — which was last updated in 2011 — includes a Natural Hazard Survey that seeks public feedback regarding natural hazards of greatest concern to area residents, including vulnerable locations and potential mitigation opportunities.

Survey results will be used to help protect the region against the impacts of extreme weather and climate change, providing emergency responders and key decision makers greater understanding of public perception of natural hazards, including vulnerabilities.

“It’s all connected,” Mr. Sachnin said of the workshop, survey, and other aspects of the plan. “The survey gives us the opportunity to cast a wider net, to learn things you can’t get at public meetings.

“These are the people who are directly affected by disasters, and it’s important that their voices are heard,” he said. “The public’s feedback concurrently assists emergency responders, so it’s really a win/win for the community.”

The survey will be available into January online at swrpa.org.



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The current Hazard Mitigation Plan is also available at swrpa.org.

Ms. Kulikowski said Weston officials, including those who attended the workshop and the first selectman, the town engineer, and the emergency management director, will meet together to review the Hazard Mitigation Plan and the new strategy suggestions. They will identify low, medium, and high priorities, long- and short-range goals, etc.

Each town is expected to have a draft plan to present to the whole group of former SWRPA members by February 2015.

In addition to Weston, Wilton, and New Canaan, the other municipalities involved in this plan are Darien, Greenwich, Norwalk, Stamford, and Westport.

A draft of the updated plan is expected to be completed next spring and submitted to FEMA in the summer of 2015. It will go into effect July 1, 2016.

Tags: [dept of energy and environmental protection](#), [flood](#), [hazard mitigation plan](#), [natural hazards](#), [nature conservancy](#), [regional highlight](#), [storm](#), [wccog](#), [Western Connecticut Council of Governments](#), [winds](#)



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Area towns seek to identify natural hazards, responses

by Jeannette Ross and Kimberly Donnelly
editor@theWestonForum.com

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See Hazards on page 11A

Hazards

Continued from Page 1A

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Volunteer of the Year
A Weston man is recognized by the USTA. —Page 8A



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"Piglet noticed that even though he had a Very Small Heart, it could hold a rather large amount of Gratitude." —A.A. Milne, 'Winnie-the-Pooh'

45TH YEAR, NO. 48

Wednesday, Nov. 26, 2014



Weston and area towns seek to identify natural hazards, responses

By [Jeannette Ross](#) on November 19, 2014 in [Latest News](#) · [0 Comments](#)

About author



[Jeannette Ross](#)



File photo, 2012 —Stephan Grozinger photo

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Tags: [DEEP](#), [FEMA](#), [hazard mitigation](#), [natural hazard survey](#), [regional highlight](#), [regional planning](#), [SWRPA](#), [wccog](#), [weston](#)



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Nette Ross

Area towns seek to identify natural hazards, responses

They invites public input

Nette Ross on November 18, 2014 in [Clubs & Organizations](#), [Connecticut](#), [Town Meetings](#) · 0 Comments



A tree knocked down by Superstorm Sandy damages a home.

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Robert Sachnin, a regional planner with the WCCOG, said the focus of

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Tags: [council of governments](#), [FEMA](#), [natural disasters](#), [swrpa](#), [WCCOG](#), [wilton](#)

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What are the region's worst natural hazards?

Western CT council wants public input on survey

By [Weston Forum](#) on November 15, 2014 in [Connecticut](#), [Latest News](#) · [0 Comments](#)

About author



Weston Forum



A Natural Hazard Survey has been released to solicit public feedback regarding natural hazards in the state's southwestern planning region. The survey aims to identify the natural hazards of greatest public concern, including vulnerable locations and potential mitigation opportunities.

The Western Connecticut Council of Governments (WCCOG, formerly SWRPA) is issuing the survey in conjunction with its ongoing Hazard Mitigation Plan (HMP) efforts, a key planning document that keeps participating municipalities eligible for many types of Federal Emergency Management Agency (FEMA) funding.

The eight HMP municipalities include Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton.

Southwestern Connecticut has experienced an array of extreme weather events in recent years. The resulting damage and financial impacts have spurred a sense of urgency to increase resilience to such natural hazards.

WCCOG, its municipalities, and key stakeholders have worked to better prepare the area, and seek public input to ensure adequate preparedness for



future disasters.


Survey results will be used to help protect the region against the impacts of extreme weather and climate change, providing emergency responders and key decision makers greater understanding of public perception of natural hazards, including vulnerabilities.

This information is vital, and provides opportunities to more effectively target outreach and education efforts in local communities, while also confirming critical vulnerable areas suitable for mitigation measures. Such efforts increase overall public safety and reduce vulnerability of key assets and infrastructure, while also reducing human and financial impacts associated with natural disasters, consistent with HMP goals and objectives.

"A key component to natural hazard mitigation is getting the right people at the table. The Natural Hazard Mitigation Survey provides an unparalleled opportunity to cast a wider net and better involve the public," said Robert Sachnin, senior regional planner at WCCOG and HMP project manager. "These are the people who are directly affected by disasters, and it's important that their voices are heard. The public's feedback concurrently assists emergency responders, so it's really a win-win for the community."

The survey may be found online at WCCOG/SWRPA's website, swrpa.org.

Tags: [COG](#), [mitigation](#), [natural hazards](#), [regional highlight](#), [Sachnin](#), [survey](#), [wccog](#), [Western Connecticut Council of Governments](#)

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Kate Stein — ya i think this is the freida hecht of circle of friends. she has an amazing range of programs already ...

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Victor Diaz — Congrats to the Trojans,

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Appendix A-3.2
Hazard Mitigation Workshops

**New Canaan, Wilton, Weston Hazard Mitigation Workshop
November 18, 2014**

TOWN of WESTON, CONNECTICUT



Incorporated 1787

Office of the First Selectman

October 21, 2014

Dear Weston Community Member,

Given recent storms like Sandy and Irene, we now find ourselves in a new era of more unpredictable and severe weather that can potentially cause more damage to our community.

In order to be as proactive as we can in preparing and protecting our community, I would like to invite you to join me at a free half-day hazards and community resilience workshop on **Tuesday, November 18, 2014**. The workshop will take place from 8:45 am to 1:30 pm in **Meeting Room A, Wilton Town Hall, 238 Danbury Rd, Wilton, CT**. Coffee, a light breakfast, and lunch will be provided.

The Nature Conservancy is partnering with the South Western RPA / Western Connecticut COG to offer this timely workshop to bring together members of our community like you to work together to help identify and prioritize steps to reduce risk and improve resilience in our community. These workshops will assist all of us in better community planning and hazard mitigation efforts.

The *11/18/2014* Workshop Objectives are:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

Please RSVP for the November 18, 2014 workshops as soon as possible to the Nature Conservancy's Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

I hope you or a designee can join me at these important workshops. Thank you for your consideration!

Sincerely,

A handwritten signature in blue ink that reads "Gayle Weinstein". The signature is written in a cursive style with a long horizontal flourish at the end.

Gayle Weinstein
Town of Weston, First Selectman

Hazards and Community Resilience Workshop

Name	Affiliation	Title	Phone	Email
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Don Scerbo	CHTP	Acct Exec	845-3646	scerbd@nu.com
LASZLO PAPP	NC-P&L	Chair	203 966-1542	ppappard@aol.com
Mark Amatrudo	Wilton EMS +	Deputy Fire Ch.	203-834-6296	mark.amatrudo@wiltonct.org
Bill Brennan	T. OF WILTON	First Sel.	203-563-0100	—
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Mike Towle	WCCOG	Regional Planner	—	towle.mpegmail.com
Gail Lavelle	Wilton State Rep. (4)	State Rep 143rd	203-762-7373	gail.lavelle@ct.gov
Toni Boucher	Wilton, New Canaan, Weston, Westport, Redding, Bethel & Ridgefield	STATE Senator	203-762-3232	Toni.Boucher@ct.gov
Diane Ifkovic	CT DEEP	state WFIP (Coordinator)	860-424-3537	diane.ifkovic@ct.gov
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Jack Majaski	Wilton CERT			
Tom Conlan	Wilton PD	Lieutenant	203 834-6329	Tommas.Conlan@wiltonct.org
TIGER MAN	New Canaan	ASSISTANT DIRECTOR	203 594-3056	NGERMAN@NEWCAANCT.GOV

Mitigation Strategy:

~~PROTECT~~ ENHANCE ^{SERVICES TO} ~~AREAS~~ of AT-RISK POPULATION

Hazards Addressed:

ALL

WCCOG &



Responsible Party:

EMD, HHS, GOVT. AGENCY

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?			✓	
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source: GRANTS, GEN. FUND/TOWN BUDGET

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy:

IMPROVE EMERGENCY ACCESS/TRANSPORTATION

Hazards Addressed:

WIND, SNOW, ICE

Responsible Party:

DPW + CL+P

WCCOG &



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?		✓		
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?		✓		

Potential Funding Source:

FEMA, TOWN GEN FUND

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: ENHANCE RESILIENCY OF POWER GRID
 Hazards Addressed: POWER LOSS DUE TO SNOW ICE WIND
 Responsible Party: TOWN + CL+P + BOE

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?			✓	
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: GRANTS, RATEPAYERS, TAXPAYERS

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Weston

Mitigation Strategy: Upgrade Critical Facilities (Public & Private)

Hazards Addressed: Wind, Flooding, Severe Storms

Responsible Party: BOS | Weston Shopping Center



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?			✓	✓
Legal	Is there state and legal authority to implement this strategy?			✓	✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓		✓	
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source: Capital Budget | Private | Grant Funding | Safety Bond

Aprox. Cost	> \$500k	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	3-5 years	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Societal Infrastructure	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Weston

Mitigation Strategy: Improve Emergency access + Safety on all roads + D.S.

Hazards Addressed: All



Responsible Party: Town / State / CL&D / Private

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits? <u>Public safety!</u>				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem? <u>Analysis likely</u>				<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy? <u>(requires partners)</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy <u>Analysis</u>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Environmental	Are there primarily environmental benefits associated with the strategy?	<input checked="" type="checkbox"/>			

Potential Funding Source: WCCOG Support?

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>3-5 yrs</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	<u>Infrastructure</u>	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Improve Community Communication

Hazards Addressed: All

Responsible Party: Town; Downken Neighborhood Captains



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?			✓	✓
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	✓

Potential Funding Source: IT NOVS | support town operating | fund raising

Aprox. Cost	<u>\$5-25k</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>1 year</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	<u>Societal</u>	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Development of Capital Imp Plan for Fire ponds/Hydrants
 Hazards Addressed: Wind (trees); Floods; Severe Storms
 Responsible Party: WCCOG & The Nature Conservancy



Responsible Party: Leah Piz; FP; Town Eng; BOS; PW; Cons.

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	✓
Political	Is there public and political support for this strategy?			✓	✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: <u>Capital Budget</u>					
Aprox. Cost	<u>\$ 100-500k</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>over 5 years</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	<u>Infrastructure / Planning</u>	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Weston

Mitigation Strategy: Receive + review + recommendations for 7 Assisted Living

Hazards Addressed: ALL

Responsible Party: Emergency Management Director with UMD



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical	Will the strategy solve the problem?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Political	Is there public and political support for this strategy?		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potential Funding Source: FEMA, DEMHS, town

Aprox. Cost	<u>100,000k</u>	\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Aprox. Time Line	<u>1-3 annual reporting</u>	Annually	< 1-year	<u>1-3 years</u>	>3 years*
Strategy Type		Infrastr.	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Assess Overpass currently → Mitigate

Hazards Addressed: Flooding

Responsible Party: DOT

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

← Funding source
Regional
make or
break

Potential Funding Source: FEMA FHW/ConDOT, Army Corps of Eng.

Aprox. Cost	<u>Assessment 500k → 10 m</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>5 or more</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mark on map

Wilton

Wilton

Mitigation Strategy: Merwyn Meadows Dam Dam Removal

Hazards Addressed: Flooding Dam Failure

Responsible Party: Town's Dam multiple department contractors



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?			✓	✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

= w/ Education

Potential Funding Source: State, Fed, Fish Wild life, EPA

Aprox. Cost	<u>2-3M</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>1-3 year</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	<u>Ecosys.</u>	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

**Darien, Norwalk, Westport Hazard Mitigation Workshop
November 24, 2014**



TOWN OF DARIEN
OFFICE OF THE SELECTMAN

JAYME J. STEVENSON
FIRST SELECTMAN

CHRISTOPHER P. (KIP) HALL
SUSAN J. MARKS
GERALD A. NIELSEN, JR.
E. REILLY TIERNEY

KARL F. KILDUFF
TOWN ADMINISTRATOR

November 4, 2014

Dear Darien Community Member,

Given recent storms like Sandy and Irene, we now find ourselves in a new era of more unpredictable and severe weather that can potentially cause more damage to our community.

In order to be as proactive as we can in preparing and protecting our community, I would like to invite you to join me at a free half-day hazards and community resilience workshop on *Monday, November 24, 2014*. The workshop will take place from 8:45 am to 1:30 pm in *Room 128 Community Room, Norwalk City Hall, 125 East Avenue, Norwalk CT*. Coffee, a light breakfast, and lunch will be provided.

The Nature Conservancy is partnering with the South Western RPA / Western Connecticut COG to offer this timely workshop to bring together members of our community like you to work together to help identify and prioritize steps to reduce risk and improve resilience in our community. These workshops will assist all of us in better community planning and hazard mitigation efforts.

The *11/24/2014* Workshop Objectives are:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

Please RSVP for the *November 24, 2014* workshops as soon as possible to the Nature Conservancy's Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

I hope you or a designee can join me at these important workshops. Thank you for your consideration!

Sincerely,

Jayme Stevenson
First Selectman

October 24, 2014

Dear Westport Community Member,

Given recent storms like Sandy and Irene, we now find ourselves in a new era of more unpredictable and severe weather that can potentially cause more damage to our community.

In order to be as proactive as we can in preparing and protecting our community, I would like to invite you to join me at a free half-day hazards and community resilience workshop on **Monday, November 24, 2014**. The workshop will take place from 8:45 am to 1:30 pm in **Room 128 Community Room, Norwalk City Hall, 125 East Avenue, Norwalk, CT**. Coffee, a light breakfast, and lunch will be provided.

The Nature Conservancy is partnering with the South Western RPA / Western Connecticut COG to offer this timely workshop to bring together members of our community like you to work together to help identify and prioritize steps to reduce risk and improve resilience in our community. These workshops will assist all of us in better community planning and hazard mitigation efforts.

The *11/24/2014* Workshop Objectives are:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

Please RSVP for the November 24, 2014 workshops as soon as possible to the Nature Conservancy's Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

I hope you or a designee can join me at these important workshops. Thank you for your consideration!

Sincerely,

James S. Marpe
First Selectman

WELCOME to the Hazards and Community Resilience Workshop

Name	Affiliation	Title	Phone	Email
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Jonathan Stanbury	CGA	State Rep	203-722 -7477	jonathan.stanbury@ct.gov
Gail Lovelle	State Rep			gail.lovelle@ct.gov
Melissa Kane	Westport Subcommittee	Chair	203 227 2030	Melissa.Kane@yale.edu
FLIP HUFFARD	DARLEN COMMISSION ON COASTAL MATTERS	CHAIR	203 655 8181	FHUFFARD@GMAIL.COM

WELCOME to the Hazards and Community Resilience Workshop

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Susan Cameron	Darien P&Z	Chair	203 524-3244	srcameron@gmail.com
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Denis McCarthy	Norwalk	EMT	203 667-1388	DenMcCarthy@norwalkct.org
Dave Ifforic	CTDEEP	State NFIP Coordinator	860 424-3537	dave.ifforic@ct.gov

Darren

Mitigation Strategy: Design Remedies for RT 1 Underpass

Hazards Addressed: ~~flooding~~ island

Responsible Party:

WCCOG & The Nature Conservancy 

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?	✓			
Political	Is there public and political support for this strategy				✓
Legal	Is there state and legal authority to implement this strategy				✓
Economic	Is the strategy affordable, with readily/easily available financial support?		✓		
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: FEMA / Federal

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Duichen

Mitigation Strategy: Targeted outreach to vulnerable

Hazards Addressed: Coastal flooding + high winds

Responsible Party: Emergency Mgmt Director



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source: FEMA / town

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Arien

Mitigation Strategy: Outreach to FD for shelter staffing

Hazards Addressed: All

WCCOG & The Nature Conservancy 

Responsible Party: Town

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source: FF Grant

Aprox. Cost		<u>\$5-25k</u>	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		<u>Annually</u>	< 1 year	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy:

IMPROVE COORDINATION FOR Emerg. Response CLTP

Hazards Addressed:

SNOW/ICE TREE ISSUES/WIND

WCCOG &



NORWALK

Responsible Party:

CLTP / TOWN

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?	✓			
Economic	Is the strategy affordable, with readily/easily available financial support?			likely	✓
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source:

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: HARBOR SHORE COMMUNICATION ~~PLAN~~ + RESILIENCE PLAN CIRP ^{INDIVIDUAL} NORWALK

Hazards Addressed: FLOODING WCCOG & The Nature Conservancy 

Responsible Party: RESIDENTS/TOWN

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?	✓			
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source:					
Aprox. Cost		\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Aprox. Time Line		Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: IDENTIFY EVAC. LOCATION PUBLIC WORKS

Hazards Addressed: FLOODING

Responsible Party: PUBLIC WORKS



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?			✓	
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source:					
Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: MITIGATE (Tree) HAZARDS PUBLIC+PRIVATE

Hazards Addressed: ICE/SNOW/WIND

Responsible Party: P.W. + POWER CL + P (SNOW + TTP)

WCCOG &

The Nature Conservancy 

NORWALK

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy			✓	
Legal	Is there state and legal authority to implement this strategy			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?	✓		✓	
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

- PUBLIC NOT PRIVATE

Potential Funding Source:

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

NORWALK

Mitigation Strategy: WATER TREATMENT
RAISE AT-RISK PUMP STATIONS
 Hazards Addressed: FLOOD
 Responsible Party: TOWN - FEMA - WPCGA



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?	✓			
Political	Is there public and political support for this strategy?			✓	
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

✓
 lesser
 overtime

Potential Funding Source:					
Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Normal/4th

Mitigation Strategy: Outreach/Education for ~~Proactive~~ Housing

Hazards Addressed: Flooding, Severe Winds/Storms, Severe Heat/Cold, Ice/Cold.

