DROUGHT AND WILDFIRE HAZARDS
ASSESSMENT AND MITIGATION

In the

Dukes County Multi-Jurisdictional Hazard Mitigation Plan 2015

ORIGINALLY PRESENTED TO:

ALL ISLAND PLANNING BOARDS

June 20, 2016

Jo-Ann Taylor, MVC

PROPOSED COMMUNITY MITIGATION ACTIONS FOR ALL OF DUKES COUNTY TOWNS

Category of Action	Description of Action	Implementation Responsibility	Priority/Timeframe	Resources/Funding
Structural, Prevention	In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within the State Forest.	Town Water Departments and District	60 If DCR agrees to consider this (although it's not recreational), design should be completed within the next 5 years, and possibly construction.	HMGP, PDM 25% match by town water districts or town meeting appropriations, DCR
Structural	In order to lessen the impacts of drought and wildfire, establish plans and build infrastructure for water supply needs to alleviate future drought emergencies. The Towns of Tisbury and Oak Bluffs, nearly at buildout, should focus their attention on redundancy plans in response to potential emergencies such as drought. The Town of Edgartown has much greater needs for water supply beyond the capacity of the existing Edgartown wells, in addition to needs for redundancy to be prepared for emergencies such as drought	Town Water Departments and District	60 Permitting for new facilities should be done within the next 5 years.	HMGP, PDM 25% match by town water districts or town meeting appropriations
Structural	In order to lessen the impacts of drought and wildfire, establish plans and build infrastructure for water supply needs to alleviate future drought emergencies. Consider potential need for and options to provide water supply to areas with a development pattern that may not be compatible with continued private well water supplies, which may not be adequate in the event of emergencies such as drought and wildfire; build the necessary infrastructure.	Town Water Departments and District	60 Conversations should be had within the next 5 years. If this is a desirable solution, planning and permitting can begin within the next 5 years.	HMGP, PDM 25% match by town meeting appropriations
Prevention	Vegetation management to reduce the impacts of wildfire, including but not limited to the cutting, chipping and disposal (by shipment off-Island or by reuse as compost) of excess fuel materials in forest.	DCR, private and public owners	60 This should be done immediately.	DCR, HMGP, PDM, owners 25% match by DCR

Prevention	Perform outreach to encourage the towns to revise local subdivision and building regulations to require fire-proof roofing materials in areas vulnerable to wildfire; and homeowners' association to include the same in covenants or in renewal of covenants, possibly including review by the Fire Chiefs.	Towns, MVC, private and public owners	65 This should be done within the next two years.	MVC
Emergency services	Develop a dedicated on-Island fire cache that would allow prescribed fire teams to respond on very short notice and conduct preventive prescribed burns.	DCR	65 This should be done within the next 5 years.	HMGP, PDM, DCR 25% match by DCR
Public information	Employ data-gathering (such as LIDAR), analysis and consensus-building to establish an Island-wide comprehensive plan for adaptations to climate change	MVC	20 This should be done within the next 5 years.	HMGP, PDM 25% match by town meeting appropriations, in kind by MVC
Public information	Establish a Dukes County Citizens Academy for the education of Martha's Vineyard residents, both full time and part time, in the areas of family and individual emergency preparation and response to natural and man-made hazards, including but not limited to hurricane preparedness, flood awareness, and wildfire risks.	County	60 This should be done within the next 5 years.	County
Emergency services	Establish an MOU with the public service entities of all island towns and the Wampanoag Tribe of Gay Head (Aquinnah) to provide incident support, whereby the Dukes County Emergency Management Agency would provide the services of the vehicles, manpower, and emergency management computer program services etc. that are owned or managed by the Dukes County Emergency Management Agency.	County, towns, WTGHA	60 This should be done within the next 5 years.	County

EXISTING PROTECTION MATRIX
FOR ALL OF DUKES COUNTY TOWNS

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Public information	Encourage the towns and others to participate in the DCR/Fire Wise Program	DCR, Towns, MVC	Ongoing	DCR
Prevention, public information	Educate public and private landowners and homeowners' associations concerning the importance of techniques for defensible space to reduce the risk of wildfire, such as utilization of low-maintenance native landscaping and removing fuel in forested areas; also consider issues of access to and through the developments for fire-fighting; fund implementation	DCR, MVC	Ongoing	DCR

PROPOSED MITIGATION ACTIONS
FOR THE TOWN OF AQUINNAH (ALONG WITH ALL THE COMMUNITY ACTIONS)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Structural, prevention **New**	Install dry hydrants to pump pond water for firefighting. Require for some new (larger) subdivisions. Encourage elsewhere. If there is no pond nearby, install a water source.	Town fire department, private	60 This should be done within the next 5 years.	Town, private, HMGP, PDM

EXISTING PROTECTION MATRIX CHILMARK

Type of Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Wildfire Mitigation	Model of Probability of Ignition	town		
Fire-Wise Outreach	Outreach and response person on Martha's Vineyard 24/5; outreach to groups and available for response	Martha's Vineyard	DCR	This program could use some support in order to reach more of the vulnerable homeowners
prevention	Recommendations in the Probability of Ignition report	Town	Ongoing	HMGP, PDM

PROPOSED MITIGATION ACTIONS FOR THE TOWN OF CHILMARK (ALONG WITH ALL THE COMMUNITY ACTIONS)

(Note: Chilmark does NOT participate in the National Flood Insurance Program)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Structural, prevention **New**	Install 8,000 gallon holding tank for Menemsha public water supply	Town Highway and Fire, private	65 Within the next 2 years.	HMGP, PDM

Structural, prevention **New**	Install dry hydrants to pump pond water for firefighting. Required for some new subdivisions. Encourage elsewhere. If there is no pond nearby, install a water source.	Town Highway and Fire, private	65 This should be done within the next 5 years, as new subdivisions are approved.	Town, private, HMGP, PDM

EXISTING PROTECTION MATRIX EDGARTOWN

Type of Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Fire Breaks in State Forest	Fire breaks maintained by grazing, brushbreaking, controlled burns	Within Manuel F. Correllus State Forest	DCR	Need continued management
Fire-Wise Outreach	Outreach and response person on Martha's Vineyard 24/5; outreach to groups and available for response	Martha's Vineyard	DCR	This program could use some support in order to reach more of the vulnerable homeowners

PROPOSED MITIGATION ACTIONS
FOR THE TOWN OF EDGARTOWN
(ALONG WITH ALL THE COMMUNITY ACTIONS)

