



# Saugus Hazard Mitigation Plan 2021



Saugus Planning Board  
June 3, 2021

Martin Pillsbury  
Metropolitan Area Planning Council



# Why is Saugus doing this Plan?

- The **Federal Disaster Mitigation Act of 2000** requires towns to adopt and periodically update a **Hazard Mitigation Plan** to be eligible for FEMA mitigation grants.
- Saugus' previous plan was approved in 2015 and now must be updated
- This 2021 Plan Update will meet FEMA's requirement and make the Town eligible for FEMA mitigation project grants



Hurricane Irene

Source: <https://saugus.wickedlocal.com>

# A Plan for Mitigating All Natural Hazards

- Flooding
- High winds, hurricanes, tornadoes
- Winter storms, snow & ice
- Brush fires
- Earthquakes, landslides
- Extreme temperatures
- Drought



***A Mitigation Plan , not an Emergency Response Plan***

# What is Hazard Mitigation?

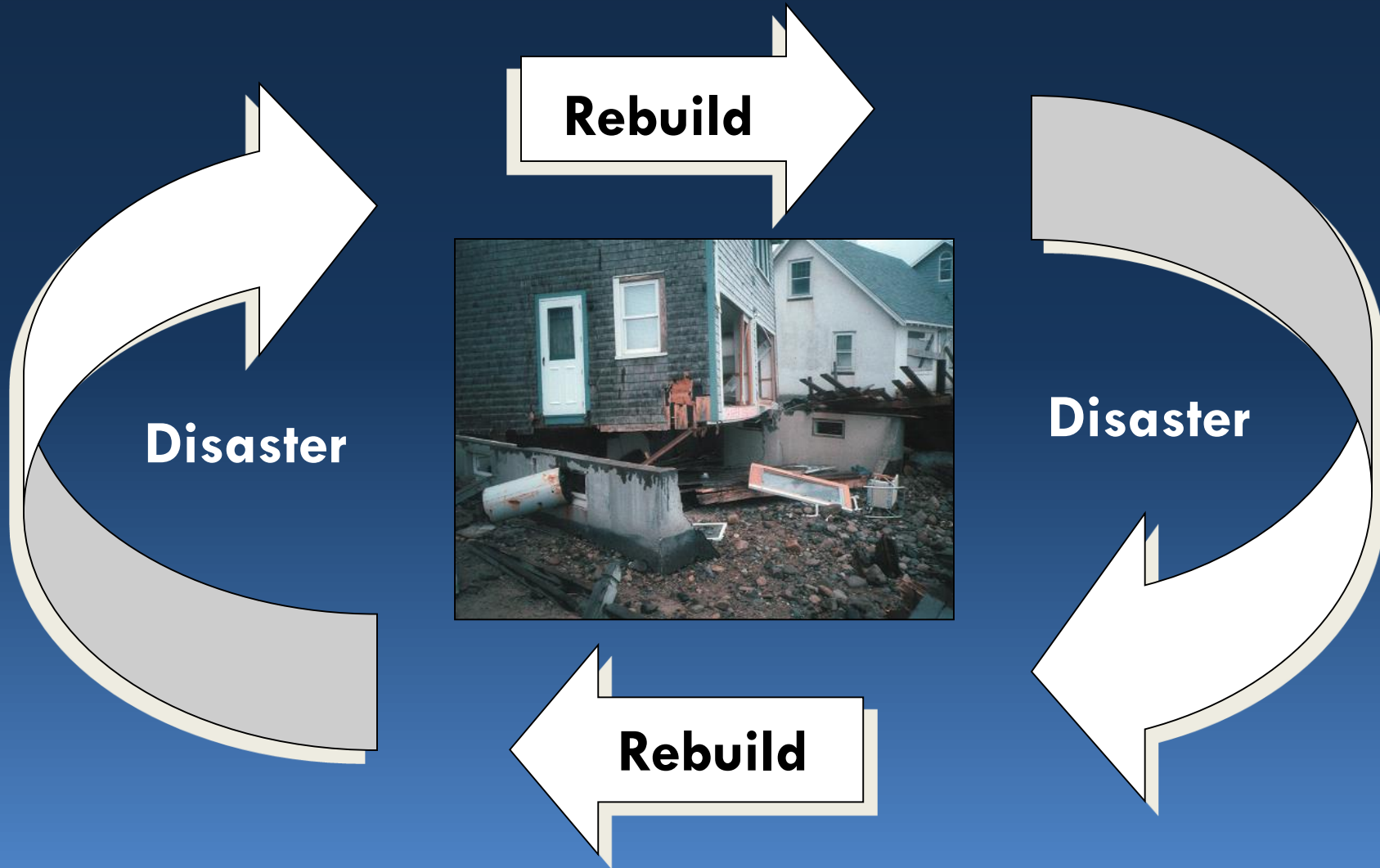


To reduce or prevent loss of life, injuries and property damage by using long-term strategies **before** a disaster happens (“Pre-Disaster Mitigation”)

- ❖ *What preventive actions are being taken NOW to reduce future risks and damages?*
- ❖ *What additional actions can be taken in the FUTURE to reduce vulnerability and increase resilience?*



# Mitigation: Breaking the Cycle of Disaster & Rebuilding



# Six Tools & Techniques for Hazard Mitigation



1. Prevention
2. Property Protection
3. Public Education
4. Natural Resources Protection
5. Structural Projects
6. Emergency Services Protection

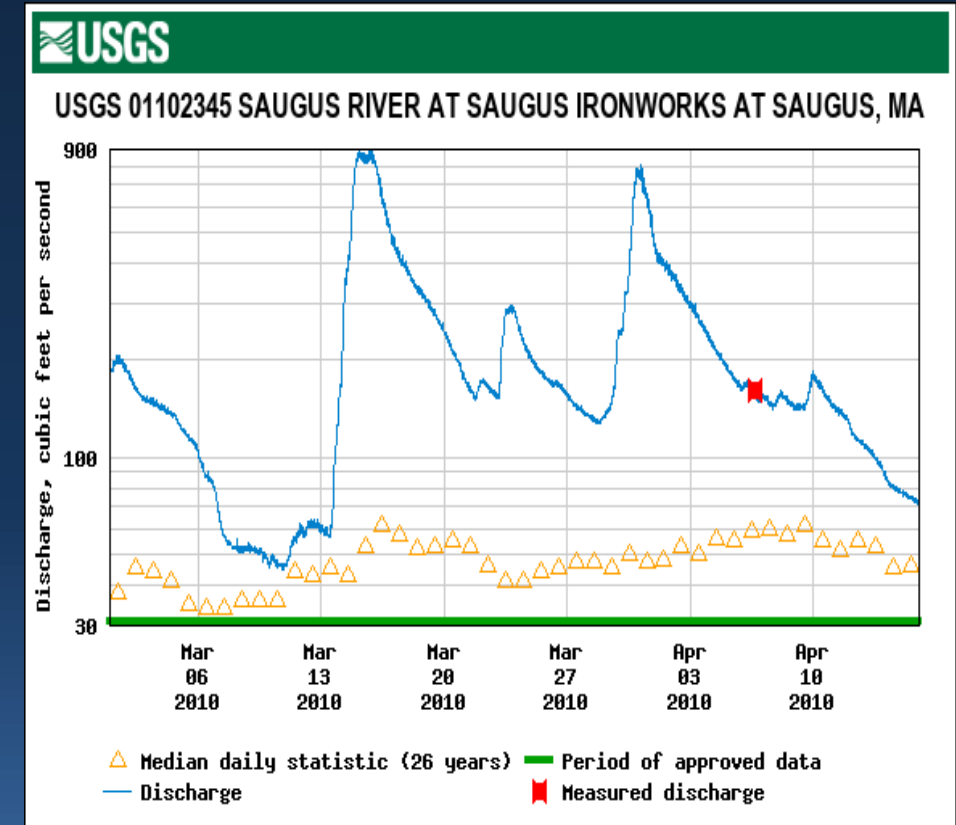
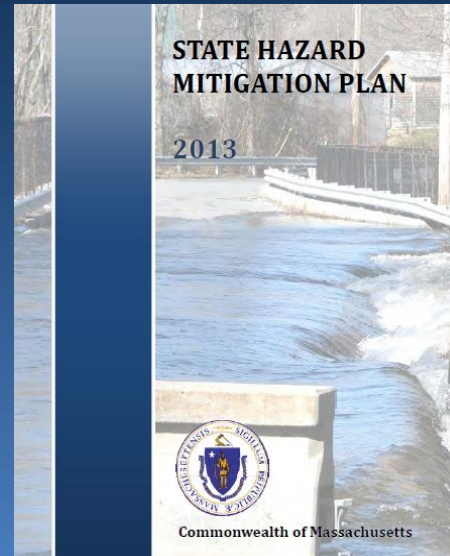
# How the Plan is Developed