WCCOG & The Nature Conservancy 

Responsible Party: Emergency Management Team

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				X
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?			X	X
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?				X

Potential Funding Source: Foundations/private/grants,					
Aprox. Cost	City Department Budget, Public , United Way	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	Annually	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Norwalk Blue

→ impacts social pricing 44%

Mitigation Strategy: Oyster Bed Resilience - Dredging

Hazards Addressed: Flooding in case of sewage, sediment, chemical

WCCOG & The Nature Conservancy 

Responsible Party: Private, City, State, Health Department oversee recreational and inspections

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?	✓	✓		
Technical	Will the strategy solve the problem?		✓		
Administrative	Does your town have all the capabilities to implement/maintain the strategy?		✓		
Political	Is there public and political support for this strategy?	✓			
Legal	Is there state and legal authority to implement this strategy?			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?			⊕	
Environmental	Are there primarily environmental benefits associated with the strategy?				⊕

chemical
No

Potential Funding Source:

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Norwalk Blue

Mitigation Strategy: Exanding / Raising Levee near WTP

Hazards Addressed: Flooding

Responsible Party: City of Norwalk Public Works / WPCA

WCCOG &



permission from Army Corps

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?				<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?				<input checked="" type="checkbox"/>

Funding or match can be supplied

Potential Funding Source: FEMA, EPA, DEEP

Aprox. Cost	<u>2 million 3 million 4 million +</u>	\$5-25k	\$25-50k	\$100-500k	<u>>500k*</u>
Aprox. Time Line	<u>3-5 years</u>	<u>Annually</u>	< 1 year	1-3 years	<u>>3 years*</u>
Strategy Type		<u>Infrastr.</u>	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Levee for King Chemical Screen or Protection

Barrier System

Hazards Addressed: Flooding

WCCOG &



Responsible Party: Private King Chemical. Town can't fund

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?			<input checked="" type="checkbox"/>	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?	<input checked="" type="checkbox"/>			
Political	Is there public and political support for this strategy?			<input checked="" type="checkbox"/>	
Legal	Is there state and legal authority to implement this strategy?			<input checked="" type="checkbox"/>	
Economic	Is the strategy affordable, with readily/easily available financial support?			<input checked="" type="checkbox"/>	
Environmental	Are there primarily environmental benefits associated with the strategy?				<input checked="" type="checkbox"/>

support letters at support King protection

Potential Funding Source: EPA, DECD, Homeland Security, Private


Aprox. Cost	<u>3 million +</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>5 years</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

WESTPORT

Mitigation Strategy: ~~Continue efforts to~~ continue successful efforts of identifying and communicating with isolated and vulnerable citizens

WCCOG &  The Nature Conservancy

Hazards Addressed: All
Responsible Party: Em, PRZ, CC

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	X
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				X
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?			X	X
Environmental	Are there primarily environmental benefits associated with the strategy?				X


Potential Funding Source:	FEMA, DEMHS, Town, CT DOT, HUD, DEEP, EPA, USDOT, OPM			
Aprox. Cost	\$5-25k	<u>\$25-50k</u>	\$100-500k	>500k*
Aprox. Time Line	Annually	<u>< 1 year</u>	1-3 years	>3 years*
Strategy Type	Infrastr.	<u>Societal</u>	Ecosys.	Other*

STAPLEE Question adapted from FEMA

* Please write in response in the empty space to the left.

Mitigation Strategy: Modify zoning regulations regarding improvements and requirements for mitigating flood risk

Hazards Addressed: Flood, Hurricane, Sea Level Rise, Severe storms

WCCOG &  The Nature Conservancy

Responsible Party: PRZ

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?				X
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				X
Political	Is there public and political support for this strategy?			X	X
Legal	Is there state and legal authority to implement this strategy?			X	X
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?				X

Potential Funding Source:	Town			
Aprox. Cost	<u>\$5-25k</u>	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	Annually	<u>< 1 year</u>	1-3 years	>3 years*
Strategy Type	Infrastr.	Societal	Ecosys.	<u>Other</u> *

STAPLEE Question adapted from FEMA

* Please write in response in the empty space to the left.

WESTPORT

Mitigation Strategy: Improve Coordination w/ CL&P and NW

Hazards Addressed: All

WCCOG &



Responsible Party: Em, Police, Fire, DPW

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			X	
Political	Is there public and political support for this strategy				X
Legal	Is there state and legal authority to implement this strategy			X	
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?				X

Potential Funding Source: FEMA, DEMHS, PURCA, Town

Aprox. Cost		<u>\$5-25k</u>	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		<u>Annually</u>	< 1 year	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	Societal	Ecosys.	Other*

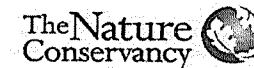
* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Identify Opportunities for Cooperation and Coordination w/ Private Road Associations

Hazards Addressed: All

WCCOG &



Responsible Party: Em, DPW, Private

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?		X		
Political	Is there public and political support for this strategy				X
Legal	Is there state and legal authority to implement this strategy			X	
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?			X	

Potential Funding Source: Town, Private

Aprox. Cost		<u>\$5-25k</u>	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		<u>Annually</u>	< 1 year	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

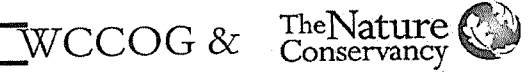
STAPLEE Question adapted from FEMA

WESTPORT

Mitigation Strategy: ^(bridge) Improve Access to Saugatuck Shores Community

Hazards Addressed: All

Responsible Party: Em, Dpw, cc



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?				X
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			X	
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?		X		
Environmental	Are there primarily environmental benefits associated with the strategy?			X	

Potential Funding Source: FEMA, DEMHS, US DOT, HUD

Aprox. Cost	Depends on construction/mitigation measure	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

→ Phase 1

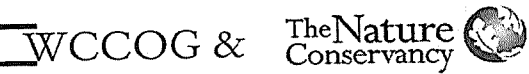
STAPLEE Question adapted from FEMA

* Please write in response in the empty space to the left.

Mitigation Strategy:

Hazards Addressed:

Responsible Party:



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				
Technical	Will the strategy solve the problem?				
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				
Political	Is there public and political support for this strategy?				
Legal	Is there state and legal authority to implement this strategy?				
Economic	Is the strategy affordable, with readily/easily available financial support?				
Environmental	Are there primarily environmental benefits associated with the strategy?				

Potential Funding Source:

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

STAPLEE Question adapted from FEMA

* Please write in response in the empty space to the left.

**Stamford Hazard Mitigation Workshop
December 1, 2014**

Dear Stamford Community Member,

Given recent storms like Sandy and Irene, we now find ourselves in a new era of more unpredictable and severe weather that can potentially cause more damage to our community.

In order to be as proactive as we can in preparing and protecting our community, I would like to invite you to join me at a free half-day Hazards and Community Resilience Workshop on ***Monday, December 1, 2014***. The workshop will take place from 8:45 am to 1:30 pm in the ***Safety Training Room, sixth floor of the Stamford Government Center, 888 Washington Blvd, Stamford, CT***. Coffee, a light breakfast, and lunch will be provided.

The Nature Conservancy is partnering with the South Western RPA / Western Connecticut COG to offer this timely workshop to bring together members of our community like you to work together to help identify and prioritize steps to reduce risk and improve resilience in our community. These workshops will assist all of us in better community planning and hazard mitigation efforts.

The *12/1/2014* Workshop Objectives are:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

Please RSVP for the *Monday, December 1, 2014* workshops as soon as possible to the Nature Conservancy's Adam Whelchel at 860-970-8442 or awhelchel@tnc.org.

I hope you or a designee can join me at this important workshop. Thank you for your consideration!

Respectfully,

Ted Jankowski
Director of Public Safety, Health and Welfare
City of Stamford

WELCOME to the Hazards and Community Resilience Workshop

Name	Affiliation	Title	Phone	Email
Carlo Leone	St of CT	Senator	860 240-0589	carlo.leone@ga.ct.gov
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WILLIAM LIBRANDI	CFRY		203-353-8211	WILLIAM, LIBRANDI@SNET.NET
Rep. John A. Zekusky	Bd of Reps		203 348-3870	
TED JAWKOWSKI	STAMFORD	DIRECTOR	203 977-4151	
DON WATSON			203 459-0332	
Beth Erickson	Stamford PD	Capt.	203 977-4432	berickson@stamford.ct.gov
Virgil de la Cruz	Board of Reps		203 977 8627	virgild@comcast.net
Tanya Curt	BCFL		359-3220	
B. McQuinn	SPD	CAPT		
Milton Puyet	Mill River	E.D.	347-432 4847	milton@millriverpark.com
Chris Ackley	CTDEMHS			christophu.ackley@ct.gov

WELCOME to the Hazards and Community Resilience Workshop

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Barry Michelson	Zoning Bd		203-329-3310	bmichelson@optonline.net
Bill Mullin	Police	CAPTAIN	12031977-530	wmullin@stanfordct.gov
Sue Prosser	SWRTA	Sr. Trans. Coordinator	203-316-5191	Prosser@surt.org
Donna Libera	Cert		203-353-8131	
Emily Prosser	DSSD	Public Space		

Mitigation Strategy: Coordinated Evacuation Plan

Hazards Addressed: Flooding / Storms

Responsible Party: City of Reno / Solid Front




Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy? <i>In post-evacuation</i>				✓
Political	Is there public and political support for this strategy				✓
Legal	Is there state and legal authority to implement this strategy			✓	✓
Economic	Is the strategy affordable, with readily/easily available financial support?		✓	✓	
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	

Potential Funding Source: Grants

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Coordination + Community Networks/Education
 Hazards Addressed: All WCCOG & The Nature Conservancy 
 Responsible Party: City / Networks

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?		✓	✓	

Potential Funding Source: General Budget

Aprox. Cost		\$5-25k	<u>\$25-50k</u>	\$100-500k	>500k*
Aprox. Time Line		Annually	<u>< 1 year</u>	1-3 years	>3 years*
Strategy Type		Infrastr.	<u>Societal</u>	<u>Ecosys.</u>	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stanford/Blue

Mitigation Strategy:

I&T Assessment

Hazards Addressed:

Hazardous / WSP failure

Responsible Party:

City

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: Budget + Grants

Aprox. Cost	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stamford/Blue

Mitigation Strategy: Detailed Flood Assessment

Hazards Addressed: Infrastructure

Responsible Party: City/Regional

WCCOG &  The Nature Conservancy

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy			✓	✓
Legal	Is there state and legal authority to implement this strategy			✓	✓
Economic	Is the strategy affordable, with readily/easily available financial support?		✓		✓
Environmental	Are there primarily environmental benefits associated with the strategy?		✓		✓

Potential Funding Source: Grants / Green Bonds

Aprox. Cost		\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Aprox. Time Line		Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		<u>Infrastr.</u>	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

Mitigation Strategy: *Sanitary sewer & storm drain Insp. program*

Hazards Addressed: *flooding - water quality*

Responsible Party: *City of Stamford LUNA*

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem? <i>- identify issues to be addressed</i>			<input checked="" type="checkbox"/>	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?		<input checked="" type="checkbox"/>		
Political	Is there public and political support for this strategy?				<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?				<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?		<input checked="" type="checkbox"/>		
Environmental	Are there primarily environmental benefits associated with the strategy?				<input checked="" type="checkbox"/>

Potential Funding Source: *Stormwater Auth. / Grants / General Fund expenditure*

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	<u>>500k*</u>
Aprox. Time Line		<u>Annually</u>	< 1 year	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stamford green

Stanford green

Mitigation Strategy: Mitig. of Hurricane barrier

Hazards Addressed: Coastal Flooding & SLR

Responsible Party: US ACOE -

WCCOG &  The Nature Conservancy

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy? <u>N/A ACOE</u>				
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?			✓	
Economic	Is the strategy affordable, with readily/easily available financial support? <u>(uncertain)</u>		✓		
Environmental	Are there primarily environmental benefits associated with the strategy?	✓			

Potential Funding Source: Federal

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: *Regional Communications*
 Hazards Addressed: *Emergency - flooding storm wind.*
 Responsible Party: *Public Health Safety & Welfare - CEOs*



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy <i>not necessary</i>				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?		✓		

Potential Funding Source: *city/towns*

Aprox. Cost		\$5-25k	<u>\$25-50k</u>	\$100-500k	>500k*
Aprox. Time Line		Annually	<u>< 1 year</u>	1-3 years	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stamford Head

Mitigation Strategy: tree inventory study

Hazards Addressed: High Winds Snow

Responsible Party: Land Use Bureau

WCCOG &



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?			✓	
Technical	Will the strategy solve the problem?			✓	✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?		✓		
Legal	Is there state legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?			✓	
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: CITY, UTILITY

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Coastal Risk Assessment

Hazards Addressed: Coastal Flooding / Flash Flooding / Riverine

Responsible Party: City Department Army Corps Engineer Land use Planning Harbor Management



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?				<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy?				<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?				<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?		<input checked="" type="checkbox"/>		
Environmental	Are there primarily environmental benefits associated with the strategy?				<input checked="" type="checkbox"/>

Potential Funding Source: NFWF, Federal, OPM regional performance F, FEMA (HMP only), HUD, city

Aprox. Cost	<u>4.50,000 + 500k + stanford only</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stanford Red

Mitigation Strategy: Evacuation Plan updated every 5 years, 1 year on south end

Hazards Addressed: ~~Coastal Flood~~, All Hazards

Responsible Party: Health & Safety, WCCOG if regional DEMHS



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy?				<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy?				<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?			<input checked="" type="checkbox"/> Regional	<input checked="" type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?				<input checked="" type="checkbox"/> N/A

→ Rest Estate & other files
N/A

Potential Funding Source: City funds, DRM, DEMHS, FEMA, HUD

Aprox. Cost		\$5-25k	\$25-50k	<u>\$100-500k</u> Regional	>500k*
Aprox. Time Line	1	Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		Infrastr.	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Educational Outreach to Vulnerable Communities

Hazards Addressed: All Hazards

Responsible Party: City - EOC

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: Grants

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*	\$ 1.5 Million
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*	
Strategy Type		Infrastr.	Societal	Ecosys.	Other*	

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: additional Resources for Emergency Evacuation Processes

Hazards Addressed: All

WCCOG &



Responsible Party: City

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy				✓
Legal	Is there state and legal authority to implement this strategy			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	

Potential Funding Source: Operating expense

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

\$3* Million

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Stamford/Yellow

Mitigation Strategy: Shoreline Assessment for natural resources

Hazards Addressed: Coastal flooding, wind

Responsible Party: City → hire consultant

WCCOG &  The Nature Conservancy

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: <u>Capital + Grants</u>					
Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	<u><500k*</u> \$4 million
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	<u>Ecosys.</u>	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

**Greenwich Hazard Mitigation Workshop
December 18, 2014**



TOWN OF GREENWICH

Office of First Selectman (203) 622-7710 Fax (203) 622-3793
Town Hall- 101 Field Point Road - Greenwich, CT 06830
E-Mail: ptesei@greenwichct.org
www.twitter.com/GreenwichFirst

Peter J. Tesei
First Selectman

November 4, 2014

Dear Preparedness Stakeholder,

The Town of Greenwich, in coordination with the Southwest Regional Planning Agency/Western Connecticut COG, is in the process of updating the Town's Natural Hazard Mitigation Plan. Recent storm events, including Sandy and Irene, have been a stark reminder of the vulnerability of communities like ours during severe storm events and the need for preparedness planning.

You have been identified as a key stakeholder that would provide valuable input to this planning process. As such, I would like to invite you to attend a hazards and community resilience workshop on **Thursday, December 18, 2014**. The workshop will take place from 8:45 am to 1:30 pm at the **Town Hall Meeting Room, Greenwich Town Hall, 101 Field Point Road, Greenwich, CT**. Coffee, a light breakfast, and lunch will be provided.

The South Western RPA / Western Connecticut COG, is partnering with The Nature Conservancy, to offer this workshop to bring together emergency responders, land use planners, town officials, and community stakeholders to help identify and prioritize steps to reduce risk and improve resilience in our community. The workshops will assist all of us in better community planning and hazard mitigation efforts.

The **12/18/2014** Workshop Objectives are:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources to hazards.
- Identify and map vulnerabilities and assets and develop infrastructure, societal and natural resource risk profiles.
- Develop and prioritize actions for the municipality, local organizations, businesses, private citizens, neighborhoods, and community groups.
- Identify opportunities to advance actions that further reduce the impact of hazards and increase resilience.

Please RSVP for the December 18, 2014 workshop, as soon as possible, to Denise Savageau, Conservation Director, 203-622-6461 or denise.savageau@greenwichct.org.

I hope you or a designee can join me at this important workshop.

Sincerely,

Peter J. Tesei,
First Selectman

WELCOME to the Greenwich Hazards and Community Resilience Workshop

December 18th, 2014

Name	Affiliation	Title	Phone	Email
Bob Sechnin	WCCOG/ SWRPA	Sr Regional Planner		
Jim Syrotiak	Greenwich EMS	Deputy Director	203- 637-7505	JSyrotiak@ Greenwichems.org
Joseph Williams	Greenwich Library	Dep. Director		jwilliams@greenwichlib ary.org
Mike Towle	WCCOG	Regional Planner		towle@swrpa.org
Jim Heavey	Police	Police Chief	203 622-8010	JHeavey@greenwichct.org
Jim Michel	GREENWICH DPW	Chief Eng.	203-622-7813	Jmichel@greenwichct.org
Joe Roberto	Hwy/DPW	Super Hwy	627-7763	
Tam Klein	IT	Director	622-6448	tklein@greenwichct.org
Joan Sullivan	Purchasing Admin Serv.	Director	622-7884	jsullivan@greenwich ct.org
Lori Contadino	Commissioning	Director	862-6711	lcontadino@greenwichct.org
George O'Loughlin	GDSS	Director Case Mgmt	622-3802	go'Loughlin@greenwichct.org
ROBERT BERRY	POLICE	CAPTAIN	622-3235	RBERRY@GREENWICHCT.org
Kraig Gray	Police	LT	622-3620	Kgray@greenwichct.org
Tom Brew	PR	Asst Dir	622-6488	TBREW@greenwichct.org
Chris Whitford	PR	OP MANAGER	496-0432	CWHITFORD@greenwichct.org
Jim Domaseck	Fleet	Director	869-0532	Jdomaseck@greenwichct.org
Pete Siccicusi	Fire	Chief	622-3951	psiccicusi@greenwichct.org
Peter Berg	Plan Land Use	Chair	661-3830	PeterEBerg@AUSA.com
Bob Kenny	DEMHS	REG EM	203-696- 2640	robert.kenny@ct.gov

Greenwich - Blue

Implementation & Maintenance.