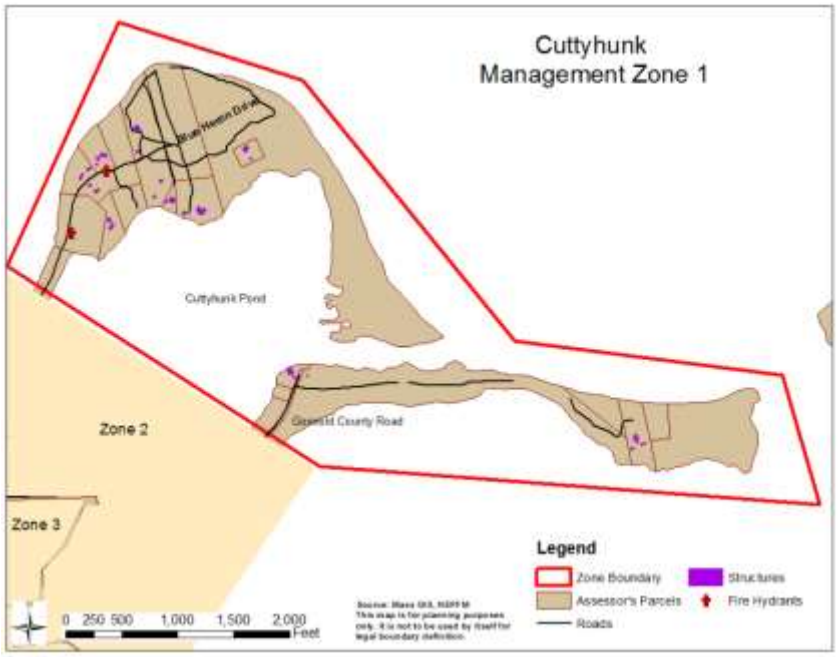
Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Prevention	In order to reduce the impacts of drought and wildfire, establish an overall management plan for the State Forest, including establishment of specific procedures or Memoranda of Agreement regarding the transfer of land for new public water supplies and for easements to install water supply lines	DCR and State Forest Advisory Committee	65 The initial phase of opening a dialog between the town fire and water departments, the MVC and the new	DCR

			State Forest Superintendent should be done within the next year.	
Structural	In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within the State Forest	Town Water Department	60 If DCR agrees to consider this (although it's not recreational), design should be completed within the next 5 years, and possibly construction.	HMGP, PDM 25% match by DCR, town water department
Structural	In order to lessen the impacts of drought and wildfire, establish plans and build infrastructure for water supply needs to alleviate future drought emergencies. The Town of Edgartown has great need for water supply beyond the capacity of the existing Edgartown wells, in addition to needs for redundancy to be prepared for emergencies such as drought	Town Water Department	60 Permitting for new facilities should be done within the next 5 years.	HMGP, PDM 25% match by town water department
Structural	Consider potential need for and options to provide water supply to areas with a development pattern that may not be compatible with continued private well water supplies, which may not be adequate in the event of emergencies such as drought and wildfire, particularly in the Arbutus Park, Ocean Heights and southern Katama Plains areas; build the necessary infrastructure.	Town Water Department	60 Conversations should be had within the next 5 years. If this is a desirable solution, planning and permitting can begin within the next 5 years.	HMGP, PDM 25% match by town meeting appropriation

GOSNOLD MITIGATION ACTIONS
Cuttyhunk
Wildfire Mitigation Actions – new
(from Cuttyhunk Community Wildfire Protection Plan, 2013)

Zone 1:

- Firewise treatments on individual properties/structures

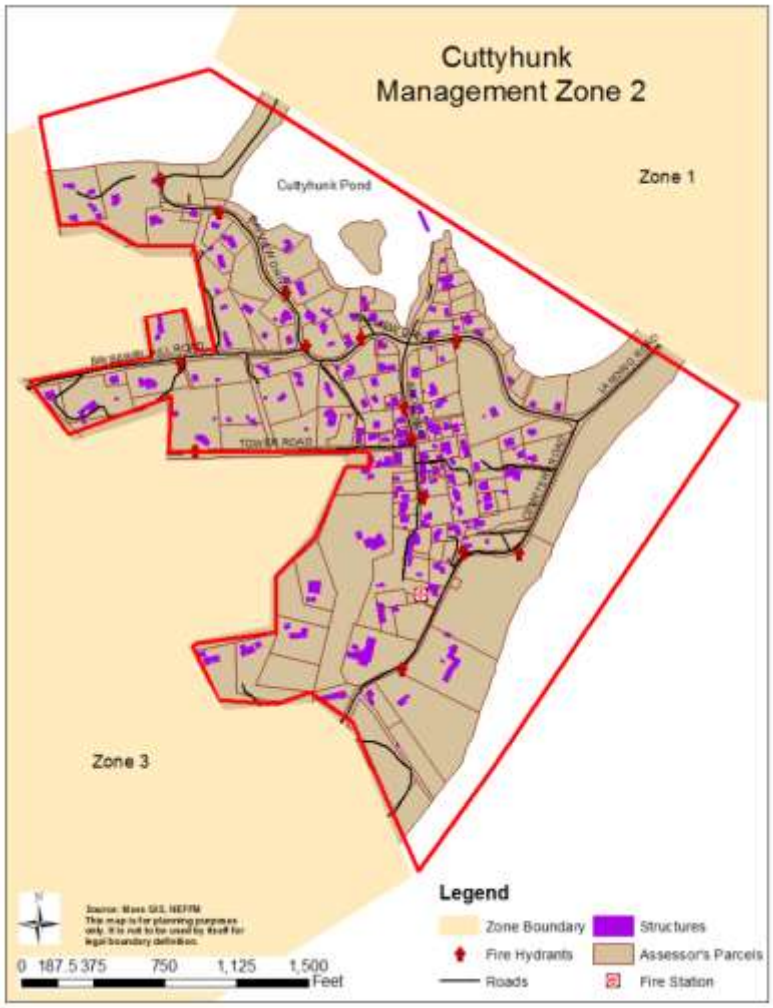


GOSNOLD MITIGATION ACTIONS
Cuttyhunk
Wildfire Mitigation Actions – new
(from Cuttyhunk Community Wildfire Protection Plan, 2013)

Zone 2:

Firewise treatments on individual properties/structures

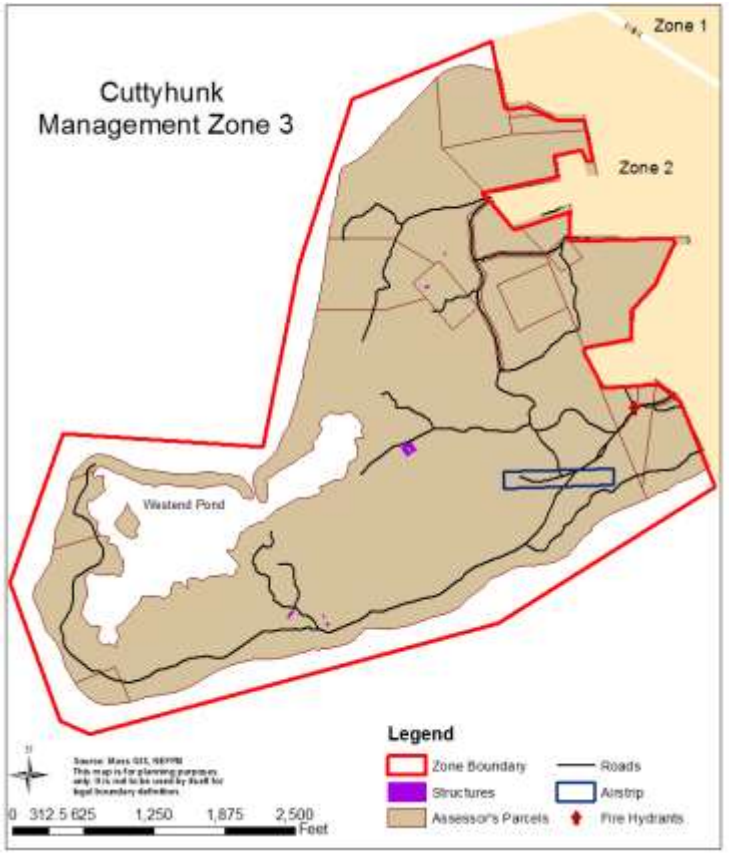
- Mowed firebreak 15’ (for egress) to 80’ (for suppression) wide separating Zone 2 from western end of island
- Possible prescribed burning in certain areas of Zone 2



GOSNOLD MITIGATION ACTIONS
Cuttyhunk
Wildfire Mitigation Actions – new
(from Cuttyhunk Community Wildfire Protection Plan, 2013)

Zone 3:

- Firewise treatments on individual properties/structures
- Prescribed burning in uninhabited areas and along firebreak
- Road clearance/widening to improve access for emergency vehicles



PROPOSED MITIGATION ACTIONS FOR THE TOWN OF GOSNOLD (ALONG WITH ALL THE COMMUNITY ACTIONS)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Prevention **New**	Implement recommendations in Cuttyhunk Wildfire Protection Plan, 2013	Town Fire Department, private	70 This should be completed within the next 5 years.	HMGP, PDM, town, private 25% match by town meeting appropriation

EXISTING PROTECTION MATRIX OAK BLUFFS

Type of Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Fire-Wise Outreach	Outreach and response person on Martha's Vineyard 24/5; outreach to groups and available for response	Martha's Vineyard	DCR	This program could use some support in order to reach more of the vulnerable homeowners

PROPOSED MITIGATION ACTIONS
FOR THE TOWN OF OAK BLUFFS
(ALONG WITH ALL THE COMMUNITY ACTIONS)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Prevention	In order to reduce the impacts of drought and wildfire, establish an overall management plan for the State Forest, including establishment of specific procedures or Memoranda of Agreement regarding the transfer of land for new public water supplies and for easements to install water supply lines	DCR and State Forest Advisory Committee	65 The initial phase of opening a dialog between the town fire and water departments, the MVC and the new State Forest Superintendent should be done within the next year.	DCR
Structural	In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within the State Forest	Town Water District	60 If DCR agrees to consider this (although it's not recreational), design should be completed within the next 5 years, and possibly construction.	HMGP, PDM 25% match by DCR
Structural	In order to lessen the impacts of drought and wildfire, establish plans and build infrastructure for water supply needs to alleviate future drought emergencies. The Town of Oak Bluffs, nearly at buildout, should focus its attention on redundancy plans in response to potential emergencies such as drought.	Town Water District	60 Design and permitting should be underway within the next 5 years.	HMGP, PDM 25% match by town water district
New Prevention **New**	In order to lessen wildfire vulnerability, clear a 100-foot firebreak between the Southern Woodlands and vulnerable residences. (Proposed by Acting Chief Rose)	M. V. Land Bank	65 This should be done within the next 5 years.	HMGP, M.V. Land Bank, PDM 25% match by M.V. Land Bank

EXISTING PROTECTION MATRIX TISBURY

Type of Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Fire-Wise Outreach	Outreach and response person on Martha's Vineyard 24/5; outreach to groups and available for response	Martha's Vineyard	DCR	This program could use some support in order to reach more of the vulnerable homeowners
Structural, protection, emergency services	Relocation of Fire/Ambulance Departments out of floodplain	Town	completed	
Emergency Services	Land purchase for new Emergency Services facility out of floodplain	Town	completed	
Structural, protection	Hardened utilities – electric lines on Main St, Union St., Beach St., and Water St.	Town	Conduit completed, no utilities in as yet	Town
Emergency services	foam trailer for fighting ethanol-based fires	Town	completed	

PROPOSED MITIGATION ACTIONS
FOR THE TOWN OF TISBURY
(ALONG WITH ALL THE COMMUNITY ACTIONS)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Structural, protection	Hardened utilities – electric lines on Main St, Union St., Beach St., and Water St.	Town DPW	Conduit completed, no utilities in as yet; This should be done within the next 5 years.	Town
Prevention **New**	Ensure that outdoor storage materials are secured from creating a flood hazard.	Town DPW and Harbormaster, private	40 This should be done within the next year.	Town, private
Prevention	In order to reduce the impacts of drought and wildfire, establish an overall management plan for the State Forest, including establishment of specific procedures or Memoranda of Agreement regarding the transfer of land for new public water supplies and for easements to install water supply lines	DCR and State Forest Advisory Committee	65 The initial phase of opening a dialog between the town fire and water departments, the MVC and the new State Forest Superintendent should be done within the next year.	DCR
Structural	In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within the State Forest	Town Water Department	60 If DCR agrees to consider this (although it's not recreational), design should be completed within the next 5 years, and possibly construction.	HMGP, PDM 25% match by DCR, town water department

Structural	In order to lessen the impacts of drought and wildfire, establish plans and build infrastructure for water supply needs to alleviate future drought emergencies. The Town of Tisbury, nearly at buildout, should focus its attention on redundancy plans in response to potential emergencies such as drought or wildfire.	Town Water Department	60 Design and permitting for this should be underway within the next 5 years.	HMGP, PDM 25% match by town water department
Structural	Consider potential need for and options to provide water supply to areas with a development pattern that may not be compatible with continued private well water supplies, which may not be adequate in the event of emergencies such as drought and wildfire; build the necessary infrastructure.	Town Water Department	60 Conversations should be had within the next 5 years. If this is a desirable solution, planning and permitting can begin within the next 5 years.	HMGP, PDM 25% match by town water department