# Hazard Identification & Mapping

- State & Federal data on floodplains, precipitation, wind speeds, hurricanes earthquakes
- Coordinate with Local Team to get local hazard information

- Flood Hazard Areas
- Geologic Hazard (Earthquakes)
- Wind Hazards (Hurricanes)
- Winter Hazards (Snowfall, Ice)
- Brushfire hazards
- Drought
- Extreme Temperatures





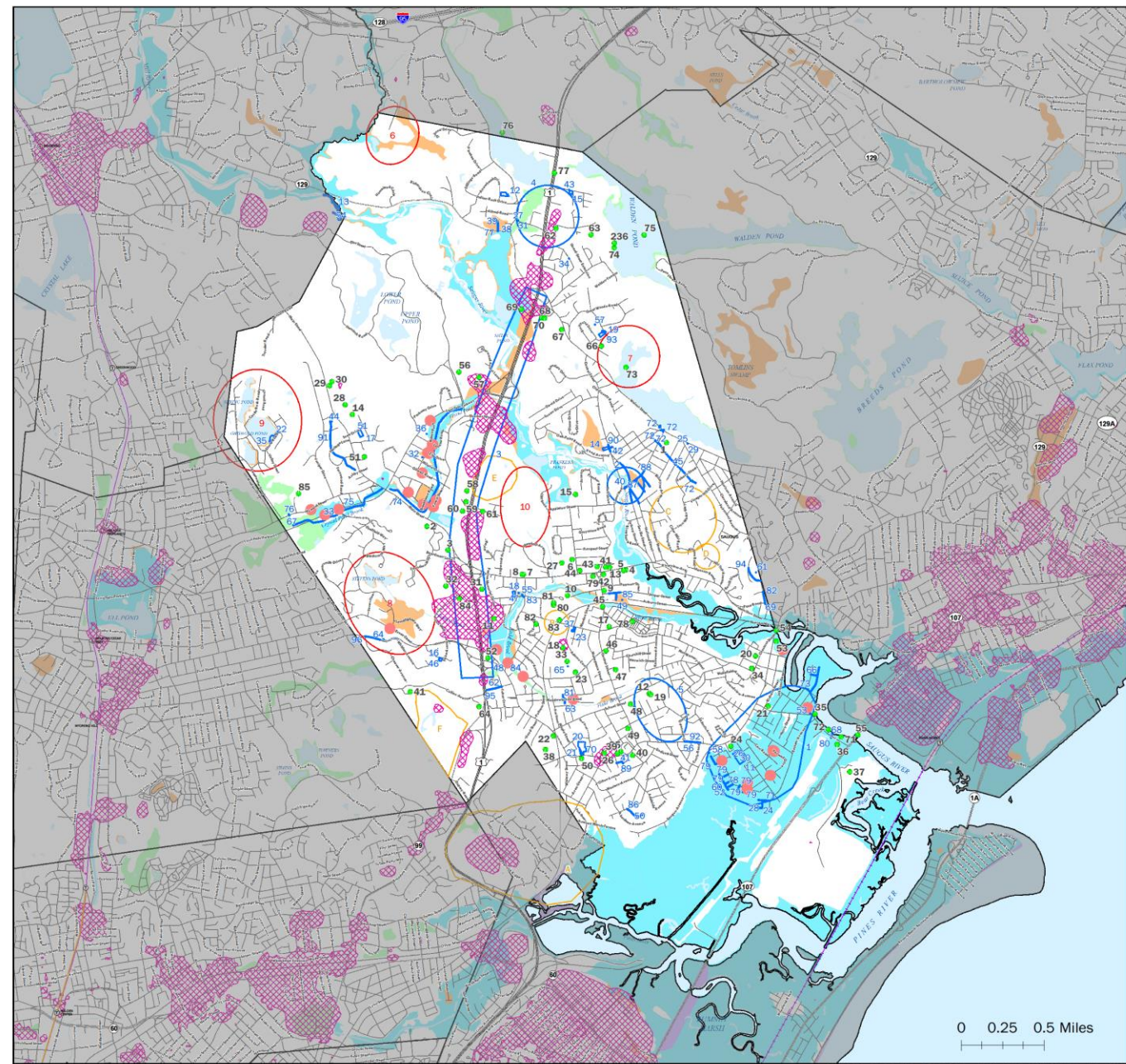
# Critical Facilities

## 96 Sites identified including:

- Disaster response sites such as fire and police stations
- Sites requiring assistance, such as elderly housing
- Infrastructure: Dams, pump stations, communications

# Hazard Areas

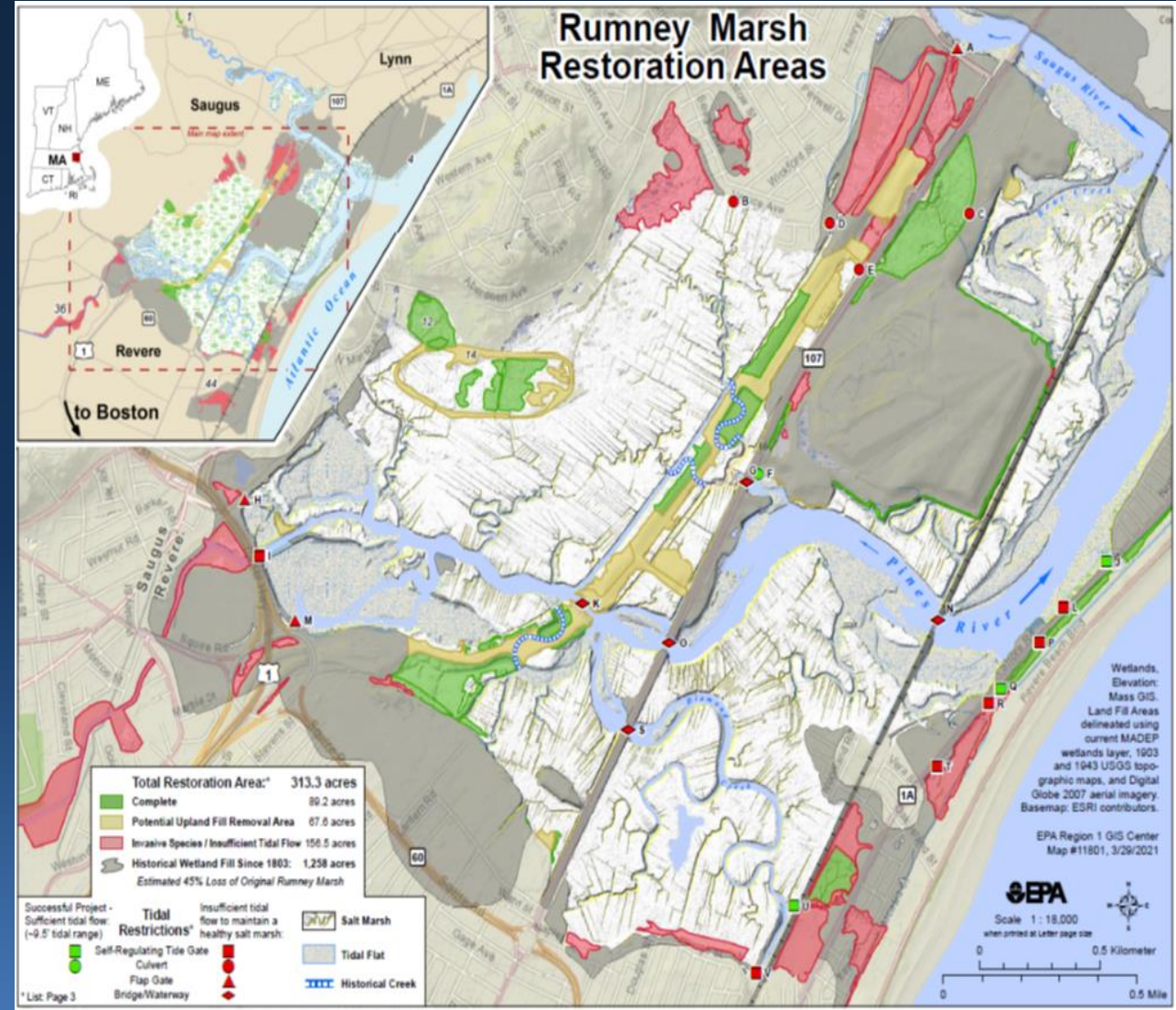
- 24 Local flood areas
- 5 Brushfire risk areas