Mitigation Strategy: Interactive GIS software coordination w/ town departments

Hazards Addressed: All

Responsible Party: All town departments West Con COG



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	

Potential Funding Source: FEMA/DEHHS, Town, OPM, USDOT/CTDOT

Aprox. Cost	<u>100-300k + ongoing</u>	\$5-25k	\$25-50k	<u>100-300k + annual</u> \$100-500k	>500k*
Aprox. Time Line	<u>1-3 years annual</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

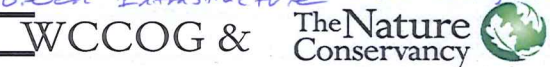
* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Cos Cob & Fire House & US I relocate Fire House Green Infrastructure flood mitigation

Hazards Addressed: Flood Hazard - riverine

Responsible Party: DPW, Engineering



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				
Environmental	Are there primarily environmental benefits associated with the strategy?				

Potential Funding Source: FEMA, USDOT, CTDOT, DEEP, EPA, WCCOG

Aprox. Cost	<u>1m - 23m we want 25m depending on construction activity</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>Phase 1 3yrs</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

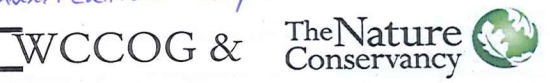
STAPLEE Question adapted from FEMA

Greenwich - Blue

Greenwich - Blue

Mitigation Strategy: Access to Isolated areas - Education outreach *communication improvements.*

Hazards Addressed: All hazards, Drought



Responsible Party: Emergency Management, Neighbourhood Associations, Conservation

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	

Potential Funding Source: Town, HUD, CDBG, FEMA DEMHS, BE *Union support no \$*

Approx. Cost	<u>Floods</u>	\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Approx. Time Line		Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Sewer Treatment Plant Relocation / Raising / Berm? *price not*

Hazards Addressed: Flooding



Responsible Party: DPW

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: DEEP, FEMA/DEMHS, EPA, FISHWILDLIFE

Approx. Cost	<u>\$30+ million</u>	\$5-25k	\$25-50k	\$100-500k	<u>>500k*</u>
Approx. Time Line	<u>3-8 years</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Greenwich - Blue

Mitigation Strategy: IMPROVE + ENLARGE STORAGE OF FUEL TANKS
 Hazards Addressed: ALL HAZARDS
 Responsible Party: TOWN OF GREENWICH

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?				X
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				X
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?			X	
Environmental	Are there primarily environmental benefits associated with the strategy?				X

Potential Funding Source:

\$5-25k	\$25-50k	\$100-500k	>500k*
Annually	< 1 year	1-3 years	> 3 years*
Infrastr.	Societal	Ecosys.	Other*

Strategy Type: _____
 Approx. Time Line: _____
 Approx. Cost: _____

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: WMT + PUMP STATION REVERTED
 Hazards Addressed: FLOODING
 Responsible Party: TOWN

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?				X
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				X
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?			X	
Environmental	Are there primarily environmental benefits associated with the strategy?				X

Potential Funding Source:

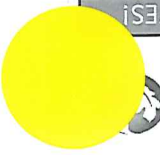
\$5-25k	\$25-50k	\$100-500k	>500k*
Annually	< 1 year	1-3 years	> 3 years*
Infrastr.	Societal	Ecosys.	Other*

Strategy Type: _____
 Approx. Time Line: _____
 Approx. Cost: _____

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

WCCOG & The Nature Conservancy



Mitigation Strategy: Coordination + Cooper. w/ Power gen. related partners
 Hazards Addressed: lightning wind / storm events
 Responsible Party: (ct/ny) municipality + utility providers

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				✓
Political	Is there public and political support for this strategy?	✓			
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			✓
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: state of ct / federal

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: IMPROVE POWER GRID RESILIENCY
 Hazards Addressed: ALL
 Responsible Party: CL+P

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?			X	
Environmental	Are there primarily environmental benefits associated with the strategy?	X			

Potential Funding Source:

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Risk assessment + resiliency plan for sewage system (private + public) WCCOG & The Nature Conservancy

Hazards Addressed: Flooding concerns.

Responsible Party: Town

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy? <i>(need coop. w/ state)</i>		✓		
Political	Is there public and political support for this strategy				✓
Legal	Is there state and legal authority to implement this strategy				✓
Economic	Is the strategy affordable, with readily/easily available financial support?	✓			
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source:	<u>FEMA</u>			
Aprox. Cost	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: IMPROVE I.T. FOR LIVE UPDATES

Hazards Addressed: ALL WCCOG & The Nature Conservancy

Responsible Party: TOWN

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				X
Technical	Will the strategy solve the problem?			X	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			X	
Political	Is there public and political support for this strategy				X
Legal	Is there state and legal authority to implement this strategy				X
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?	X			

Potential Funding Source:				
Aprox. Cost	\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Aprox. Time Line	Annually	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type	Infrastr.	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA



Hazards Addressed: Wind / Winter Storms
 Responsible Party: P&P - CRP

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Potential Funding Source: <u>Town / CRP</u>					
Aprox. Cost	<u>\$ 1 - 2 M plus</u>	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	<u>ongoing</u>	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	<u>Ecosystem</u>	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Improve communication channel for residents
 Hazards Addressed: disasters
 Responsible Party: Emergency Preparedness Dept - Town depts - IT, police etc

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				<input checked="" type="checkbox"/>
Technical	Will the strategy solve the problem?				<input checked="" type="checkbox"/>
Administrative	Does your town have all the capabilities to implement/maintain the strategy?				<input checked="" type="checkbox"/>
Political	Is there public and political support for this strategy				<input checked="" type="checkbox"/>
Legal	Is there state and legal authority to implement this strategy				<input checked="" type="checkbox"/>
Economic	Is the strategy affordable, with readily/easily available financial support?				<input checked="" type="checkbox"/>
Environmental	Are there primarily environmental benefits associated with the strategy?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Potential Funding Source: <u>Town funding, FEMA, STATE of CT</u>					
Aprox. Cost		\$5-25k	\$25-50k	<u>\$100-500k</u>	>500k*
Aprox. Time Line		<u>Annually</u>	< 1 year	<u>1-3 years</u>	>3 years*
Strategy Type		<u>Infrastr.</u>	<u>Societal</u>	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy:

Develop ^{Strategy} Communication & Education for at Risk Populations & Disaster Preparedness

Hazards Addressed:

WCCOG & The Nature Conservancy 

Responsible Party:

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				
Technical	Will the strategy solve the problem?				
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			X	
Political	Is there public and political support for this strategy?				X
Legal	Is there state and legal authority to implement this strategy?				X
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?		X	X	

Potential Funding Source:

Aprox. Cost	50 - 100K	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	1 yr	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Social	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy:

Town-wide Tree Management Program

Hazards Addressed:

Coastal & Inland Flooding, Ice/Snow, Wind

WCCOG & The Nature Conservancy 

Responsible Party:

Town, Multi-department; Private Homeowners, Utilities

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	✓
Political	Is there public and political support for this strategy?			✓	
Legal	Is there state and legal authority to implement this strategy?			✓	
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?		✓		

Potential Funding Source:

Local & Private

Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k*	1.5M
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years*	25 yrs
Strategy Type		Infrastr.	Societal	Ecosys.	Other*	

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: ^{Vulnerable} Assessment of Town owned Infrastructure
 Hazards Addressed:



Responsible Party:

Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				
Technical	Will the strategy solve the problem?				
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			X	
Political	Is there public and political support for this strategy				X
Legal	Is there state and legal authority to implement this strategy				X
Economic	Is the strategy affordable, with readily/easily available financial support?				X
Environmental	Are there primarily environmental benefits associated with the strategy?		X	X	

Potential Funding Source:					
Aprox. Cost	\$100 - 500R	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	1-2 years	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Infrastructure	Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Mitigation Strategy: Upgrade & Harden Waste Water Treatment System
 Hazards Addressed: Coastal Inland Flooding
 Responsible Party: TOWN'S DPW



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				✓
Technical	Will the strategy solve the problem?			✓	
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy			✓	
Legal	Is there state and legal authority to implement this strategy				✓
Economic	Is the strategy affordable, with readily/easily available financial support?			✓	
Environmental	Are there primarily environmental benefits associated with the strategy?				✓

Potential Funding Source: Federal, State & Local					
Aprox. Cost		\$5-25k	\$25-50k	\$100-500k	>500k* \$10M+
Aprox. Time Line		Annually	< 1 year	1-3 years	>3 years* 2 to years
Strategy Type		Infrastr.	Societal	Ecosys.	Other*

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Investigation Strategy: Upgrade & maintain storm drain system
 Hazards Addressed: Coastal & Inland Flooding
 Responsible Party: Town, private associations, Public Works

WCCOG & The Nature Conservancy 



Criteria	Question	NO!	unlikely	likely	YES!
Social	Are there social benefits?				
Technical	Will the strategy solve the problem?				✓
Administrative	Does your town have all the capabilities to implement/maintain the strategy?			✓	
Political	Is there public and political support for this strategy?				✓
Legal	Is there state and legal authority to implement this strategy?				✓
Economic	Is the strategy affordable, with readily/easily available financial support?				✓
Environmental	Are there primarily environmental benefits associated with the strategy?			✓	✓

Potential Funding Source:	State, Local, Federal			
Aprox. Cost	\$5-25k	\$25-50k	\$100-500k	>500k*
Aprox. Time Line	Annually	< 1 year	1-3 years	>3 years*
Strategy Type	Infrastr.	Societal	Ecosys.	Other*

> \$40M
 15 yrs

* Please write in response in the empty space to the left.

STAPLEE Question adapted from FEMA

Appendix A-3.3
Hazard Mitigation Public Survey



 Request edit access

Natural Hazard Mitigation Survey

1. What town/city do you live in?

- Darien
- Greenwich
- New Canaan
- Norwalk
- Stamford
- Weston
- Westport
- Wilton
- Other (enter below)

2. Have any of the following increased your awareness of natural hazards in the region? (check all that apply)

- Winter Storm Nemo, February 2013
- Superstorm Sandy, October 2012
- Winter Storm Alfred, October 2011
- Hurricane/Tropical Storm Irene, August 2011
- Mid-Atlantic Earthquake, August 2011
- Other (enter below)

3. What are your greatest hazards of concern? (check all that apply)

- Flooding
- Hurricane and Tropical Storms
- Tornadoes
- Severe Thunderstorms (including hail and/or downburst)
- Winter Storms (includes ice storms) and Blizzards
- Earthquakes
- Sea Level Rise
- Coastal and Inland Erosion
- Dam Failure

Other (enter below)

4. Have any of the hazards below personally impacted your home and/or business? (check all that apply)

Flooding

Hurricane and Tropical Storms

Tornadoes

Severe Thunderstorms (including hail and/or downburst)

Winter Storms (includes ice storms) and Blizzards

Earthquakes

Sea Level Rise

Coastal and Inland Erosion

Dam Failure

Other (enter below)

5. Are there any specific areas in your town/city vulnerable to natural hazards? If so, please specify the town/city, location and vulnerability to what hazard(s). For example, "Road A, near Lake B"

6. What are some helpful measures that can be taken to reduce your city/town's vulnerability to natural hazards (natural hazard mitigation strategies)? (check all that apply)

Identify future threats and impacts from natural hazards

Outreach/Education to residents, businesses, and other community entities to help understand area risks and vulnerabilities

Technical assistance to residents, businesses and other community entities to aid in the reduction of damage/losses from natural hazards and disasters

Specific, targeting project efforts that will mitigation hazards and make the community more resilient. Examples such as drainage, erosion, and flood control projects

Improve warning and response systems with respect to natural hazards and disasters

Develop and enforce regulations, codes, and ordinances. Examples include zoning regulations and building codes that reduce development in hazard-prone areas

Other (enter below)

Optional: please feel free to leave your name and e-mail address, so we can keep you posted of any new information and upcoming events

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Location of Publicly-accessible Hazard Mitigation Survey on Website

Hazard Mitigation Planning


foreasters, hurricanes, blizzards/severe winter storms/ice storms, drought, sea level rise, earthquakes, and dam failure. Each of these risks was evaluated for its likelihood of occurrence and potential for loss of life and property. To try to minimize these losses, the plan established mitigation measures, objectives and strategies that minimize the negative consequences of natural disasters before they occur.


SWRPA and its municipalities are currently working on an update to the 2011 plan, more details on the 2016 HMP/PDM Update, the current 2011 plan, and previous iterations can be found below.

New

2016 Plan Update

★ [Take the SWR Natural Hazard Mitigation Survey](#)

 [Scope of Work \(229.10 KB\)](#)

 [Project Schedule \(25.49 KB\)](#)

Hazard Mitigation Workshops (*NEW!*)

SWRPA has partnered with The Nature Conservancy (TNC) to conduct Hazard Mitigation Workshops for the region and each municipality. Workshop objectives seek to:

- Understand connections between ongoing community issues, hazard and local planning/mitigation processes.
- Evaluate strengths and vulnerabilities of residents, infrastructure and natural resources.

Appendix A-3.4
Sub-Regional Public Meetings

Appendix A-4
Public Information Comments

Place holder for public comments here

Appendix A-5

References

Chapter 1

1. Federal Emergency Management Agency (FEMA), retrieved June 25, 2014 from: <http://www.fema.gov/hazard-mitigation-grant-program>
2. Federal Emergency Management Agency (FEMA), retrieved June 25, 2014 from: <http://www.fema.gov/pre-disaster-mitigation-grant-program>
3. Federal Emergency Management Agency (FEMA), retrieved June 25, 2014 from: <http://www.fema.gov/flood-mitigation-assistance-program>

Image References

- I. Chapter 1 Cover Image: South West Region Satellite View, created 1/7/2015 by WCCOG. Data from ESRI

Chapter 2

1. FEMA Location Mitigation Handbook, 2013.

Image References

- I. Chapter 2 Cover Image: Photo created by WCCOG

Chapter 3

1. Dam Failure Definition: NOAA's online glossary of meteorology and climatology terms.
2. Dam Failure Statistics: NOAA website, interactive mapping tool
3. Drought Advisory Group CT Interagency Drought Advisory Group. Personal communication 9/2/10.
4. State of Connecticut 2014 Hazard Mitigation Plan
5. USGS Earthquake Hazards Program: <http://earthquake.usgs.gov/>
6. The Northeast States Emergency Consortium website: www.nesc.org/hazards/earthquakes.cfm.
7. FEMA publication FEMA-480
8. NOAA's severe weather primer website: http://www.nssl.noaa.gov/primer/flood/fld_basics.html
9. NOAA Website "Hail...": <http://www.erh.noaa.gov/er/cae/svrwx/hail.htm>
10. NOAA, National Hurricane Center: <http://www.nhc.noaa.gov/>
11. National Weather Service Webpage, Severe Thunderstorms: <http://www.weather.gov/aly/PreparednessSevere>
12. Northeast States Emergency Consortium (NESEC) website: <http://nsec.org/>
13. U.S. Global Change Research Program, Global Climate Change Impacts in the United States
14. FEMA, Protecting Your Home or Small Business From Disasters, December 2005, publication number IS-394.A

Image References

- I. Chapter 3 Cover Image: Photo by k88rock on FLICKR. Tags "Stamford CT" "Snow"

Chapter 4

1. Connecticut Office of Policy Management. Retrieved 10/22/14 from: <http://www.ct.gov/opm/cwp/view.asp?q=383046>
2. United States Federal Emergency Management Agency (FEMA). (1996). Guide for All-Hazard Emergency Operations Planning. Retrieved 2/13/14 from <http://www.fema.gov/pdf/plan/slg101.pdf>

3. Wikipedia: Local Emergency Planning Committee, retrieved 2/27/14 from http://en.wikipedia.org/wiki/Local_Emergency_Planning_Committee
4. 2014-2019 Capitol Region Natural Hazards Mitigation Plan Update – Pg. 111

Image References

- I. Chapter 4 Cover Image: Hurricane Sandy Coastal Recovery in Weston, Source: <http://www.westport-news.com/news/article/State-of-emergency-declared-in-Westport-as-3987067.php>
- II. 4.1-1 Acres of State Conservation Land, Actual, Projected and Goal Track. Connecticut Council on Environmental Quality's (CEQ) 2013 report.
- III. 4.3-1 Planning Process, Source: FEMA Location Mitigation Handbook, 2013

Chapter 5

Image References

- I. Chapter 5 Cover Image: <http://www.smartfile.com/blog/wp-content/uploads/2012/07/blueprints.jpg>
- II. Figure 5.0-1: Core Steps in Hazard Mitigation Planning Process: <http://www.fema.gov/hazard-mitigation-planning-overview>

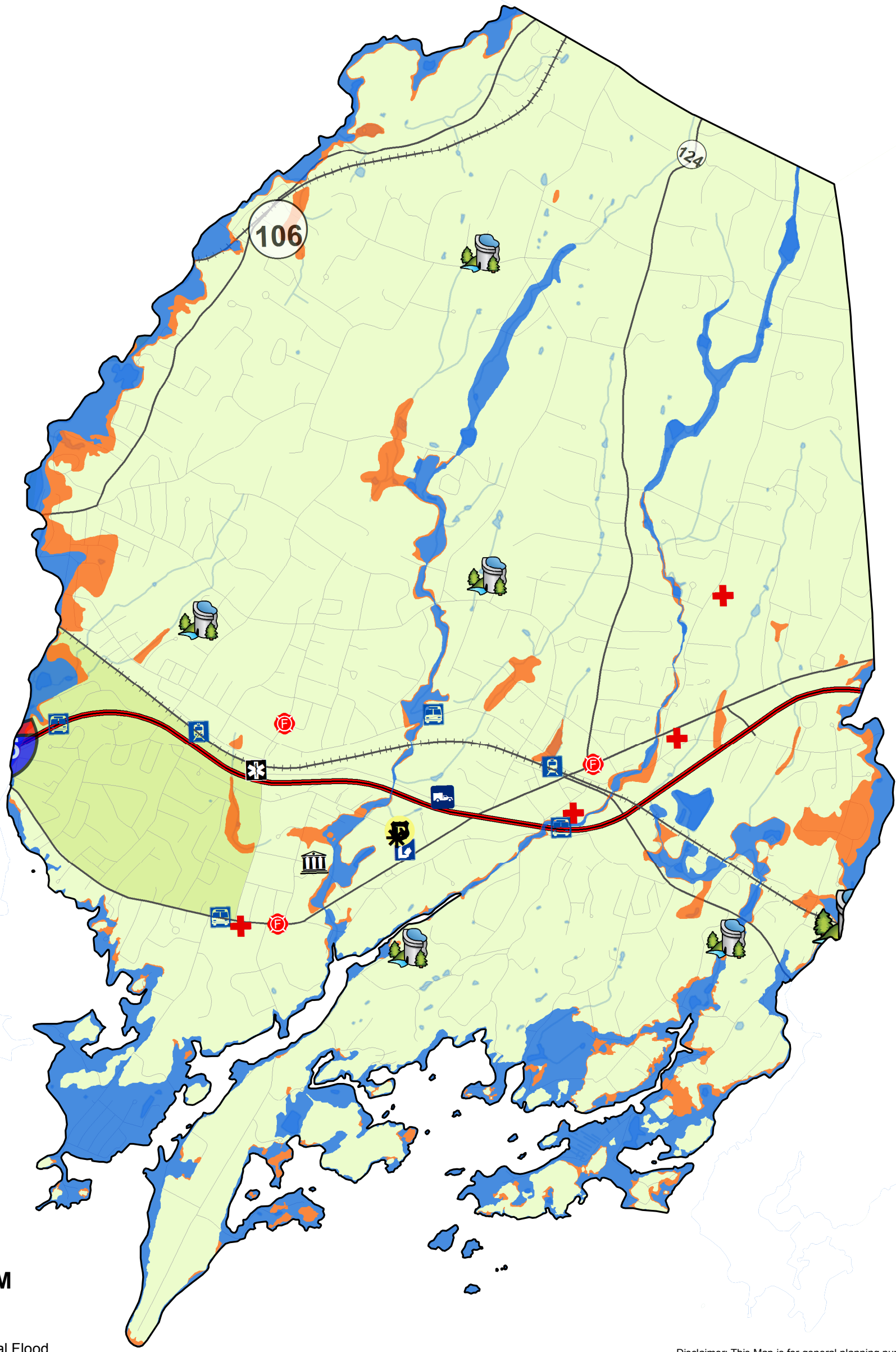
Appendix B

HAZUS-MH Reports

Appendix B-1

Individual Municipal Flood Maps

Darien - Flood Insurance Rate Map and Municipal Resources



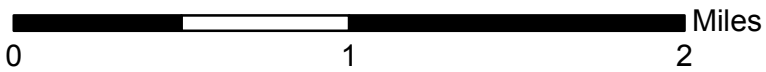
Simple DFIRM

Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

Municipal Resources



- | | | | |
|-----------|-----------------------|----------------|-------------|
| Town Hall | EMS | Library | Class B Dam |
| EOC | Care Facility | Post Office | Class C Dam |
| Hospital | Water Treatment Plant | Animal Control | |
| Fire | Public Works | Rail | |
| Police | Community Center | Bus B.3 | |