EXISTING PROTECTION MATRIX WEST TISBURY

Type of Existing Protection	Description	Area Covered	Effectiveness and/or Enforcement	Improvements or Changes Needed
Fire Breaks in State Forest	Fire breaks maintained by grazing, brushbreaking, controlled burns	Within Manuel F. Correllus State Forest	DCR	Need continued management; this program could use some funding support
Fire-Wise Outreach	Outreach and response person on Martha's Vineyard 24/5; outreach to groups and available for response	Martha's Vineyard	DCR	This program could use some support in order to reach more of the vulnerable homeowners

PROPOSED MITIGATION ACTIONS
FOR THE TOWN OF WEST TISBURY
(ALONG WITH ALL THE COMMUNITY ACTIONS)

Category of Action	Description of Action	Implementation Responsibility	Timeframe/Priority	Resources/Funding
Structural	Consider potential need for and options to provide water supply to areas with a development pattern that may not be compatible with continued private well water supplies, which may not be adequate in the event of emergencies such as drought and wildfire; build the necessary infrastructure.	Town Selectmen	60 Conversations should be had within the next 5 years. If this is a desirable solution, planning and permitting can begin within the next 5 years.	HMGP, PDM 25% match in kind by town, construction match by town meeting appropriation
Prevention	In order to reduce the impacts of drought and wildfire, establish an overall management plan for the State Forest, including establishment of specific procedures or Memoranda of Agreement regarding the transfer of land for new public water supplies and for easements to install water supply lines	DCR and State Forest Advisory Committee	65 The initial phase of opening a dialog between the town fire and water departments, the MVC and the new State Forest Superintendent should be done within the next year.	DCR
Structural	In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within the State Forest	Town Water Department	60 If DCR agrees to consider this (although it's not recreational), design should be completed within the next 5 years, and possibly construction.	HMGP, PDM 25% match by DCR, town appropriations
Prevention **New**	Use town regulations to prevent subdivision covenants from restricting homeowners from using fire-wise roofing materials such as asphalt.	Town planning board	65 This should be done within the next year.	

Next is a discussion of drought and wildfire hazards, followed by a town-by-town vulnerability assessment.

Drought and wildfire hazards

Fire-related Hazards:

Drought:

Drought conditions exist when an area experiences an extended period of deficient water supply. The fire hazards associated with drought are closely associated with the time of year. Drought conditions in spring, when trees have not leafed out, may be particular cause for concern for wildfires.

Vulnerability to Drought:

Vulnerability to drought is not a localized issue that can be pinpointed to a specific place or time. Unlike the more ephemeral natural hazards that quickly strike and leave, drought takes some time to establish itself and some time to depart. Drought levels intensify from normal conditions through the range of drought advisory, drought watch, drought warning and drought emergency. According to the Massachusetts Department of Conservation and Recreation[1], the most recent local drought has ended. *A Drought Advisory for two of the state's drought regions, the Southeast Region and the Cape and Islands Region, had been in effect from October 1 through November 30, 2014. As of December 1, 2014, the Drought Advisory is no longer in effect, and conditions have returned to normal.*

In 2003, the Martha's Vineyard Commission produced *Martha's Vineyard Source Water Protection Project*, which assessed the needs for protection of the three major public water supplies on Martha's Vineyard, in part to be better prepared for emergencies like drought. The report recommended redundancy for the Oak Bluffs and Tisbury water supplies, to be prepared for emergencies, particularly establishing permission and infrastructure to cross the State Forest and possibly to drill wells there. The report recommended similar improvements for Edgartown, and also to add to the overall supply and infrastructure, which was not estimated to be adequate to meet the projected demand. In addition, the report recommended that plans be considered to bring public water supply to parts of Edgartown that are presently served by wells, and for the Town of West Tisbury to consider initiating its first public water supply service (The entire town is presently served by private wells). In order to meet existing demand and unable to use one well because of high iron content, Edgartown has reported pumping all available wells 17-24 hours per day in the summer, with no redundancy available in case of emergency, which condition is expected to continue[2], leaving Edgartown particularly vulnerable to emergencies like drought.

Wildfires:

[1] http://www.mass.gov/eea/agencies/dcr/water-res-protection/water-data-tracking/drought-status.html

[2] *Superintendent Fred Dumont, Edgartown Water Department,* 2007, personal communication

We are less familiar with wildfires as a hazard, maybe thinking that they are more likely to occur in the vast western wildernesses of our nation. Wildfires have happened closer to home. In 1957, a fire burned 18,000 acres from Carver to Plymouth, burning all the way to the sea, which is the only reason that it stopped. In the first 6 hours, 12,500 acres burned at the rate of 53 acres/minute. For scale, the Martha's Vineyard State Forest is about 5,200 acres (Imagine an area more than twice the size of the State Forest burning in 6 hours). On Martha's Vineyard, between 1867 and 1929, there were 16 fires greater than 1,000 acres, including the largest (known) 12,000 acres in 1916, which burned from West Tisbury to Farm Neck, Ocean Heights and Edgartown. Since then, fires have generally been smaller. The last big fire was in 1965, 1,200 acres from Great Plains to Katama.

This type of natural disaster would strike quickly and with potential for great loss of life and property.

Vulnerability to Wildfire:

According to the *Commonwealth of Massachusetts State Hazard Mitigation Plan*[3], Massachusetts' forests are potential fuels for wildfires…."Particular areas at risk include the Southeastern area of Plymouth County, Cape Cod, and the Islands, where forested areas pose wildland fire and urban interface fire hazards. Sandy soils, which dry out quickly, increase the wildfire risk in this area".
The table which follows, *Major fires of Martha's Vineyard, 1855-1999,* lists the major fires that have occurred on Martha's Vineyard, and their locations.