# Rumney Marsh

- 2274 acres, extensive saltmarshes & mud flats, designated ACEC 1988
- Historic fill/drainage alterations led to tidal restrictions, erosion, flooding
- Salt Marsh Restoration Plan identified restoration projects, EPA tracking 44 projects over 20 years
- EPA water level study in 2019 shows impact of the highway embankment on E. Saugus drainage
- Rt. 107 bridges are key tidal restrictions to the upper estuary



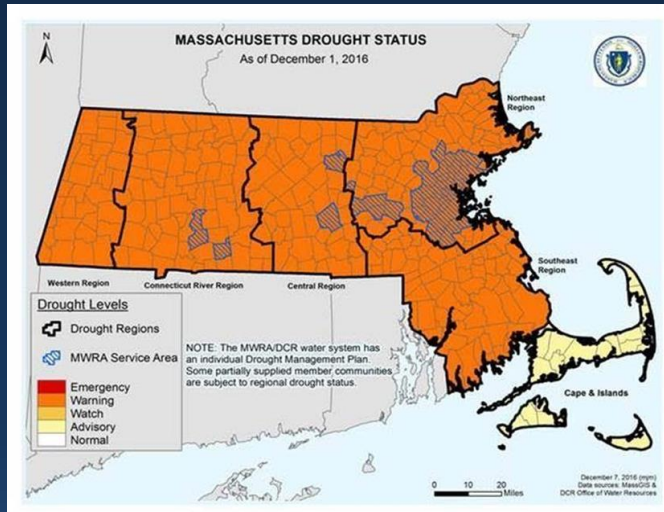


# Multiple Natural Hazards

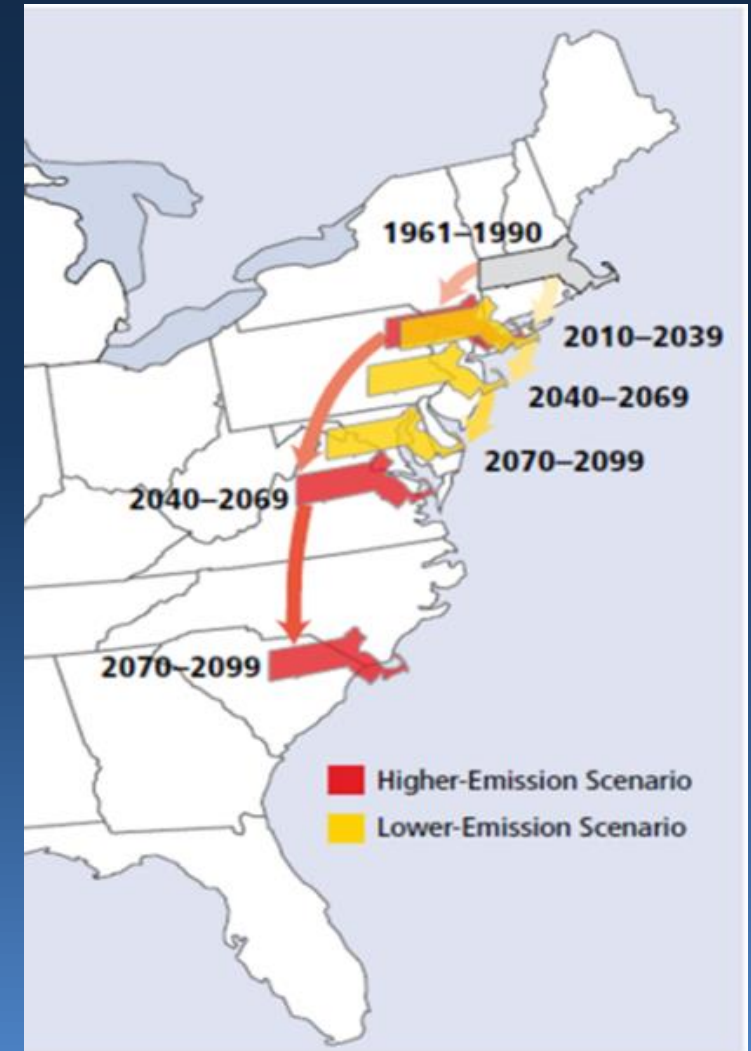
## Extreme Heat

		Temperature (°F)																
Relative Humidity (%)		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136	
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137		
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137			
	55	81	84	86	89	93	97	101	106	112	117	124	130	137				
	60	82	84	88	91	95	100	105	110	116	123	129	137					
	65	82	85	89	93	98	103	108	114	121	128	136						
	70	83	86	90	95	100	105	112	119	126	134							
	75	84	88	92	97	103	109	116	124	132								
	80	84	89	94	100	106	113	121	129									
	85	85	90	96	102	110	117	125	135									
	90	86	91	98	105	113	122	131										
	95	86	93	100	108	117	127											
	100	87	95	103	112	121	132											
Category		Heat Index					Health Hazards											
Extreme Danger		130 °F – Higher					Heat Stroke or Sunstroke is likely with continued exposure.											
Danger		105 °F – 129 °F					Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.											
Extreme Caution		90 °F – 105 °F					Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.											
Caution		80 °F – 90 °F					Fatigue possible with prolonged exposure and/or physical activity.											