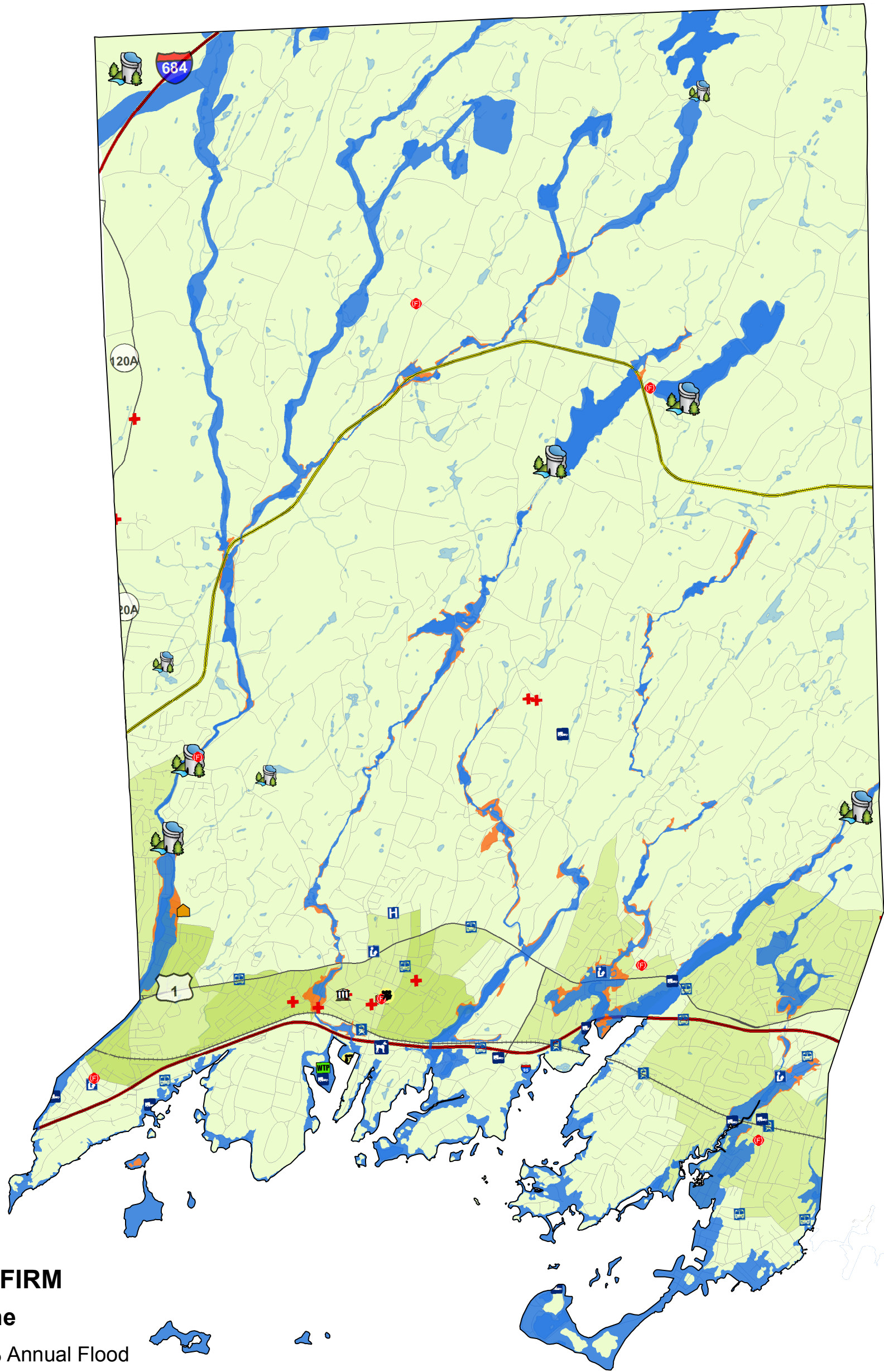
Population Density

Population/Acre

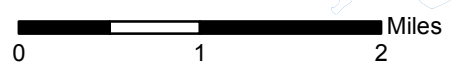
- 0-5
- 5-10
- 10-25
- 25-50
- 50+



Greenwich - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources



Simple DFIRM
Flood Zone
 0.2% Annual Flood
 1% Annual Flood



Municipal Resources

- | | | |
|-----------|-----------------------|----------------|
| Town Hall | EMS | Library |
| EOC | Care Facility | Post Office |
| Hospital | Water Treatment Plant | Animal Control |
| Fire | Public Works | Rail |
| Police | Community Center | Bus B.4 |

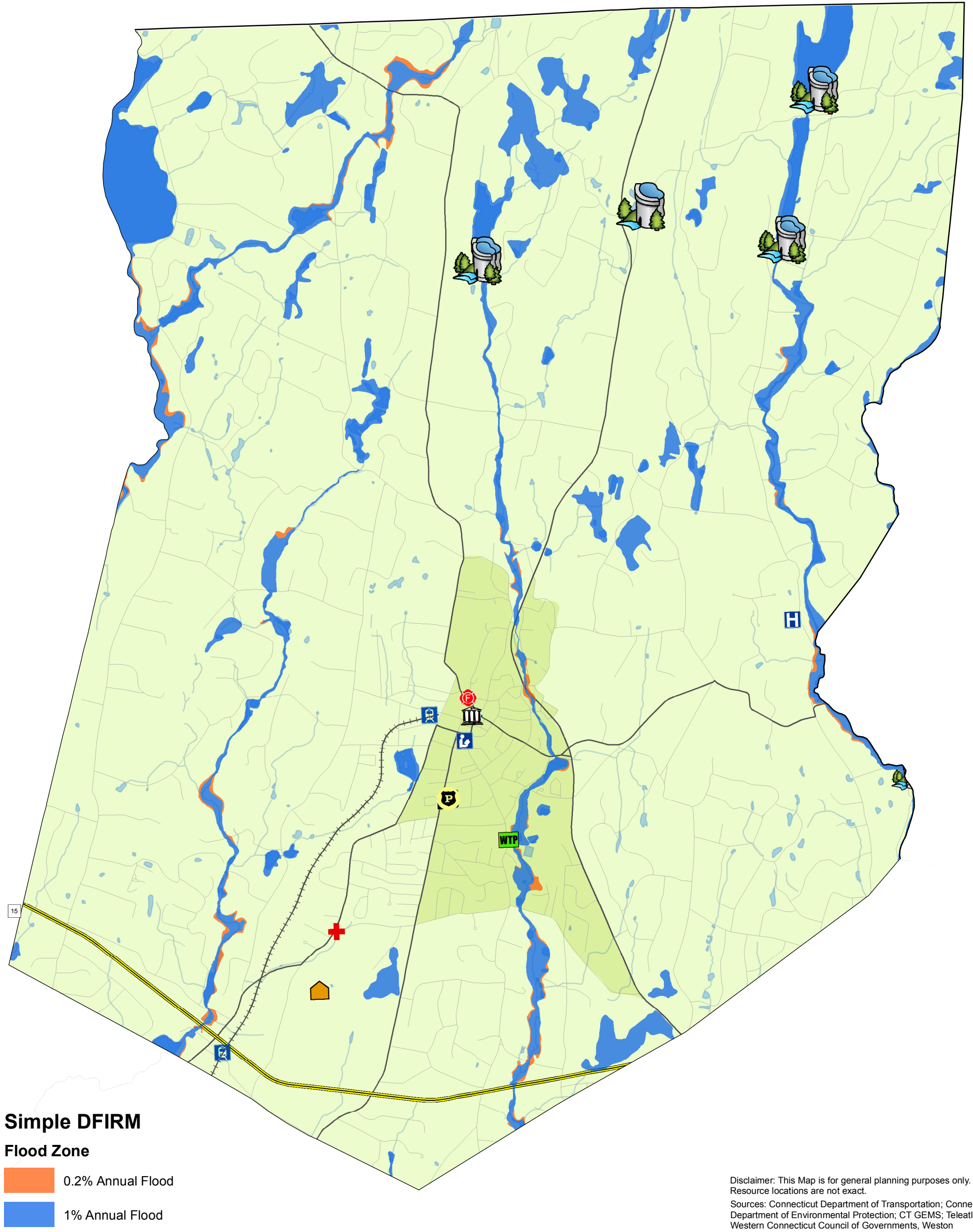
- Class B Dam
- Class C Dam

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

New Canaan - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources



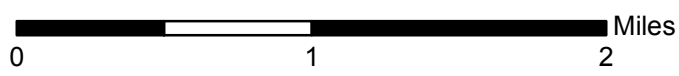
Simple DFIRM

Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teletlas; Western Connecticut Council of Governments, Weston

New Canaan Municipal Resources



- | | | | |
|-----------|-----------------------|----------------|-------------|
| Town Hall | EMS | Library | Class B Dam |
| EOC | Care Facility | Post Office | Class C Dam |
| Hospital | Water Treatment Plant | Animal Control | |
| Fire | Public Works | Rail | |
| Police | Community Center | Bus B.5 | |

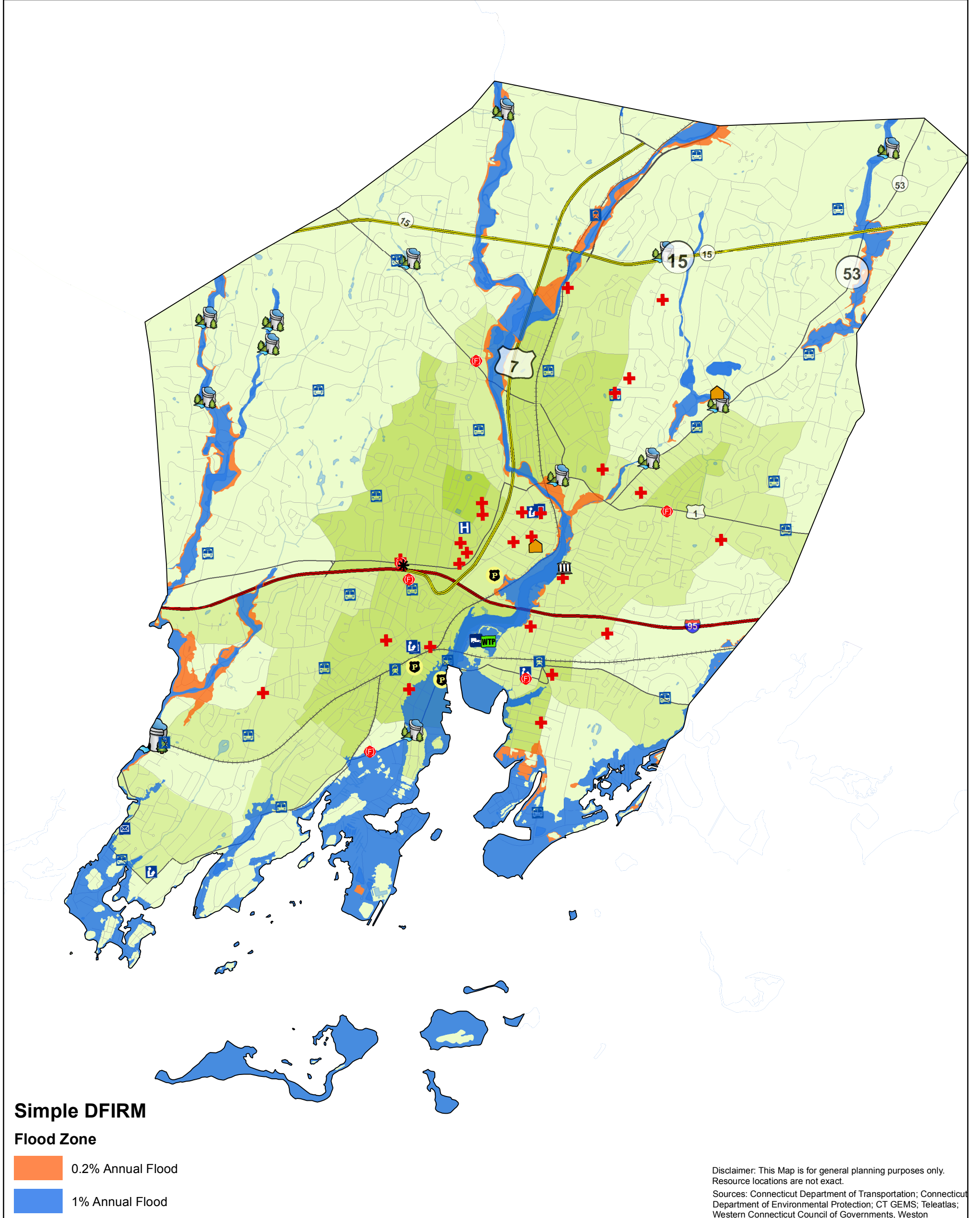


Population Density

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Norwalk - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources



Simple DFIRM

Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

Municipal Resources

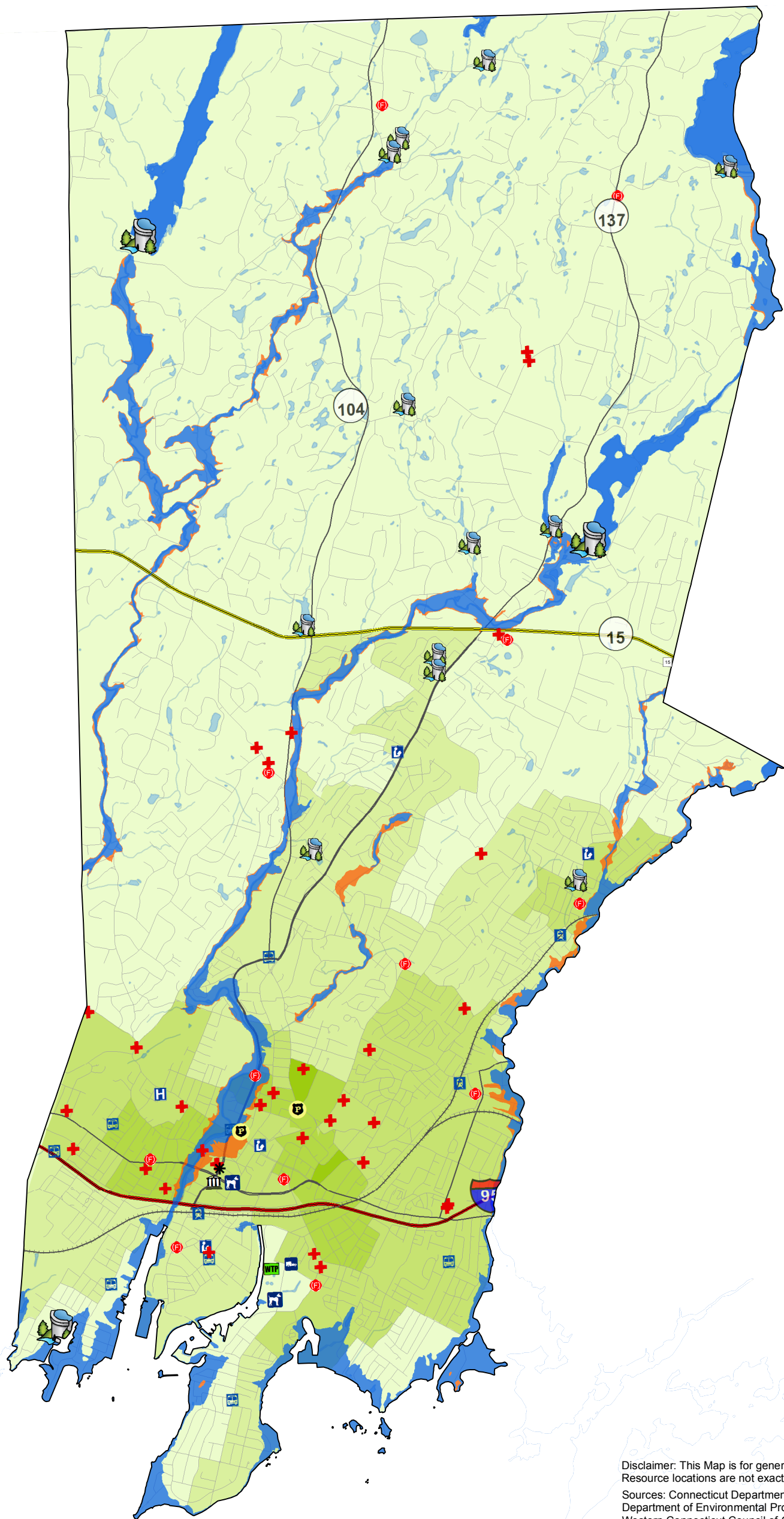


- | | | | |
|-----------|-----------------------|----------------|-------------|
| Town Hall | EMS | Library | Class B Dam |
| EOC | Care Facility | Post Office | Class C Dam |
| Hospital | Water Treatment Plant | Animal Control | |
| Fire | Public Works | Rail | |
| Police | Community Center | BUS B.6 | |