Major fires of Martha's Vineyard, 1855-1999[4]

Year	Date	Size (ac)	Location
1855	4/7	large	Willis Plain
1864	4/27	4,000	near Lagoon (south central Martha's Vineyard)
1875	7/2	7-10,000	Quompacha Bottom
1883	8/12		Vineyard Haven town fire
1885	4/4	small	Gay Head-Chilmark boundary
1886	5/3	1,000	near Vineyard Haven
1889	3/25	4,000	Quampeche Bottom
1892	4/9	5-8,000	near Middletown
1894	June	large	location unknown
1900	4/27	5,000	Scrubby Neck toward Edgartown
1903	5/18		Inisfail Hotel
1909	7/23	10,000	on Plains
1914	12/25	1,200	western Great Plains to Katama (south eastern Martha's Vineyard)
1916	5/19	12,000	West Tisbury to Farm Neck, Ocean Heights, and Edgartown
1920	8/6		large Vineyard Haven fire
1926	5/14	6,400	West Tisbury toward Ocean Heights
1927	4/30	6,400	from Dr. Fisher Road to Edgartown
1927	5/24	6,400	from Dr. Fisher Road towards Edgartown

[3] *Commonwealth of Massachusetts State Hazard Mitigation Plan,* 2013, Prepared by The Massachusetts Emergency Management Agency (MEMA) and the Department of Conservation and Recreation (DCR)

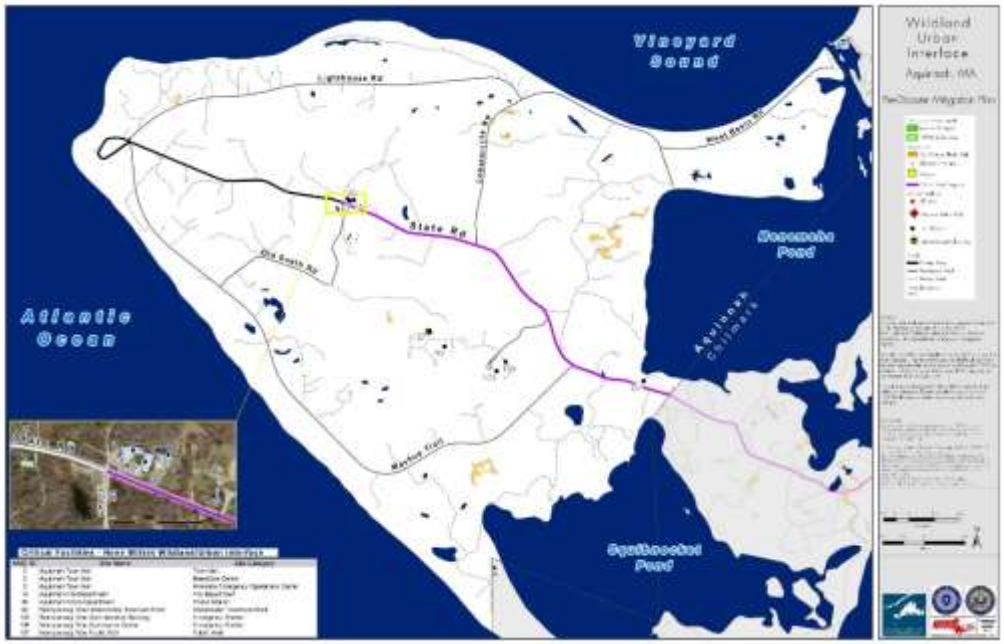
[4] *The Modern and Historic Fire Regimes of Central Martha's Vineyard, Massachusetts*, 2002, A Thesis Presented by Adam Mouw

1928	4/28	small	Indian Hill Road
1929	4/6	2,500	Watcha to Tiah's Cove, Waldron's Bottom, to Oyster Pond
1929	5/4	2,560	Waldron's Bottom
1929	7/3	small	Tashmoo/Herring Creek
1930	5/10	200	West Chop
1930	5/17	5,000	between Edgartown and Oak Bluffs
1930	6/7	1,000	north to northeast through State Forest
1932			two fires in State Forest
1935	3/30	4,000	Edgartown Great Pond to Katama
1936			8 fires, none in State Forest
1937			Chappaquiddick
1939	4/1	4,000	Quampacha Bottom on Dr. Fisher Road to Vineyard Haven Road
1940	5/18	1,000	State Forest near Edgartown - Vineyard Haven Road
1942	5/27	350	Job's Neck Pond to Jayne's Cove
1942		1,200	near Edgartown Great Pond
1944		240	in State Forest
1946	4/20	5,120	Head of Tisbury Great Pond towards Edgartown/Oak Bluffs
1948	9/4	300	south & west towards Clevelandtown/Edgartown Airport
1951			10 fires on the Island
1954	4/10	1,000	between Bames Road, Wing Road and Edgartown-Vineyard Haven Road
1954	5/30	2,500	Tiah's Cove, West Tisbury to Edgartown
1954	7/17	100	Chappaquiddick near four comers
1957	4/20	35	near state highway at Deep Bottom
1957	5/4	100	North of Chilmark cemetery, toward Chilmark Pond
1958	6/14		east and north from State Forest
1959	4/25	25	between Old Courthouse Road and state Highway
1959	5/9	500	West Tisbury Road near Deep Bottom
1960	4/23	25	Katama
1963	10/26	300	Quampache Bottom to West Tisbury Road
1965	12/19	1,200	Great Plains to Katama
1971	5/15	20	Oklahoma, Tisbury
1975	4/26	50	Northeast from Edgartown dump
1976	1/1	85	Edgartown: Herring Creek Road to Katama Airfield
1987	8/1	20	Oak Bluffs behind Crosslands Nursery
1987	July	~8	State Forest
1999	July	-16	State Forest, along Edgartown-West Tisbury Rd.

AQUINNAH WILDFIRE VULNERABLITY

Aquinnah is known for its wild landscape, but most of the terrain is made up of moors rather than forests. There are some fuel-rich areas of pitch pine and scrub oak. Otherwise, forest fire is not a major issue for Aquinnah.

Contiguous Woodlands are shown in green; darker green represents area >=50 acres; lighter green shows
1000ft Buffer Area. Pitch Pine or Shrub Oak vegetation is shown in tan.