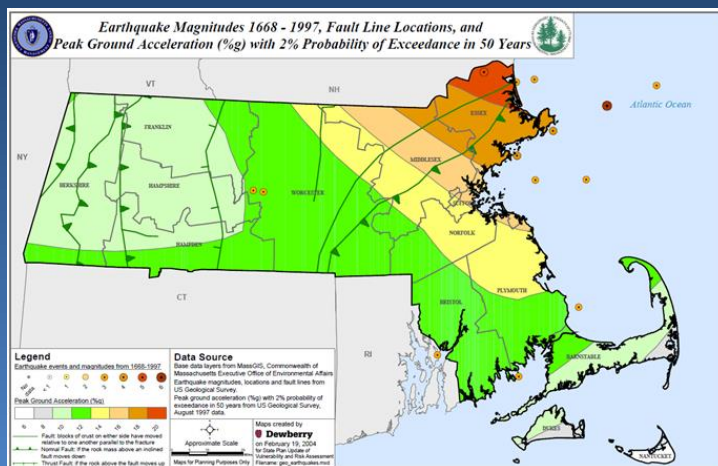
## Drought



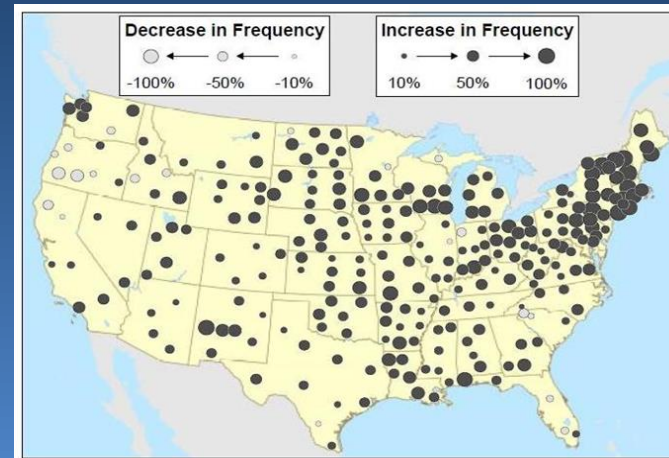
## Future Climate Trends



## Earthquakes



## Extreme Precipitation



# Vulnerability Analysis: Estimated Damages

## FEMA'S HAZUS-MH Program

### **HURRICANE Estimated Damages**

100-Year Hurricane property damage:	\$	<b>17,318,000</b>
500-Year Hurricane property damage:	\$	<b>87,541,000</b>

### **EARTHQUAKE Estimated Damages**

Magnitude 5 total property damage:	\$	<b>602,840,000</b>
Magnitude 7 total property damage:	\$	<b>4,239,000,000</b>

### **FLOODING Estimated Damages**

100-Year Flood property damage:	\$	<b>164,570,000</b>
500-Year Flood property damage:	\$	<b>478,060,000</b>

# Mitigation Strategies

*The Mitigation Strategies from the previous plan were updated by the Local Team considering the following:*



- ❖ What are the Town's existing Mitigation measures?
- ❖ Where are the gaps? What additional actions will further reduce vulnerability?
- ❖ What are the mitigation priorities, costs, timelines?
- ❖ Review priority actions from the MVP Workshop.



# Updated Mitigation Strategies

## High Priority Mitigation Measures

1. Complete design and construction of Route One drainage system upgrade
2. Update East Saugus drainage system
3. Consider adopting a Stormwater Utility mechanism
4. Additional manpower resources for storm preparation and response
5. Replace the Spring St. 48-inch culvert with a larger, pre-cast concrete culvert