Population Density

- ### Population/Acre
- 0-5
 - 5-10
 - 10-25
 - 25-50
 - 50+

Stamford - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources



Simple DFIRM










Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood; V; VE

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

Municipal Resources



- | | | | |
|--|---|--|---|
|  Town Hall |  EMS |  Library |  Class B Dam |
|  EOC |  Care Facility |  Post Office |  Class C Dam |
|  Hospital |  Water Treatment Plant |  Animal Control | |
|  Fire |  Public Works |  Rail | |
|  Police |  Community Center |  Bus B.7 | |



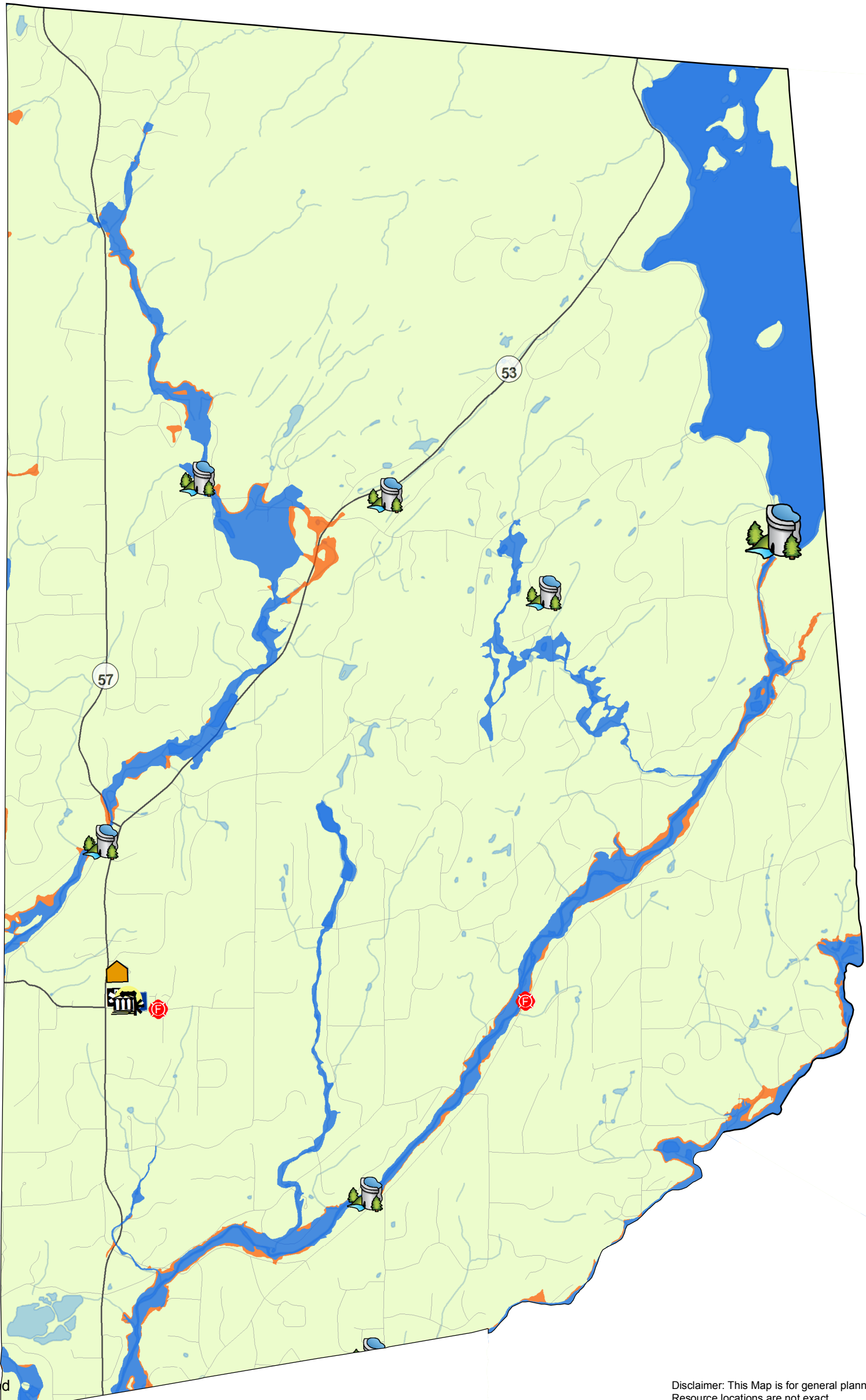
Population Density

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Weston - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources

WCCOG




















Simple DFIRM

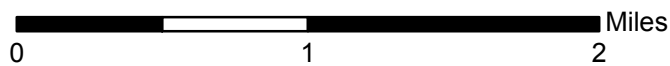
Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood; V; VE

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

Weston Municipal Resources

- | | | | |
|--|---|--|---|
|  Town Hall |  EMS |  Library |  Class B Dam |
|  EOC |  Care Facility |  Post Office |  Class C Dam |
|  Hospital |  Water Treatment Plant |  Animal Control | |
|  Fire |  Public Works |  Rail | |
|  Police |  Community Center |  Bus _{B.8} | |



Population Density

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Westport - Digital Flood Insurance Rate Map (DFIRM) and Municipal Resources



Simple DFIRM

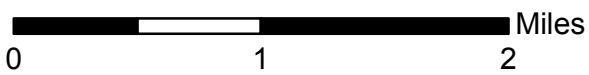
Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood; V; VE

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teleatlas; Western Connecticut Council of Governments, Weston

Municipal Resources

- Town Hall
- EMS
- EOC
- Care Facility
- Hospital
- Shelter
- Fire
- Water Treatment Plant
- Police
- Public Works



- Community Center
- Library
- Post Office
- Animal Control
- Rail_{B,9}

- Bus
- Class B Dam
- Class C Dam



Population Density

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Wilton - Digital Flood Insurance Rate Map and Municipal Resources



Simple DFIRM

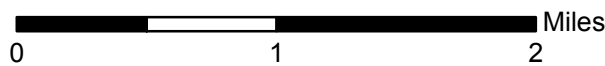
Flood Zone

- 0.2% Annual Flood
- 1% Annual Flood; V; VE

Disclaimer: This Map is for general planning purposes only. Resource locations are not exact.
 Sources: Connecticut Department of Transportation; Connecticut Department of Environmental Protection; CT GEMS; Teletlas; Western Connecticut Council of Governments, Weston

Wilton Municipal Resources

- | | | | |
|-----------|-----------------------|------------------|-------------|
| Town Hall | EMS | Community Center | Bus |
| EOC | Care Facility | Library | Class B Dam |
| Hospital | Shelter | Post Office | Class C Dam |
| Fire | Water Treatment Plant | Animal Control | |
| Police | Public Works | Rail | |



Population Density

Population/Acre

- 0-5
- 5-10
- 10-25
- 25-50
- 50+

Appendix B-2

Climate Change Analysis

Geospatial Modeling Approaches

To assess and understand the impacts of climate change via sea level rise and extreme precipitation events in the SWRPA region geospatial modeling and spatial analyses are utilized within a Geographic Information System (GIS) package. The advantages of using GIS for environmental modeling are the following:

- Data from multiple scales can be analyzed
- A GIS can handle diverse data sets (e.g. environmental, demographics, and land use) in a single geographic context
- A GIS is scalable for manipulation analysis of very large data sets
- Results can be analyzed, aggregated, and summarized at multiple scales

For this analysis, two types of geospatial analyses widely incorporated into environmental and change analysis modeling are utilized. To model Sea Level Rise impacts, an Overlay Analysis is conducted with vector data. The Overlay Analysis allows for the identification of areas impacted by sea level rise based on specific criteria—typically a specific subset based on a rule set.

A Vulnerability Analysis with raster data creates a rank-order score for each and every spot within the entire region based on modeling criteria such as topography, slope shape, land use, and soil drainage to better understand the relative risk from extreme precipitation events. A Vulnerability Analysis is well suited for evaluating conflicting multivariate criteria. For both models very fine scale environmental data will allow for the identification parcels and street level impacts or vulnerabilities.

Modeling Sea Level Rise Impacts

To model the independent variable (variables that changes) sea level rise estimates were acquired from the Nature Conservancy for the SWRPA region. The spatial data they created has three scenarios (i.e. conservative, average, and aggressive) for three different time periods (i.e. 2020, 2050, and 2080 per time period which represent the horizontal extent that sea water comes inland for the four coastal towns: Greenwich, Stamford, Norwalk, Weston. Four sets of high resolution, dependent variables were evaluated for impacts (i.e. parcels, assets, bus stops, and major roads) using an Overlay Analysis that determine which features are seaward of the predicted sea level rise line. The primary physical assumption in this analysis is that if the sea level rise horizontal extent intersects and an important physical feature, that feature is vulnerable. Local elevation of each individual asset is not accounted for in this analysis.

Modeling Vulnerability to Extreme Precipitation Event

As discussed early, another important climate change impact is the increase in the number of extreme precipitation events and general change of the hydrologic regime to a warmer, wetter climate, which is an already documented change, and one that is expected to continue increase through the rest of the 21st century. Unlike sea level rise whose impacts are limited to coastal area and is a relatively simple impact process, the process of evaluating vulnerability to climate change is much more complicated because of the influence and interaction of topographic, insipient condition, land use factors. Topographic factors, for instance, influences how surface water is concentrated and the resulting flow network. The inherent soil conditions such as drainage influence the infiltration and permeability of a particular location. The land use greatly impacts infiltration. For instance, forested lands have a high capacity for infiltration whereas paved or impervious cover areas have no infiltration.

Instead of the discrete and direct impacts discussed in the sea level change model, this environmental geospatial model approach is focused on finding locations that are more likely to be impacted by

changing extreme precipitation patterns. This Vulnerability Model uses an additive coding scheme on a per pixel basis where scores from each variable are recoded so that factors that promote wetness and runoff are ranked higher than those that promote infiltration. For example, the land cover category called deciduous forest is coded as a “1” while the developed, High Intensity category is coded as a “4”. See Table X for more information. Critical to this analysis is the use of raster data that allows the application of the model across the entire site, at each and every location.

To facilitate the modeling process, all vector and raster data of interest were recoded and reprojected into 10’ raster cells using the Connecticut State Plane projection. Some locations were excluded from the analysis such as roads, existing state waters, Connecticut wetlands, and FEMA floodplain zones that are already wet, regulated, or controlled by a governmental entity. Topographic variables such as curvature, slope and flow accumulation were derived from resampled 10’ digital elevation model (DEM). The variable curvature evaluates whether a location is concave, convex or flat. The variable slope determines the ratio between vertical and horizontal change. The variable flow accumulation is calculated by a process that fills in isolated holes called sinks, determines which way pixels flow and then counts the number of cells that come to a single point. Soils data were used to evaluate infiltration capacity and the presence of wetland soils in Connecticut (i.e. poorly drained, very poorly drained, and alluvial and floodplain soils). Land cover data was extracted from 30m NLCD raster data from 2012. To evaluate the influence of impervious cover on the broader watershed scale, a ratio between pervious and impervious cover was developed. Finally, all coded variables were added using the Raster Calculator and then analyzed using Boolean thresholds. See Table 1 and 2 for more information regarding geoprocessing and data sources.

Table 1: Geoprocessing of Spatial Data

Group	Variable	Processing	Processing	Processing	Processing
	<i>Data</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>
	CT Soil Drainage Class	Clip to SWRPA Boundary	Vector to Raster Conversion	Reclassify	Combine in Weighted Sum Overlay Model
	CT Soils Hydric	Clip to SWRPA Boundary	Vector to Raster Conversion	Reclassify	Combine in Weighted Sum Overlay Model
	Slopes	Mosaic DEMs	Convert DEM to Slope Raster	Convert to Categorical Data using Raster Calculator	Combine in Weighted Sum Overlay Model
	Land Cover per Pixel	Clip US 2012 NLCD Land Cover to SWRPA Boundary	Reclassify		Combine in Weighted Sum Overlay Model
	Curvature	Convert DEM to Curvature Raster	Convert to Categorical Data using Reclassify		Combine in Weighted Sum Overlay Model
	Flow Accumulation	Convert DEM to Flow Direction Raster	Convert Flow Direction Raster to Flow Accumulation Raster	Reclassify	Combine in Weighted Sum Overlay Model
	Land Cover per WS	Clip US 2012 NLCD Land Cover to SWRPA Boundary	Reclassify to Categorical Data	Aggregate to Local Basins	Combine in Weighted Sum Overlay Model
	Adjacent to Hydrography	Clip USGS Hydrography data to SWRPA Boundary	Rasterize distances from Hydrography with Euclidean Distance	Reclassify to Convert to Categorical Data	Combine in Weighted Sum Overlay Model
Exclusion	Exclude Roads	Clip to SWRPA boundary	Vector to Raster Conversion	Reclassify to NoData	Combine using Times
	Exclude Hydro	Clip to SWRPA boundary	Vector to Raster Conversion	Reclassify to NoData	Combine using Times
	Exclude FEMA	Clip to SWRPA boundary	Vector to Raster Conversion	Reclassify to NoData	Combine using Times
	Exclude Storm Surge	Clip to SWRPA boundary	Vector to Raster Conversion	Reclassify to NoData	Combine using Times
	Exclude High and Medium Intensity Urban	Reclassify to NoData			

Table 2 Variable Coding

Variable	Data Type	String	Original Coding	Model Coding	Notes	Data source
<i>Soil Drainage Class</i>	Categorical				High values are wet and low values are dry Caveat for heavily developed areas	NRCS Web Soil Survey
		Water	1	4		
		Well drained	2	2		
		Very poorly drained	3	3		
		Mod well drained	4	2		
		Somewhat ex drained	5	1		
		Poorly drained	6	3		
		Ex drained	7	1		
		Not Rated	8	0		
<i>Soils Hydric</i>	Categorical					NRCS Web Soil Survey
		Water	1	4		
		Other	2	1		
		Poorly Drained and Very Poorly Drained Soils	3	4		
		Alluvial and Floodplain Soils	4	3	These soils are often dry but are protected under the inland wetlands act	
<i>Slopes</i>	Continuous		0 to 3%	3	Range of values from 0 to 1108.79	SWRPA 2013 DEM data
			3 to 8%	2		
			8%<	1		
<i>Land Cover per Pixel</i>	Categorical	Unclassified	0	0	Use TR 45 model for reference	NLCD 2012 Land Cover data
		Open Water	11	4		
		Perennial Snow/Ice	12	0		
		Developed, Open Space	21	2		
		Developed, Low Intensity	22	3		

		Developed, Medium Intensity	23	4		
		Developed, High Intensity	24	4		
		Barren Land	31	3		
		Deciduous Forest	41	1		
		Evergreen Forest	42	1		
		Mixed Forest	43	1		
		Shrub/scrub	52	2		
		Herbaceous	71	3		
		Hay/pasture	81	2		
		Cultivated Crops	82	3		
		Woody Wetlands	90	4		
		Emergent Herbaceous Wetlands	95	4		
Curvature	Continuous		less than -1	3	Range of values from 31 to -31. Typically most values are between 1 and -1 Curvature resampled in 3x3 neighborhood	SWRPA 2013 DEM data
			zero to -1	2		
			zero to 31	1		
Flow Accumulation	Continuous		less than 20	1	Minimum value is 100 cells which is approximate size of a residential lot	SWRPA 2013 DEM data
			20 to 50	2		
			50 to 100	3		
			100 to 200	4		
			200 or greater	5		
Per NN or WS Variable						
Land Cover per WS	Categorical	Unclassified	0	0	Rule set is <10% Developed and or >50%	NLCD 2012 Land Cover data
		Open Water	11	0		

		Perennial Snow/Ice	12	0		
		Developed, Open Space	21	4	Combined <10% Developed	
		Developed, Low Intensity	22	4	combined >10%	
		Developed, Medium Intensity	23	4		
		Developed, High Intensity	24	4		
		Barren Land	31	4		
		Deciduous Forest	41	1	combine forest categories >50% forest	
		Evergreen Forest	42	1		
		Mixed Forest	43	1		
		Shrub/scrub	52	1		
		Herbaceous	71	0		
		Hay/pasture	81	0		
		Cultivated Crops	82	0		
		Woody Wetlands	90	0		
		Emergent Herbaceous Wetlands	95	0		
Adjacency						
Hydro				4	within 100'	CT DEEP
				0	beyond 100'	
Exclusion						
Exclude Roads					Apply 25' buffer to centerline	Teleatlas
Exclude Hydro						CT DEEP
Exclude FEMA						100 year FEMA
		100 year		4		
		500 year		3		
Exclude Storm Surge					Not utilized in initial analysis	Nature Conservancy

Appendix B-3

HAZUS-MH Analysis

B-2 HAZUS Methodology

Potential impacts from flooding, hurricane and earthquake events were evaluated using HAZUS-MH loss estimation program developed by FEMA. HAZUS-MH can be performed at three levels of analysis each with an increasing level of detail but at the cost of user effort and data sophistication. The scope of this analysis is a level 2 analysis which uses the default HAZUS-MH data along with ancillary data prepared by WCCOG. A description of the data and methodology for each hazard type our outlined below.

Data

HAZUS Inventory Data:

HAZUS provides its own suite of out of the box data developed for simulating hazards known as the HAZUS Inventory Data. It includes generalized information on the counts of buildings, building types, building materials, day time and night time automobiles, building interior values, 2000 census population data, hospitals, fire departments, police departments, schools, and utility infrastructure to name some of the features. This data is described in detail in the HAZUS-MH technical manuals which can be downloaded from FEMA's website.

Essential Facilities:

Fire, Police, Hospitals, care facilities, shelters, schools, and emergency operations centers was provided through DEMHS. Local assets were identified for each municipality through meetings and workshops with relevant municipal staff.

Elevation Data

A 10m digital elevation model (DEM) from the USGS was used to calculate streams, flood depth grids, and potential flood zones for flood simulations.

Flood Simulation Methodology

Four regional flood scenarios were simulated to cover coastal and riverine flooding during 1%, and 0.2% annual flood events. The results from these regional simulations were sorted into the municipal level.