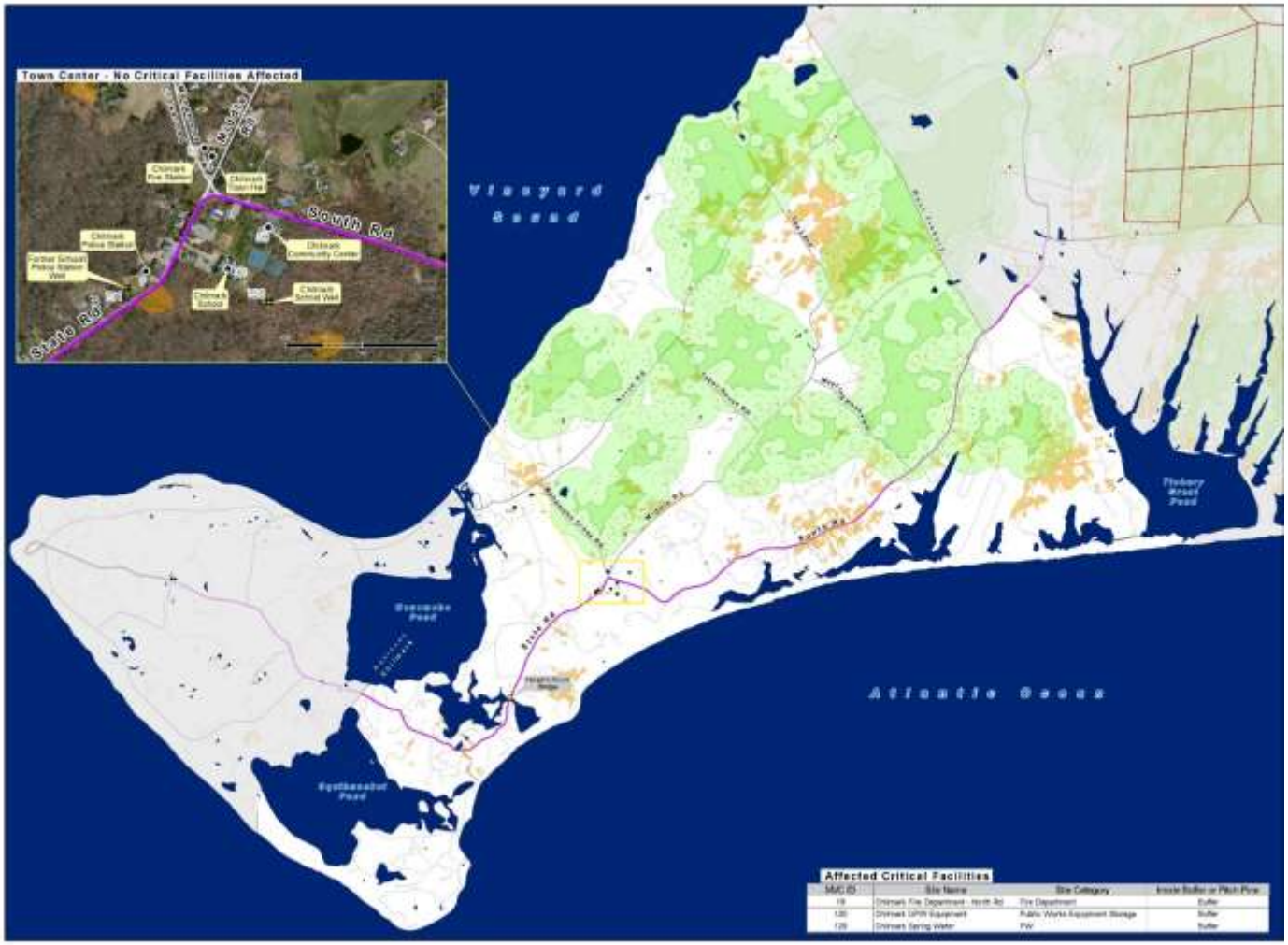


Wildland-Urban Interface Vulnerability for Aquinnah (Wildfire Vulnerability)

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value

	2.14 per building	4.22 per building			2.14 per building	4.22 per building		
Residential	6	13	3	$694,803	32	63	15	$3,474,015
Commercial								
Industrial								
Municipal, Public, Non-profit							2	$463,202

CHILMARK WILDFIRE VULNERABILITY (WILDLAND URBAN INTERFACE)



Contiguous Woodlands are shown in green; darker green represents area >=50 acres; lighter green shows 1000ft Buffer Area. Pitch Pine or Shrub Oak vegetation is shown in tan.

CHILMARK WILDFIRE VULNERABILITY (WILDLAND URBAN INTERFACE)

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value

	2.16 per building	4.29 per building			2.16 per building	4.29 per building		
Residential	1162	2308	538	$266,761,900	1419	2819	657	$325,766,856
Commercial			2	$2,537,000			6	$7,611,000
Municipal, Public, Non-profit			3	$197,500			13	$855,833

EDGARTOWN WILDFIRE VULNERABILITY

Contiguous Woodlands are shown in green; darker green represents area >=50 acres; lighter green shows 1000ft Buffer Area. Pitch Pine or Shrub Oak vegetation is shown in tan.

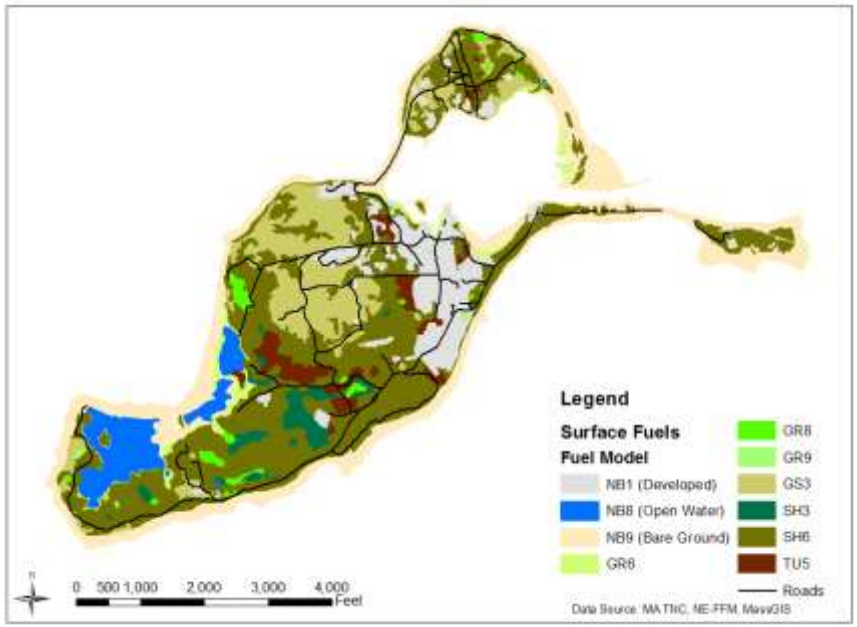
Edgartown Wildfire Vulnerability

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value

	2.25 per building	4.14 per building			2.25 per building	4.14 per building		
Residential	2869	5279	1275	$566,972,200	3670	6752	1631	$725,279,732
Commercial			33	$22,361,800			26	$17,618,388
Industrial			0	$0			14	$0
Municipal, Public, Non-profit			12	$17,175,100			133	$190,357,358

GOSNOLD WILDFIRE VULNERABILITY

Contiguous Woodlands are shown in green; darker green represents area >=50 acres; lighter green shows 1000ft Buffer Area. Pitch Pine or Shrub Oak vegetation is shown in tan.