6. Upgrade drainage lines along Lynnhurst Street from Stockade Road to Elm St.
7. Acquisition of Vacant Flood Prone Lands
8. Install generators at Town Hall and Senior Center

# Updated Mitigation Strategies

## 10. Local Drainage upgrades from the Drainage Master Plan:

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Belair and Hewlett Streets</li><li>• Bistrow Street area</li><li>• Sachem Street</li><li>• Spring Street culver</li><li>• Bennetts Pond Brook</li><li>• Hayward Street culvert</li><li>• Forest Avenue</li><li>• Fairmont Avenue</li><li>• Shute Brook culvert at Vine St.</li></ul> | <ul style="list-style-type: none"><li>• Auburn Street wetlands</li><li>• Acadia and Aberdeen Ave.</li><li>• Central and Mt. Pleasant St.</li><li>• Sycamore Lane</li><li>• Pleasant Avenue</li><li>• Essex Street</li><li>• Maple Road</li><li>• Altamont Avenue</li></ul> |
|--|--|

# Final Steps: Hazard Mitigation Plan

- **Plan Review by MEMA and FEMA**
- **Submit revisions if required**
- **Town Adoption of the plan**
- **FEMA Approval: the Town will be eligible for FEMA grants for 5 years**







Questions ?



# *Draft Plan Available Online*

Here is a link to download the draft  
*Saugus Hazard Mitigation Plan 2021 Update:*

<https://www.saugus-ma.gov/planning-and-economic-development>

Please submit any questions or comments by  
June 17 to [amello@saugus-ma.gov](mailto:amello@saugus-ma.gov)

**DRAFT  
TOWN OF SAUGUS  
HAZARD MITIGATION PLAN 2021 UPDATE**



Runney Marsh - Image Source: Kevin Davis



**DRAFT  
May 17, 2021**