To initiate the riverine flood simulation a stream network was delineated with a defined stream drainage area of 0.25 square miles, the highest scale of calculating streams allowed by HAZUS (See HAZUS Flood Technical Manual for more details on stream drainage area.). The stream layer underwent a hydrologic analysis to solve for peak flood discharges and the frequencies in which they occur. Then the model calculates the flood plain boundary as a polygon file and a flood depth grid as a raster file.

The flood depth grid was an input for within the user data and is used to calculate flood impacts. HAZUS displays the results as output tables witch can be viewed through the HAZUS software. The technical process used in this study is listed below. The simulation was performed assuming there was no advance warning, with equal flooding occurring within the entire riverine system simultaneously.

In coastal flooding scenarios, HAZUS provided coastal shoreline data which was updated to include high tide elevation data found within FEMA flood manuals for the region. The HAZUS software then computes a flood boundary and a flood depth grid for all the flood scenarios. The flood data is then used

to calculate estimated impacts for a coastal flood event which occurs without warning throughout the entire region simultaneously.

Hurricane Simulation Methodology

Hurricane simulations were performed for probabilistic for 5%, 1%, 0.02% and 0.001% as well as for Super Storm Sandy. The results from these hurricane scenarios only account for damage caused by wind. The scenario utilized default model settings, but did account for WCCOG's updated asset data. Storm surge and flooding which are often tied to hurricanes are not accounted in the damage estimates. These scenarios were performed as a regional analysis, the data from which was further distilled to the municipal level. Regional summary reports can be found in Appendix B-3. More information on technical methods for the hurricane model can be found in the HAZUS-MH technical manual.

Earthquake Simulation Methodology

Earthquake simulations were performed on a regional scale representing scenarios where a magnitude 5 earthquake were to have its epicenter in the center of the region, the center of each town, and 25km, 50km, 75 and 100km due north from the center of the region. All default settings were chosen for the various earthquake scenarios. These scenarios were performed as a regional analysis, the data from which was further distilled to the municipal level. Regional summary reports can be found in Appendix B-3. More information on technical methods for the earthquake model can be found in the HAZUS-MH technical manual.

Hazus-MH: Flood Event Report

Region Name: HMP2016_SWR_FI

Flood Scenario: Coastal

Print Date: Thursday, November 06, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 210 square miles and contains 4,297 census blocks. The region contains over 134 thousand households and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 119,285 buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 87.95% of the buildings (and 68.49% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religion	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,291,272	62.4%
Commercial	2,095,775	30.5%
Industrial	307,555	4.5%
Agricultural	27,017	0.4%
Religion	98,476	1.4%
Government	12,397	0.2%
Education	48,264	0.7%
Total	6,880,756	100.00%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 1,824 schools, 38 fire stations, 12 police stations and 8 emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	HMP2016_SWR_FI
Scenario Name:	Coastal
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-Ifs

Building Damage

General Building Stock Damage

Hazus estimates that about 1,796 buildings will be at least moderately damaged. This is over 61% of the total number of buildings in the scenario. There are an estimated 105 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	1	2.86	30	85.71	2	5.71	2	5.71	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	189	10.73	534	30.32	422	23.96	511	29.02	105	5.96
Total	1		220		536		424		511		105	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	0	0.00	9	15.52	20	34.48	7	12.07	22	37.93	0	0.00
Steel	1	6.67	12	80.00	1	6.67	1	6.67	0	0.00	0	0.00
Wood	0	0.00	191	11.21	511	29.99	415	24.35	482	28.29	105	6.16

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 812 hospital beds available for use. On the day of the scenario flood event, the model estimates that 812 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	2	0	2
Hospitals	4	0	0	0
Police Stations	12	2	0	2
Schools	1,824	2	0	1

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 98,613 tons of debris will be generated. Of the total amount, Finishes comprises 41% of the total, Structure comprises 36% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 3,945 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 5,997 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 15,291 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 1,113.26 million dollars, which represents 16.18 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,107.95 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 43.99% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	297.82	143.25	29.58	6.81	477.45
	Content	191.50	323.41	65.14	34.36	614.40
	Inventory	0.00	5.94	9.19	0.97	16.10
	Subtotal	489.32	472.59	103.90	42.14	1,107.95
<u>Business Interruption</u>						
	Income	0.02	1.94	0.00	0.04	2.00
	Relocation	0.28	0.44	0.00	0.01	0.73
	Rental Income	0.09	0.30	0.00	0.00	0.39
	Wage	0.05	1.56	0.00	0.57	2.18
	Subtotal	0.43	4.24	0.01	0.62	5.30
ALL	Total	489.75	476.84	103.91	42.76	1,113.26

Appendix A: County Listing for the Region

- Connecticut
 - Fairfield

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			
	Population	Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Total Study Region	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Flood Event Report

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Flood Scenario: Coastal

Print Date: Thursday, November 06, 2014

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Note:

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There are an estimated 119,285 buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 87.95% of the buildings (and 68.49% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

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Religion	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,291,272	62.4%
Commercial	2,095,775	30.5%
Industrial	307,555	4.5%
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Government	12,397	0.2%
Education	48,264	0.7%
Total	6,880,756	100.00%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 1,824 schools, 38 fire stations, 12 police stations and 8 emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	HMP2016_SWR_FI
Scenario Name:	Coastal
Return Period Analyzed:	500
Analysis Options Analyzed:	No What-Ifs

Building Damage

General Building Stock Damage

Hazus estimates that about 2,994 buildings will be at least moderately damaged. This is over 80% of the total number of buildings in the scenario. There are an estimated 316 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	2	3.77	37	69.81	12	22.64	1	1.89	1	1.89	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	1	50.00	1	50.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	83	2.82	747	25.40	787	26.76	1,008	34.27	316	10.74
Total	2		121		760		788		1,009		316	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	0	0.00	6	5.50	24	22.02	25	22.94	42	38.53	12	11.01
Steel	1	3.45	22	75.86	6	20.69	0	0.00	0	0.00	0	0.00
Wood	0	0.00	88	3.11	725	25.61	759	26.81	959	33.87	300	10.60

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 812 hospital beds available for use. On the day of the scenario flood event, the model estimates that 812 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	3	0	3
Hospitals	4	0	0	0
Police Stations	12	2	0	2
Schools	1,824	4	0	3

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 207,587 tons of debris will be generated. Of the total amount, Finishes comprises 34% of the total, Structure comprises 41% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 8,303 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 7,425 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 19,357 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 1,812.99 million dollars, which represents 26.35 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,805.47 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 46.24% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	512.99	234.42	45.81	11.69	804.90
	Content	324.60	499.15	98.82	54.16	976.73
	Inventory	0.00	9.11	13.32	1.40	23.83
	Subtotal	837.59	742.69	157.96	67.24	1,805.47
<u>Business Interruption</u>						
	Income	0.03	2.75	0.00	0.07	2.84
	Relocation	0.42	0.64	0.01	0.02	1.08
	Rental Income	0.14	0.43	0.00	0.00	0.57
	Wage	0.08	2.18	0.00	0.77	3.03
	Subtotal	0.67	5.99	0.01	0.86	7.52
ALL	Total	838.26	748.67	157.96	68.10	1,812.99

Appendix A: County Listing for the Region

- Connecticut
 - Fairfield

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			Total
	Population	Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Total Study Region	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Flood Event Report

Region Name: HMP2016_SWR_FI

Flood Scenario: RiverineOnly

Print Date: Friday, October 24, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 210 square miles and contains 4,297 census blocks. The region contains over 134 thousand households and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 119,285 buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 87.95% of the buildings (and 68.49% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religion	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	9,558,592	65.8%
Commercial	3,722,941	25.6%
Industrial	733,184	5.0%
Agricultural	60,060	0.4%
Religion	213,715	1.5%
Government	85,237	0.6%
Education	150,211	1.0%
Total	14,523,940	100.00%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 1,824 schools, 38 fire stations, 12 police stations and 8 emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	HMP2016_SWR_FI
Scenario Name:	RiverineOnly
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-Ifs

Building Damage

General Building Stock Damage

Hazus estimates that about 434 buildings will be at least moderately damaged. This is over 27% of the total number of buildings in the scenario. There are an estimated 86 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	26	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	9	45.00	8	40.00	2	10.00	1	5.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	9	2.33	20	5.17	139	35.92	133	34.37	86	22.22
Total	0		45		28		141		134		86	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	3	75.00	1	25.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	0	0.00	9	60.00	1	6.67	1	6.67	4	26.67	0	0.00
Steel	0	0.00	18	72.00	5	20.00	1	4.00	1	4.00	0	0.00
Wood	0	0.00	14	3.62	20	5.17	138	35.66	129	33.33	86	22.22

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 812 hospital beds available for use. On the day of the scenario flood event, the model estimates that 812 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	2	0	2
Hospitals	4	0	0	0
Police Stations	12	0	0	0
Schools	1,824	8	0	7

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 27,816 tons of debris will be generated. Of the total amount, Finishes comprises 56% of the total, Structure comprises 26% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 1,113 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 4,030 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 7,871 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 745.17 million dollars, which represents 5.13 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 741.64 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 29.83% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	143.78	97.37	36.52	6.08	283.75
	Content	78.42	230.24	95.74	32.05	436.45
	Inventory	0.00	3.14	17.61	0.69	21.44
	Subtotal	222.20	330.74	149.87	38.83	741.64
<u>Business Interruption</u>						
	Income	0.00	1.32	0.01	0.03	1.37
	Relocation	0.07	0.27	0.02	0.01	0.37
	Rental Income	0.02	0.17	0.00	0.00	0.19
	Wage	0.01	1.05	0.02	0.52	1.60
	Subtotal	0.10	2.81	0.05	0.57	3.53
ALL	Total	222.30	333.56	149.92	39.40	745.17

Appendix A: County Listing for the Region

- Connecticut
 - Fairfield

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			Total
	Population	Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Total Study Region	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Flood Event Report

Region Name: HMP2016_SWR_FI

Flood Scenario: RiverineOnly

Print Date: Friday, October 24, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 210 square miles and contains 4,297 census blocks. The region contains over 134 thousand households and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 119,285 buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 87.95% of the buildings (and 68.49% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religion	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	9,558,592	65.8%
Commercial	3,722,941	25.6%
Industrial	733,184	5.0%
Agricultural	60,060	0.4%
Religion	213,715	1.5%
Government	85,237	0.6%
Education	150,211	1.0%
Total	14,523,940	100.00%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 1,824 schools, 38 fire stations, 12 police stations and 8 emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	HMP2016_SWR_FI
Scenario Name:	RiverineOnly
Return Period Analyzed:	500
Analysis Options Analyzed:	No What-Ifs

Building Damage

General Building Stock Damage

Hazus estimates that about 789 buildings will be at least moderately damaged. This is over 36% of the total number of buildings in the scenario. There are an estimated 211 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	39	92.86	3	7.14	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	8	42.11	8	42.11	2	10.53	1	5.26	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	10	1.38	34	4.68	227	31.22	245	33.70	211	29.02
Total	0		58		45		229		246		211	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	3	75.00	1	25.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	0	0.00	11	50.00	2	9.09	6	27.27	2	9.09	1	4.55
Steel	0	0.00	24	75.00	6	18.75	1	3.13	1	3.13	0	0.00
Wood	0	0.00	17	2.34	35	4.83	220	30.34	243	33.52	210	28.97

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 812 hospital beds available for use. On the day of the scenario flood event, the model estimates that 812 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	3	0	3
Hospitals	4	0	0	0
Police Stations	12	0	0	0
Schools	1,824	10	0	9

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 52,188 tons of debris will be generated. Of the total amount, Finishes comprises 47% of the total, Structure comprises 31% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 2,088 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 5,212 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 10,606 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 1,145.61 million dollars, which represents 7.89 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,139.67 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 30.63% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	227.57	162.60	45.35	9.69	445.21
	Content	123.10	379.93	114.75	49.27	667.05
	Inventory	0.00	6.09	20.45	0.88	27.42
	Subtotal	350.67	548.61	180.55	59.84	1,139.67
<u>Business Interruption</u>						
	Income	0.01	2.14	0.01	0.06	2.22
	Relocation	0.13	0.47	0.02	0.03	0.65
	Rental Income	0.03	0.31	0.01	0.00	0.35
	Wage	0.02	1.78	0.02	0.89	2.71
	Subtotal	0.19	4.71	0.06	0.98	5.94
ALL	Total	350.87	553.32	180.61	60.81	1,145.61

Appendix A: County Listing for the Region

- Connecticut
 - Fairfield

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			Total
	Population	Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Total Study Region	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: SANDY_2012_stm_2107PM

Print Date: Thursday, November 06, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name: SANDY_2012_stm_2107PM
Type: Forecast/Advisory
Maximum Peak Gust in Study Region: 81 mph
Storm Information: HURREVAC Storm Advisory Download; FILE PATH:
ftp://ftp.hurrevac2.com/s_2012.stm

User Defined Storm Track Input Data

Point	Latitude	Longitude	Time Step (hour)	Translation Speed (mph)	Radius To Max Winds (miles)	Max. Sustained Wind Speed (mph @ 10m)	Central Pressure (mBar)	Profile Parameter	Radius to Hurricane Force Winds (miles)
1	12.50	-78.50	6.00	--	--	40.00	999.00	--	0.00
2	12.70	-78.70	9.00	--	--	40.37	998.00	--	0.00
3	12.70	-78.60	12.00	--	--	41.40	998.00	--	0.00
4	12.90	-78.70	15.00	--	--	40.37	998.00	--	0.00
5	13.30	-78.60	18.00	--	--	41.40	998.00	--	0.00
6	13.40	-77.90	21.00	--	--	40.37	997.00	--	0.00
7	13.80	-77.80	24.00	--	--	46.58	993.00	--	0.00
8	14.10	-77.60	27.00	--	--	44.51	993.00	--	0.00
9	14.30	-77.60	30.00	--	--	46.58	993.00	--	0.00
10	14.80	-77.50	33.00	--	--	44.51	993.00	--	0.00
11	15.20	-77.20	36.00	--	--	51.75	989.00	--	0.00
12	15.70	-77.10	39.00	--	--	57.96	988.00	--	0.00
13	16.30	-77.00	42.00	--	--	62.10	986.00	--	0.00
14	16.60	-76.90	45.00	--	--	63.14	983.00	--	0.00
15	17.10	-76.70	48.00	--	--	72.45	973.00	--	0.00
16	17.60	-76.80	51.00	--	--	72.45	973.00	--	0.00
17	18.30	-76.60	54.00	--	--	72.45	970.00	--	0.00
18	18.70	-76.40	57.00	--	--	76.59	968.00	--	21.56
19	19.40	-76.30	60.00	--	--	82.80	954.00	--	21.56
20	20.10	-75.90	63.00	--	--	99.36	957.00	--	21.56
21	20.90	-75.80	66.00	--	--	93.15	960.00	--	17.71
22	21.60	-75.50	69.00	--	--	94.19	967.00	--	17.71
23	22.40	-75.50	72.00	--	--	93.15	964.00	--	21.56
24	23.50	-75.40	75.00	--	--	94.19	963.00	--	21.56

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25	24.50	-75.60	78.00	--	--	93.15	963.00	--	26.18
26	24.80	-75.80	81.00	--	--	90.05	965.00	--	26.18
27	25.30	-76.10	84.00	--	--	82.80	968.00	--	26.18
28	25.80	-76.50	87.00	--	--	76.59	968.00	--	26.18
29	26.30	-76.90	90.00	--	--	72.45	968.00	--	0.00
30	26.40	-76.90	93.00	--	--	72.45	970.00	--	0.00
31	26.70	-76.90	96.00	--	--	72.45	970.00	--	0.00
32	27.10	-77.10	99.00	--	--	67.28	971.00	--	0.00
33	27.30	-77.10	102.00	--	--	67.28	971.00	--	0.00
34	27.50	-77.20	105.00	--	--	67.28	970.00	--	0.00
35	27.70	-77.10	108.00	--	--	67.28	969.00	--	0.00
36	28.10	-76.90	111.00	--	--	67.28	969.00	--	0.00
37	28.60	-76.70	114.00	--	--	62.10	969.00	--	0.00
38	28.80	-76.80	117.00	--	--	67.28	960.00	--	0.00
39	29.00	-76.00	120.00	--	--	67.28	958.00	--	0.00
40	29.70	-75.60	123.00	--	--	67.28	961.00	--	0.00
41	30.20	-75.20	126.00	--	--	67.28	961.00	--	0.00
42	30.50	-74.70	129.00	--	--	67.28	961.00	--	0.00
43	30.90	-74.30	132.00	--	--	67.28	960.00	--	0.00
44	31.50	-73.70	135.00	--	--	67.28	960.00	--	0.00
45	31.90	-73.30	138.00	--	--	67.28	960.00	--	0.00
46	32.10	-73.10	141.00	--	--	67.28	951.00	--	0.00
47	32.50	-72.60	144.00	--	--	67.28	951.00	--	0.00
48	32.80	-71.90	147.00	--	--	67.28	951.00	--	0.00
49	33.40	-71.30	150.00	--	--	67.28	952.00	--	0.00
50	34.00	-70.90	153.00	--	--	67.28	950.00	--	0.00
51	34.50	-70.50	156.00	--	--	67.28	950.00	--	0.00
52	35.20	-70.50	159.00	--	--	67.28	950.00	--	0.00
53	35.90	-70.50	162.00	--	--	77.63	946.00	--	132.44
54	36.80	-71.10	165.00	--	--	76.59	946.00	--	132.44
55	37.50	-71.50	168.00	--	--	82.80	943.00	--	132.44
56	38.30	-73.10	171.00	--	--	80.73	940.00	--	132.44
57	38.80	-74.40	174.00	--	--	82.80	940.00	--	132.44
58	39.80	-75.40	180.00	--	--	77.37	952.00	--	0.00
59	40.50	-77.00	186.00	--	--	66.65	960.00	--	0.00
60	40.20	-78.40	192.00	--	--	46.42	983.00	--	0.00
61	40.80	-79.20	198.00	--	--	46.42	988.00	--	0.00
62	41.30	-79.40	204.00	--	--	40.00	992.00	--	0.00
63	42.30	-79.50	213.00	--	--	40.00	992.00	--	0.00
64	46.20	-77.70	225.00	--	--	40.00	992.00	--	0.00
65	46.20	-77.70	237.00	--	--	40.00	992.00	--	0.00
66	46.20	-77.70	249.00	--	--	40.00	992.00	--	0.00
67	46.20	-77.70	273.00	--	--	40.00	992.00	--	0.00
68	46.20	-77.70	297.00	--	--	40.00	992.00	--	0.00
69	46.20	-77.70	321.00	--	--	40.00	992.00	--	1.00