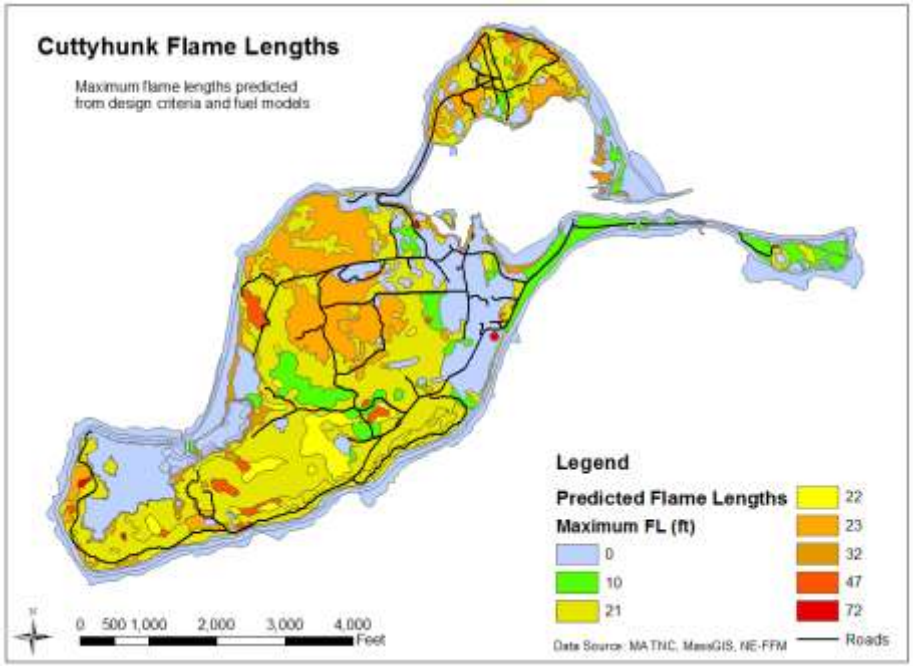


The Cuttyhunk Community Wildfire Protection Plan, 2013, included data and analysis in planning wildfire management for Cuttyhunk Island, the population center of the Town of Gosnold (including the Elizabeth Islands). Surface fuels were mapped according to TNC classification. Flame lengths and rate of spread were then modeled.

Surface Fuels for Cuttyhunk (left)

Fuel models by TNC vegetation class (below).

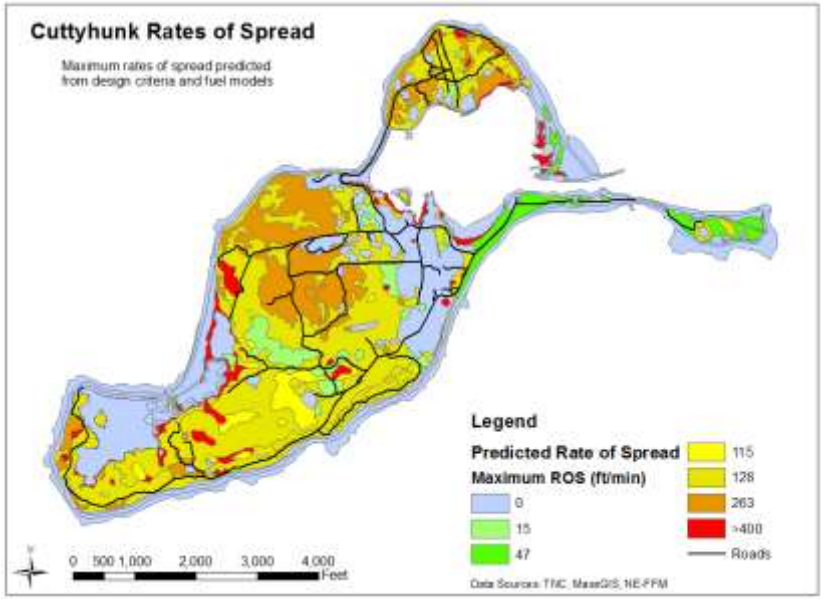
Fuel Model	TNC Classification	Location
GR6 – Moderate load grass	Salt Marsh	Westend Pond and Cuttyhunk Pond edges
GR8 – High load, very coarse grass	Shallow Marsh	Phragmites stands scattered across island
GR9 – Very high load grass	Deep Marsh	Phragmites stands scattered across island
GS3 – Moderate load grass-shrub	Sandplain/Panicum Grassland	Concentrated in the northwest end of the island
SH3 – Moderate load shrub	Shrub Swamps	Southern end of island around area of airstrip
SH6 – Low load shrub	Maritime/Coastal Shrubland	Majority of island
TU5 – Very high load timber-shrub	Successional Maritime Forest	Isolated stands of trees in center of island



from *Cuttyhunk Community Wildfire Protection Plan*, 2013

Cuttyhunk Flame Lengths (left)

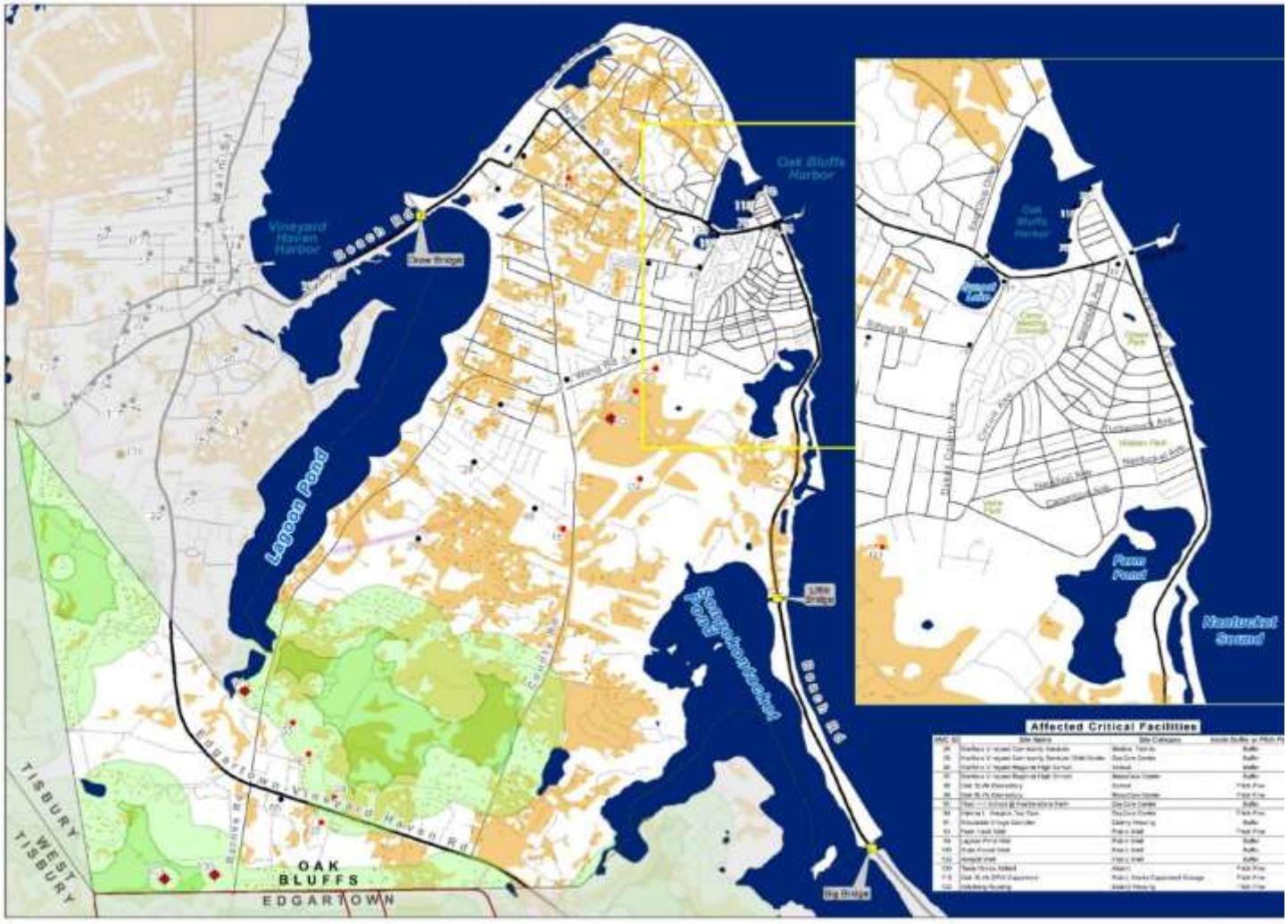
Cuttyhunk Rates of Spread (below)