Building Damage

General Building Stock Damage

Hazus estimates that about 53 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	676	99.28	5	0.68	0	0.03	0	0.01	0	0.00
Commercial	9,505	99.19	74	0.78	3	0.03	0	0.00	0	0.00
Education	327	99.24	3	0.76	0	0.00	0	0.00	0	0.00
Government	178	99.16	2	0.84	0	0.00	0	0.00	0	0.00
Industrial	2,894	99.19	23	0.80	0	0.01	0	0.00	0	0.00
Religion	683	99.35	4	0.63	0	0.02	0	0.00	0	0.00
Residential	104,239	99.36	618	0.59	47	0.05	2	0.00	0	0.00
Total	118,503		729		51		2		0	

Table 3: Expected Building Damage by Building Type

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,961	98.98	20	1.02	0	0.00	0	0.00	0	0.00
Masonry	12,357	98.37	181	1.44	23	0.18	1	0.01	0	0.00
MH	198	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	6,848	99.15	57	0.83	1	0.02	0	0.00	0	0.00
Wood	97,219	99.58	395	0.40	14	0.01	1	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 812 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	3	0	4
Police Stations	12	0	0	12
Schools	152	0	0	152

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 10,815 tons of debris will be generated. Of the total amount, 1,566 tons (14%) is Other Tree Debris. Of the remaining 9,249 tons, Brick/Wood comprises 53% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 197 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 4,333 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 4 households to be displaced due to the hurricane. Of these, 1 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 57.1 million dollars, which represents 0.14 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 57 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 95% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	43,610.95	2,373.22	287.15	263.06	46,534.38
	Content	9,214.36	1.63	0.10	0.06	9,216.14
	Inventory	0.00	0.01	0.02	0.01	0.04
	Subtotal	52,825.31	2,374.86	287.27	263.12	55,750.56
<u>Business Interruption Loss</u>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	550.76	24.11	0.49	1.04	576.39
	Rental	787.58	0.00	0.00	0.00	787.58
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	1,338.34	24.11	0.49	1.04	1,363.98
<u>Total</u>						
	Total	54,163.65	2,398.97	287.76	264.16	57,114.54

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Quick Assessment Report

B.77

November 5, 2014

Study Region : HMP2016_SWR_Hu

Scenario : Probabilistic

Regional Statistics

Area (Square Miles)	214
Number of Census Tracts	84
Number of People in the Region	353,556
General Building Stock	

<u>Occupancy</u>	<u>Building Count</u>	<u>Dollar Exposure (\$ K)</u>
Residential	104,907	27,414,335
Commercial	9,582	9,458,590
Other	4,796	3,151,702
Total	119,285	40,024,627

Scenario Results

Number of Residential Buildings Damaged

<u>Return Period</u>	<u>Minor</u>	<u>Moderate</u>	<u>Severe</u>	<u>Destruction</u>	<u>Total</u>
10	0	0	0	0	0
20	63	3	0	0	66
50	642	46	2	0	690
100	4,131	423	10	1	4,566
200	12,171	1,877	59	29	14,136
500	28,236	7,925	732	465	37,359
1000	36,232	14,070	2,172	1,411	53,886

Number of Buildings Damaged

<u>Return Period</u>	<u>Minor</u>	<u>Moderate</u>	<u>Severe</u>	<u>Destruction</u>	<u>Total</u>
10	0	0	0	0	0
20	97	3	0	0	100
50	751	50	2	0	804
100	4,556	468	15	1	5,040
200	13,439	2,147	96	30	15,712
500	31,208	9,384	1,061	477	42,130
1000	39,947	16,683	3,033	1,439	61,102

Shelter Requirements

<u>Return Period</u>	<u>Displaced Households (#Households)</u>	<u>Short Term Shelter (#People)</u>
10	0	0
20	0	0
50	2	0
100	128	31
200	618	151
500	2,599	618
1000	5,637	1,312

Economic Loss (x 1000)

<u>ReturnPeriod</u>	<u>Property Damage (Capital Stock) Losses</u>		<u>Business Interruption (Income) Losses</u>
	<u>Residential</u>	<u>Total</u>	
10	0	0	0
20	2,774	2,774	6
50	51,379	54,190	1,345
100	176,552	191,394	13,707
200	414,592	473,567	49,665
500	1,295,418	1,608,395	195,510
1000	2,476,974	3,167,628	403,181
Annualized	12,686	15,788	1,826

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 10-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 0 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 10 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	681	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	9,582	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	330	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	180	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	2,918	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	687	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	104,907	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	119,285		0		0		0		0	

Table 3: Expected Building Damage by Building Type : 10 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,981	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	12,561	100.00	0	0.00	0	0.00	0	0.00	0	0.00
MH	198	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	6,907	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	97,630	100.00	0	0.00	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 812 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	0	0	4
Police Stations	12	0	0	12
Schools	152	0	0	152

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0 tons of debris will be generated. Of the total amount, 0 tons (0%) is Other Tree Debris. Of the remaining 0 tons, Brick/Wood comprises 0% of the total, Reinforced Concrete/Steel comprises 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 0 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 0.0 million dollars, which represents 0.00 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 0 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 0% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	0.00	0.00	0.00	0.00	0.00
	Content	0.00	0.00	0.00	0.00	0.00
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	0.00	0.00	0.00	0.00	0.00
<u>Business Interruption Loss</u>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	0.00	0.00	0.00	0.00	0.00
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	0.00	0.00	0.00	0.00	0.00
<u>Total</u>						
	Total	0.00	0.00	0.00	0.00	0.00

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 100-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 484 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 1 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 100 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	653	95.96	23	3.36	3	0.50	1	0.18	0	0.01
Commercial	9,263	96.68	283	2.96	33	0.34	2	0.03	0	0.00
Education	320	97.11	9	2.77	0	0.12	0	0.00	0	0.00
Government	174	96.82	5	3.04	0	0.14	0	0.00	0	0.00
Industrial	2,825	96.80	85	2.92	7	0.23	1	0.04	0	0.00
Religion	667	97.08	19	2.79	1	0.12	0	0.01	0	0.00
Residential	100,341	95.65	4,131	3.94	423	0.40	10	0.01	1	0.00
Total	114,245		4,556		468		15		1	

Table 3: Expected Building Damage by Building Type : 100 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,908	96.33	69	3.48	4	0.19	0	0.00	0	0.00
Masonry	11,797	93.92	585	4.66	173	1.38	5	0.04	0	0.00
MH	198	99.86	0	0.11	0	0.02	0	0.00	0	0.00
Steel	6,688	96.83	193	2.80	23	0.33	2	0.03	0	0.00
Wood	93,951	96.23	3,510	3.60	160	0.16	8	0.01	1	0.00

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 812 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	3	0	4
Police Stations	12	0	0	12
Schools	152	0	0	152

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 86,672 tons of debris will be generated. Of the total amount, 31,013 tons (36%) is Other Tree Debris. Of the remaining 55,659 tons, Brick/Wood comprises 38% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 837 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 34,731 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 128 households to be displaced due to the hurricane. Of these, 31 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 205.1 million dollars, which represents 0.51 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 205 million dollars. 1% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 91% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	147,649.47	10,171.55	1,455.65	1,206.94	160,483.60
	Content	28,902.31	1,421.38	368.72	124.75	30,817.17
	Inventory	0.00	23.83	61.80	7.28	92.92
	Subtotal	176,551.78	11,616.76	1,886.17	1,338.97	191,393.69
<u>Business Interruption Loss</u>						
	Income	0.00	1,358.56	5.23	78.91	1,442.70
	Relocation	4,954.99	1,101.41	38.82	69.02	6,164.24
	Rental	4,528.08	679.31	5.25	5.18	5,217.82
	Wage	0.00	688.18	8.65	185.52	882.36
	Subtotal	9,483.07	3,827.46	57.96	338.63	13,707.13
<u>Total</u>						
	Total	186,034.85	15,444.22	1,944.13	1,677.61	205,100.82

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 1000-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 21,155 buildings will be at least moderately damaged. This is over 18% of the total number of buildings in the region. There are an estimated 1,439 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 1000 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	310	45.58	203	29.74	102	15.02	55	8.02	11	1.64
Commercial	4,774	49.82	2,489	25.98	1,767	18.44	547	5.70	5	0.05
Education	172	52.02	84	25.39	58	17.54	17	5.05	0	0.00
Government	88	48.99	45	24.81	36	19.80	12	6.41	0	0.00
Industrial	1,469	50.33	693	23.74	541	18.54	204	6.99	12	0.40
Religion	349	50.74	201	29.30	109	15.92	28	4.04	0	0.00
Residential	51,021	48.63	36,232	34.54	14,070	13.41	2,172	2.07	1,411	1.35
Total	58,183		39,947		16,683		3,033		1,439	

Table 3: Expected Building Damage by Building Type : 1000 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	931	47.02	474	23.91	464	23.43	112	5.64	0	0.00
Masonry	5,674	45.17	3,129	24.91	3,134	24.95	565	4.50	59	0.47
MH	174	87.89	11	5.45	9	4.60	1	0.46	3	1.61
Steel	3,479	50.37	1,525	22.07	1,371	19.84	527	7.63	6	0.08
Wood	48,468	49.64	35,191	36.05	10,812	11.07	1,852	1.90	1,307	1.34

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (only 0.00%) are available for use. After one week, 0.00% of the beds will be in service. By 30 days, 28.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	4	2	0
Police Stations	12	0	0	12
Schools	152	139	0	0

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 704,198 tons of debris will be generated. Of the total amount, 199,439 tons (28%) is Other Tree Debris. Of the remaining 504,759 tons, Brick/Wood comprises 58% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 11733 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 211,441 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 5,637 households to be displaced due to the hurricane. Of these, 1,312 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 3570.8 million dollars, which represents 8.92 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 3,571 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 76% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	1,827,279.76	334,227.84	72,946.01	43,506.24	2,277,959.86
	Content	649,694.38	155,446.04	54,630.40	18,979.80	878,750.62
	Inventory	0.00	2,721.51	7,717.67	478.83	10,918.01
	Subtotal	2,476,974.14	492,395.40	135,294.07	62,964.87	3,167,628.48
<u>Business Interruption Loss</u>						
	Income	200.45	22,342.18	859.18	1,473.45	24,875.25
	Relocation	156,710.86	63,104.66	6,075.17	8,677.46	234,568.16
	Rental	75,536.56	35,470.64	935.15	914.06	112,856.41
	Wage	472.38	21,615.71	1,393.38	7,399.92	30,881.38
	Subtotal	232,920.26	142,533.19	9,262.87	18,464.89	403,181.21
<u>Total</u>						
	Total	2,709,894.40	634,928.59	144,556.95	81,429.75	3,570,809.69

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 20-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

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The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 3 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 20 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	680	99.83	1	0.17	0	0.00	0	0.00	0	0.00
Commercial	9,560	99.77	22	0.23	0	0.00	0	0.00	0	0.00
Education	329	99.76	1	0.24	0	0.00	0	0.00	0	0.00
Government	180	99.73	0	0.27	0	0.00	0	0.00	0	0.00
Industrial	2,911	99.75	7	0.25	0	0.00	0	0.00	0	0.00
Religion	686	99.81	1	0.19	0	0.00	0	0.00	0	0.00
Residential	104,841	99.94	63	0.06	3	0.00	0	0.00	0	0.00
Total	119,185		97		3		0		0	

Table 3: Expected Building Damage by Building Type : 20 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,975	99.69	6	0.31	0	0.00	0	0.00	0	0.00
Masonry	12,517	99.65	43	0.34	1	0.01	0	0.00	0	0.00
MH	198	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	6,889	99.73	18	0.27	0	0.00	0	0.00	0	0.00
Wood	97,610	99.98	17	0.02	2	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 812 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	0	0	4
Police Stations	12	0	0	12
Schools	152	0	0	152

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 1,107 tons of debris will be generated. Of the total amount, 254 tons (23%) is Other Tree Debris. Of the remaining 853 tons, Brick/Wood comprises 23% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 8 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 659 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 2.8 million dollars, which represents 0.01 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 3 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 100% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	1,886.79	0.00	0.00	0.00	1,886.79
	Content	887.69	0.00	0.00	0.00	887.69
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	2,774.49	0.00	0.00	0.00	2,774.49
<u>Business Interruption Loss</u>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	6.43	0.00	0.00	0.00	6.43
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	6.43	0.00	0.00	0.00	6.43
<u>Total</u>						
	Total	2,780.92	0.00	0.00	0.00	2,780.92

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 200-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 2,273 buildings will be at least moderately damaged. This is over 2% of the total number of buildings in the region. There are an estimated 30 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 200 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	589	86.48	68	10.05	16	2.34	7	1.04	1	0.09
Commercial	8,528	89.00	847	8.84	186	1.95	20	0.21	0	0.00
Education	298	90.37	27	8.26	4	1.31	0	0.05	0	0.00
Government	160	89.12	16	9.14	3	1.67	0	0.06	0	0.00
Industrial	2,611	89.48	245	8.40	52	1.79	9	0.32	1	0.02
Religion	615	89.54	63	9.19	8	1.22	0	0.06	0	0.00
Residential	90,771	86.53	12,171	11.60	1,877	1.79	59	0.06	29	0.03
Total	103,573		13,439		2,147		96		30	

Table 3: Expected Building Damage by Building Type : 200 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,743	88.00	195	9.86	41	2.09	1	0.05	0	0.00
Masonry	10,531	83.84	1,372	10.92	628	5.00	28	0.23	2	0.02
MH	196	99.22	1	0.59	0	0.16	0	0.00	0	0.03
Steel	6,183	89.52	558	8.08	144	2.09	22	0.31	0	0.00
Wood	85,462	87.54	11,094	11.36	997	1.02	50	0.05	26	0.03

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 64 hospital beds (only 8.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	3	0	1
Police Stations	12	0	0	12
Schools	152	0	0	60

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 157,957 tons of debris will be generated. Of the total amount, 45,789 tons (29%) is Other Tree Debris. Of the remaining 112,168 tons, Brick/Wood comprises 51% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 2278 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 55,216 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 618 households to be displaced due to the hurricane. Of these, 151 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 523.2 million dollars, which represents 1.31 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 523 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 84% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	340,301.91	35,223.61	6,477.98	4,452.90	386,456.39
	Content	74,289.88	7,862.84	3,280.37	965.83	86,398.92
	Inventory	0.00	143.78	523.59	43.95	711.32
	Subtotal	414,591.79	43,230.23	10,281.93	5,462.68	473,566.63
<u>Business Interruption Loss</u>						
	Income	0.00	5,534.96	84.06	577.34	6,196.37
	Relocation	13,553.94	5,894.17	452.48	717.02	20,617.62
	Rental	12,203.66	3,296.46	70.89	71.57	15,642.57
	Wage	0.00	4,655.42	136.31	2,416.44	7,208.17
	Subtotal	25,757.60	19,381.01	743.75	3,782.36	49,664.72
<u>Total</u>						
	Total	440,349.39	62,611.24	11,025.68	9,245.04	523,231.35

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 50-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 52 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 50 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	676	99.27	5	0.69	0	0.04	0	0.01	0	0.00
Commercial	9,505	99.20	73	0.77	3	0.03	0	0.00	0	0.00
Education	328	99.25	2	0.74	0	0.00	0	0.00	0	0.00
Government	179	99.17	1	0.82	0	0.00	0	0.00	0	0.00
Industrial	2,894	99.19	23	0.80	0	0.01	0	0.00	0	0.00
Religion	683	99.37	4	0.62	0	0.02	0	0.00	0	0.00
Residential	104,217	99.34	642	0.61	46	0.04	2	0.00	0	0.00
Total	118,481		751		50		2		0	

Table 3: Expected Building Damage by Building Type : 50 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,961	99.00	20	1.00	0	0.00	0	0.00	0	0.00
Masonry	12,361	98.41	178	1.41	22	0.17	1	0.01	0	0.00
MH	198	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	6,849	99.16	56	0.81	2	0.03	0	0.00	0	0.00
Wood	97,190	99.55	424	0.43	14	0.01	1	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 812 hospital beds (only 100.00%) are available for use. After one week, 100.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	3	0	4
Police Stations	12	0	0	12
Schools	152	0	0	152

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 10,691 tons of debris will be generated. Of the total amount, 1,529 tons (14%) is Other Tree Debris. Of the remaining 9,162 tons, Brick/Wood comprises 50% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 184 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 4,570 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 2 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 55.5 million dollars, which represents 0.14 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 56 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 95% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	41,894.59	2,239.09	288.27	253.79	44,675.74
	Content	9,484.15	24.94	2.81	0.87	9,512.76
	Inventory	0.00	0.34	0.59	0.11	1.04
	Subtotal	51,378.74	2,264.37	291.67	254.76	54,189.54
<u>Business Interruption Loss</u>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	576.29	24.23	0.63	1.21	602.36
	Rental	742.47	0.00	0.00	0.00	742.47
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	1,318.76	24.23	0.63	1.21	1,344.83
<u>Total</u>						
	Total	52,697.50	2,288.60	292.30	255.98	55,534.37

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Hurricane Event Report

Region Name: HMP2016_SWR_Hu

Hurricane Scenario: Probabilistic 500-year Return Period

Print Date: Wednesday, November 05, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

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General Description of the Region

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The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 213.78 square miles and contains 84 census tracts. There are over 133 thousand households in the region and has a total population of 353,556 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,025 million dollars (2006 dollars). Approximately 88% of the buildings (and 68% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 119,285 buildings in the region which have an aggregate total replacement value of 40,025 million (2006 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,414,335	68.5%
Commercial	9,458,590	23.6%
Industrial	1,772,337	4.4%
Agricultural	143,166	0.4%
Religious	601,863	1.5%
Government	194,592	0.5%
Education	439,744	1.1%
Total	40,024,627	100.0%

Essential Facility Inventory

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 38 fire stations, 12 police stations and 8 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 10,921 buildings will be at least moderately damaged. This is over 9% of the total number of buildings in the region. There are an estimated 477 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 500 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	426	62.55	158	23.21	61	9.01	31	4.51	5	0.72
Commercial	6,402	66.81	1,991	20.78	986	10.29	201	2.10	2	0.02
Education	228	69.20	66	20.06	30	9.22	5	1.52	0	0.00
Government	119	66.08	37	20.75	20	11.20	4	1.98	0	0.00
Industrial	1,966	67.36	565	19.35	303	10.39	80	2.73	5	0.17
Religion	466	67.87	155	22.61	57	8.29	8	1.23	0	0.00
Residential	67,548	64.39	28,236	26.92	7,925	7.55	732	0.70	465	0.44
Total	77,155		31,208		9,384		1,061		477	

Table 3: Expected Building Damage by Building Type : 500 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	1,275	64.35	412	20.78	261	13.17	34	1.70	0	0.00
Masonry	7,650	60.90	2,662	21.19	2,012	16.02	215	1.71	22	0.17
MH	185	93.43	7	3.57	4	2.26	0	0.13	1	0.61
Steel	4,658	67.43	1,265	18.32	779	11.28	203	2.94	2	0.03
Wood	64,046	65.60	26,929	27.58	5,602	5.74	622	0.64	430	0.44

Essential Facility Damage

Before the hurricane, the region had 812 hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (only 0.00%) are available for use. After one week, 8.00% of the beds will be in service. By 30 days, 100.00% will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	8	0	0	8
Fire Stations	38	0	0	38
Hospitals	4	4	0	0
Police Stations	12	0	0	12
Schools	152	38	0	0

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 393,843 tons of debris will be generated. Of the total amount, 103,307 tons (26%) is Other Tree Debris. Of the remaining 290,536 tons, Brick/Wood comprises 57% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 6645 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 124,406 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 2,599 households to be displaced due to the hurricane. Of these, 618 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 1803.9 million dollars, which represents 4.51 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 1,804 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 78% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	991,588.37	159,788.85	34,129.55	20,746.66	1,206,253.43
	Content	303,829.34	62,269.89	23,580.37	7,657.41	397,337.00
	Inventory	0.00	1,162.71	3,397.28	244.38	4,804.37
	Subtotal	1,295,417.71	223,221.44	61,107.20	28,648.45	1,608,394.80
<u>Business Interruption Loss</u>						
	Income	18.63	11,460.12	369.33	1,303.00	13,151.08
	Relocation	70,548.61	30,303.55	2,968.53	4,089.02	107,909.71
	Rental	39,771.62	16,566.53	436.22	412.90	57,187.27
	Wage	43.91	10,233.89	597.78	6,386.18	17,261.77
	Subtotal	110,382.78	68,564.09	4,371.85	12,191.11	195,509.83
<u>Total</u>						
	Total	1,405,800.48	291,785.54	65,479.05	40,839.55	1,803,904.62

Appendix A: County Listing for the Region

Connecticut
- Fairfield

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Connecticut				
Fairfield	353,556	27,414,335	12,610,292	40,024,627
Total	353,556	27,414,335	12,610,292	40,024,627
Study Region Total	353,556	27,414,335	12,610,292	40,024,627

Hazus-MH: Earthquake Event Report

Region HMP2016_SWR_EQ

Earthquake Scenario: SWR_M5_0km_Center

Print Date: October 07, 2014

Totals only reflect data for those census tracts/blocks included in the user's study region.

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 213.72 square miles and contains 84 census tracts. There are over 133 thousand households in the region which has a total population of 353,556 people (2002 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,024 (millions of dollars). Approximately 88.00 % of the buildings (and 68.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 6,937 and 916 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 119 thousand buildings in the region which have an aggregate total replacement value of 40,024 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 53 fire stations, 12 police stations and 8 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 39 dams identified within the region. Of these, 18 of the dams are classified as 'high hazard'. The inventory also includes 36 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 7,853.00 (millions of dollars). This inventory includes over 322 kilometers of highways, 296 bridges, 5,916 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	296	4,525.20
	Segments	162	2,304.20
	Tunnels	0	0.00
	Subtotal		6,829.30
Railways	Bridges	6	0.40
	Facilities	2	5.30
	Segments	20	89.20
	Tunnels	0	0.00
	Subtotal		95.00
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	7	8.80
	Subtotal		8.80
Ferry	Facilities	3	4.00
	Subtotal		4.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	0	0.00
	Runways	0	0.00
	Subtotal		0.00
		Total	6,937.10

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	59.20
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	59.20
Waste Water	Distribution Lines	NA	35.50
	Facilities	7	536.10
	Pipelines	0	0.00
		Subtotal	571.60
Natural Gas	Distribution Lines	NA	23.70
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	23.70
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	3	379.50
		Subtotal	379.50
Communication	Facilities	9	1.00
		Subtotal	1.00
		Total	1,035.00

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	SWR_M5_0km_Center
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-73.50
Latitude of Epicenter	41.13
Earthquake Magnitude	5.05
Depth (km) *	10.00
Rupture Length (km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	Central & East US (CEUS 2008)

Note: For shallow crustal earthquakes in the western U.S. (strike-slip, normal, reverse), Hazus uses the latest Next Generation Attenuation (NGA) functions for Historic Epicenter, Fault and Arbitrary scenarios based on specific fault source geometry and earthquake scenario depth is not used.

Building Damage

Building Damage

Hazus estimates that about 13,871 buildings will be at least moderately damaged. This is over 12.00 % of the buildings in the region. There are an estimated 294 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	386	0.49	154	0.59	107	0.93	30	1.41	5	1.68
Commercial	5,453	6.88	1,955	7.46	1,620	14.14	473	22.28	81	27.63
Education	190	0.24	66	0.25	57	0.49	15	0.71	3	0.93
Government	100	0.13	36	0.14	33	0.29	9	0.43	2	0.54
Industrial	1,612	2.03	575	2.19	543	4.74	161	7.59	28	9.41
Other Residential	10,464	13.21	3,601	13.74	1,981	17.30	468	22.05	74	25.04
Religion	419	0.53	141	0.54	96	0.83	27	1.26	5	1.57
Single Family	60,584	76.49	19,678	75.09	7,019	61.28	940	44.28	98	33.20
Total	79,207		26,206		11,454		2,123		294	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	67,365	85.05	21,925	83.66	7,456	65.09	836	39.35	56	19.01
Steel	3,726	4.70	1,298	4.95	1,385	12.09	414	19.51	73	24.66
Concrete	872	1.10	282	1.08	305	2.66	68	3.21	11	3.77
Precast	236	0.30	69	0.26	91	0.79	42	1.98	3	0.99
RM	1,718	2.17	346	1.32	400	3.50	143	6.76	5	1.86
URM	5,192	6.56	2,240	8.55	1,773	15.48	608	28.65	145	49.35
MH	99	0.12	46	0.18	44	0.38	11	0.54	1	0.36
Total	79,207		26,206		11,454		2,123		294	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 812 hospital beds available for use. On the day of the earthquake, the model estimates that only 271 hospital beds (33.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 56.00% of the beds will be back in service. By 30 days, 81.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	4	1	0	1
Schools	152	38	0	11
EOCs	8	1	0	1
PoliceStations	12	1	0	2
FireStations	53	2	0	11

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations_			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	162	0	0	162	162
	Bridges	296	6	0	291	296
	Tunnels	0	0	0	0	0
Railways	Segments	20	0	0	20	20
	Bridges	6	0	0	6	6
	Tunnels	0	0	0	0	0
	Facilities	2	0	0	2	2
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	7	1	0	7	7
Ferry	Facilities	3	0	0	3	3
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	7	5	0	1	7
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	3	2	0	0	3
Communication	9	7	0	9	9

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	2,958	173	43
Waste Water	1,775	87	22
Natural Gas	1,183	30	7
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	133,575	84	0	0	0	0
Electric Power		80,072	47,250	16,484	2,491	103

Induced Earthquake Damage

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 4 ignitions that will burn about 0.07 sq. mi (0.03 % of the region's total area.) The model also estimates that the fires will displace about 323 people and burn about 35 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.50 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 51.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 19,880 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 1,633 households to be displaced due to the earthquake. Of these, 1,007 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	7	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	2	0	0	0
	Industrial	8	2	0	0
	Other-Residential	156	29	3	7
	Single Family	136	18	1	2
	Total	308	50	5	10
2 PM	Commercial	369	72	8	16
	Commuting	0	1	1	0
	Educational	59	12	1	3
	Hotels	0	0	0	0
	Industrial	57	11	1	2
	Other-Residential	28	5	1	1
	Single Family	25	3	0	0
	Total	539	104	13	23
5 PM	Commercial	251	49	6	11
	Commuting	14	19	31	6
	Educational	6	1	0	0
	Hotels	1	0	0	0
	Industrial	36	7	1	2
	Other-Residential	62	12	1	3
	Single Family	53	7	1	1
	Total	422	95	40	23

Economic Loss

The total economic loss estimated for the earthquake is 3,153.09 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 2,777.92 (millions of dollars); 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 52 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	9.60	82.34	2.64	3.81	98.39
	Capital-Related	0.00	4.01	74.59	1.60	0.81	81.00
	Rental	10.81	26.48	49.91	1.19	1.56	89.95
	Relocation	40.64	17.26	75.84	6.58	12.47	152.78
	Subtotal	51.44	57.35	282.69	12.00	18.65	422.13
Capital Stock Losses							
	Structural	90.97	35.79	96.61	16.99	14.37	254.74
	Non_Structural	566.53	269.10	380.90	82.74	53.91	1,353.18
	Content	283.16	95.48	251.79	63.28	38.06	731.77
	Inventory	0.00	0.00	4.49	10.99	0.62	16.10
	Subtotal	940.66	400.37	733.79	174.01	106.95	2,355.78
	Total	992.10	457.72	1,016.48	186.01	125.60	2,777.92

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Hazus estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 14 presents the results of the region for the given earthquake.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	2,304.18	\$0.00	0.00
	Bridges	4,525.16	\$184.83	4.08
	Tunnels	0.00	\$0.00	0.00
	Subtotal	6829.30	184.80	
Railways	Segments	89.18	\$0.00	0.00
	Bridges	0.44	\$0.00	0.82
	Tunnels	0.00	\$0.00	0.00
	Facilities	5.33	\$1.33	24.97
	Subtotal	95.00	1.30	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Bus	Facilities	8.77	\$2.62	29.90
	Subtotal	8.80	2.60	
Ferry	Facilities	3.99	\$0.56	13.96
	Subtotal	4.00	0.60	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Airport	Facilities	0.00	\$0.00	0.00
	Runways	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Total		6937.10	189.30	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	59.20	\$0.78	1.32
	Subtotal	59.16	\$0.78	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	536.10	\$106.01	19.77
	Distribution Line	35.50	\$0.39	1.10
	Subtotal	571.63	\$106.40	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	23.70	\$0.13	0.57
	Subtotal	23.66	\$0.13	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	379.50	\$78.29	20.63
	Subtotal	379.50	\$78.29	
Communication	Facilities	1.00	\$0.22	21.21
	Subtotal	1.04	\$0.22	
	Total	1,034.99	\$185.82	

Table 14. Indirect Economic Impact with outside aid

(Employment as # of people and Income in millions of \$)

LOSS	Total	%

Appendix A: County Listing for the Region

Fairfield,CT

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Connecticut	Fairfield	353,556	27,414	12,610	40,024
Total State		353,556	27,414	12,610	40,024
Total Region		353,556	27,414	12,610	40,024

Hazus-MH: Earthquake Event Report

Region HMP2016_SWR_EQ

Earthquake Scenario: SWR_EQ_M5_25km

Print Date: October 07, 2014

Totals only reflect data for those census tracts/blocks included in the user's study region.

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 213.72 square miles and contains 84 census tracts. There are over 133 thousand households in the region which has a total population of 353,556 people (2002 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 119 thousand buildings in the region with a total building replacement value (excluding contents) of 40,024 (millions of dollars). Approximately 88.00 % of the buildings (and 68.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 6,937 and 916 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 119 thousand buildings in the region which have an aggregate total replacement value of 40,024 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 812 beds. There are 152 schools, 53 fire stations, 12 police stations and 8 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 39 dams identified within the region. Of these, 18 of the dams are classified as 'high hazard'. The inventory also includes 36 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 7,853.00 (millions of dollars). This inventory includes over 322 kilometers of highways, 296 bridges, 5,916 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	296	4,525.20
	Segments	162	2,304.20
	Tunnels	0	0.00
	Subtotal		6,829.30
Railways	Bridges	6	0.40
	Facilities	2	5.30
	Segments	20	89.20
	Tunnels	0	0.00
	Subtotal		95.00
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	7	8.80
	Subtotal		8.80
Ferry	Facilities	3	4.00
	Subtotal		4.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	0	0.00
	Runways	0	0.00
	Subtotal		0.00
		Total	6,937.10

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	59.20
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	59.20
Waste Water	Distribution Lines	NA	35.50
	Facilities	7	536.10
	Pipelines	0	0.00
		Subtotal	571.60
Natural Gas	Distribution Lines	NA	23.70
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	23.70
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	3	379.50
		Subtotal	379.50
Communication	Facilities	9	1.00
		Subtotal	1.00
		Total	1,035.00

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	SWR_EQ_M5_25km
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-73.50
Latitude of Epicenter	41.36
Earthquake Magnitude	5.05
Depth (km) *	10.00
Rupture Length (km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	Central & East US (CEUS 2008)

Note: For shallow crustal earthquakes in the western U.S. (strike-slip, normal, reverse), Hazus uses the latest Next Generation Attenuation (NGA) functions for Historic Epicenter, Fault and Arbitrary scenarios based on specific fault source geometry and earthquake scenario depth is not used.

Building Damage

Building Damage

Hazus estimates that about 1,018 buildings will be at least moderately damaged. This is over 1.00 % of the buildings in the region. There are an estimated 5 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	643	0.56	28	0.64	9	0.93	1	1.24	0	1.08
Commercial	9,015	7.92	400	9.14	146	15.82	20	21.46	1	24.04
Education	311	0.27	14	0.31	5	0.52	1	0.66	0	0.92
Government	171	0.15	7	0.15	2	0.26	0	0.30	0	0.37
Industrial	2,749	2.41	118	2.71	45	4.88	6	6.13	0	6.54
Other Residential	15,864	13.93	551	12.59	154	16.69	18	19.91	1	23.02
Religion	647	0.57	28	0.65	10	1.08	1	1.53	0	2.01
Single Family	84,492	74.19	3,229	73.80	551	59.81	45	48.77	3	42.01
Total	113,891		4,376		920		92		6	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	93,791	82.35	3334	76.19	484	52.59	28	30.57	0	6.21
Steel	6,544	5.75	248	5.68	93	10.12	10	10.58	0	8.09
Concrete	1,478	1.30	46	1.06	14	1.57	1	0.78	0	0.52
Precast	408	0.36	18	0.41	12	1.29	2	2.61	0	0.31
RM	2,494	2.19	73	1.68	40	4.40	5	5.76	0	0.15
URM	8,997	7.90	641	14.65	270	29.32	45	49.32	5	84.68
MH	179	0.16	15	0.34	7	0.71	0	0.38	0	0.04
Total	113,891		4,376		920		92		6	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 812 hospital beds available for use. On the day of the earthquake, the model estimates that only 633 hospital beds (78.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 91.00% of the beds will be back in service. By 30 days, 98.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	4	0	0	4
Schools	152	0	0	150
EOCs	8	0	0	8
PoliceStations	12	0	0	12
FireStations	53	0	0	53

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations_			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	162	0	0	162	162
	Bridges	296	0	0	296	296
	Tunnels	0	0	0	0	0
Railways	Segments	20	0	0	20	20
	Bridges	6	0	0	6	6
	Tunnels	0	0	0	0	0
	Facilities	2	0	0	2	2
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	7	0	0	7	7
Ferry	Facilities	3	0	0	3	3
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	7	0	0	7	7
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	3	0	0	3	3
Communication	9	0	0	9	9

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	2,958	16	4
Waste Water	1,775	8	2
Natural Gas	1,183	3	1
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	133,575	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 2 ignitions that will burn about 0.01 sq. mi (0.00 % of the region's total area.) The model also estimates that the fires will displace about 41 people and burn about 4 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.03 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 71.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 1,360 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 49 households to be displaced due to the earthquake. Of these, 29 people (out of a total population of 353,556) will seek temporary shelter in public shelters.

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	7	1	0	0
	Single Family	11	1	0	0
	Total	19	2	0	0
2 PM	Commercial	18	2	0	0
	Commuting	0	0	0	0
	Educational	3	0	0	0
	Hotels	0	0	0	0
	Industrial	2	0	0	0
	Other-Residential	1	0	0	0
	Single Family	2	0	0	0
	Total	27	3	0	0
5 PM	Commercial	13	2	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	1	0	0	0
	Other-Residential	3	0	0	0
	Single Family	4	0	0	0
	Total	21	3	1	0

Economic Loss

The total economic loss estimated for the earthquake is 165.35 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 152.67 (millions of dollars); 17 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 53 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.44	4.98	0.15	0.29	5.86
	Capital-Related	0.00	0.18	4.55	0.09	0.06	4.89
	Rental	0.83	1.39	3.53	0.07	0.09	5.92
	Relocation	2.91	0.89	4.52	0.39	0.78	9.49
	Subtotal	3.74	2.91	17.59	0.70	1.22	26.16
Capital Stock Losses							
	Structural	8.63	2.06	5.84	0.97	0.96	18.46
	Non_Structural	39.22	9.35	20.23	4.46	3.02	76.27
	Content	13.03	2.16	11.06	3.04	1.70	30.98
	Inventory	0.00	0.00	0.19	0.57	0.03	0.80
	Subtotal	60.87	13.57	37.32	9.05	5.70	126.51
	Total	64.61	16.47	54.91	9.75	6.93	152.67

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Hazus estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 14 presents the results of the region for the given earthquake.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	2,304.18	\$0.00	0.00
	Bridges	4,525.16	\$2.65	0.06
	Tunnels	0.00	\$0.00	0.00
	Subtotal	6829.30	2.60	
Railways	Segments	89.18	\$0.00	0.00
	Bridges	0.44	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	5.33	\$0.16	3.03
	Subtotal	95.00	0.20	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Bus	Facilities	8.77	\$0.44	5.05
	Subtotal	8.80	0.40	
Ferry	Facilities	3.99	\$0.09	2.28
	Subtotal	4.00	0.10	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Airport	Facilities	0.00	\$0.00	0.00
	Runways	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
	Total	6937.10	3.30	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	59.20	\$0.07	0.12
	Subtotal	59.16	\$0.07	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	536.10	\$6.00	1.12
	Distribution Line	35.50	\$0.04	0.10
	Subtotal	571.63	\$6.03	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	23.70	\$0.01	0.05
	Subtotal	23.66	\$0.01	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	379.50	\$3.20	0.84
	Subtotal	379.50	\$3.20	
Communication	Facilities	1.00	\$0.02	1.78
	Subtotal	1.04	\$0.02	
	Total	1,034.99	\$9.34	

Table 14. Indirect Economic Impact with outside aid

(Employment as # of people and Income in millions of \$)

LOSS	Total	%

Appendix A: County Listing for the Region

Fairfield,CT

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Connecticut	Fairfield	353,556	27,414	12,610	40,024
Total State		353,556	27,414	12,610	40,024
Total Region		353,556	27,414	12,610	40,024

Appendix C
Adoption Resolutions

PLACEHOLDER FOR RESOLUTIONS