GOSNOLD Wildfire Vulnerability

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value
	1.92 per building	? per building			1.92 per building	? per building		
Residential	7.68		4	$1,077,716			0	
Commercial								
Industrial			1	$24,500			0	
Municipal, Public, Non-profit								

OAK BLUFFS WILDFIRE VULNERABILITY

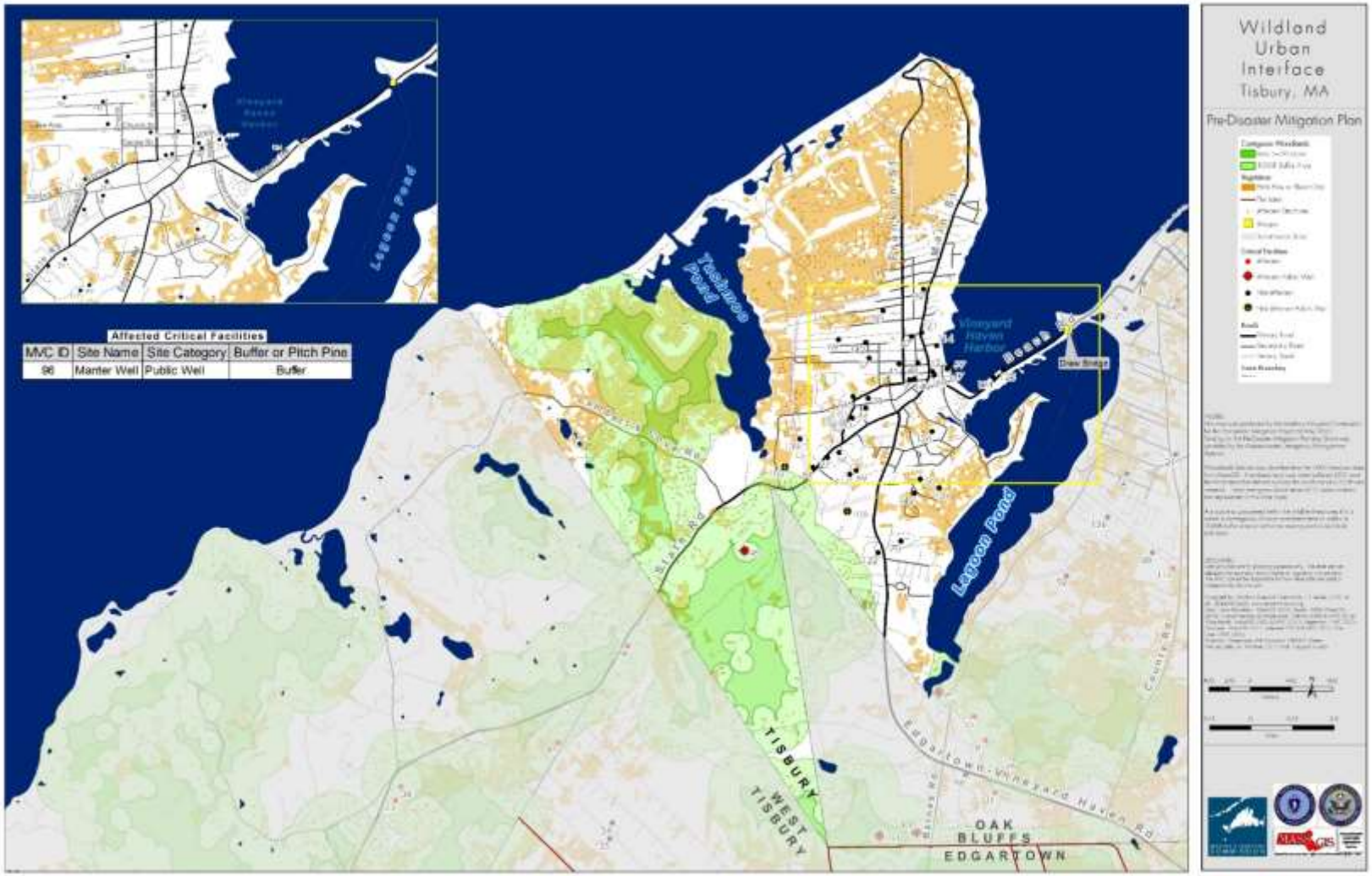


Contiguous Woodlands are shown in green; darker green represents area >=50 acres; lighter green shows 1000ft Buffer Area. Pitch Pine or Shrub Oak vegetation is shown in tan.

OAK BLUFFS Wildfire Vulnerability

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value
	2.24 per building	3.93 per building			2.24 per building	3.93 per building		
Residential	1823	3199	814	$230,143,940	1172	2055	523	$147,868,895
Commercial			3	$1,342,800			16	$7,161,600
Industrial			1	$272,900			0	$0
Municipal, Public, Non-profit			22	$63,813,900			40	$116,025,273

TISBURY WILDFIRE VULNERABILITY



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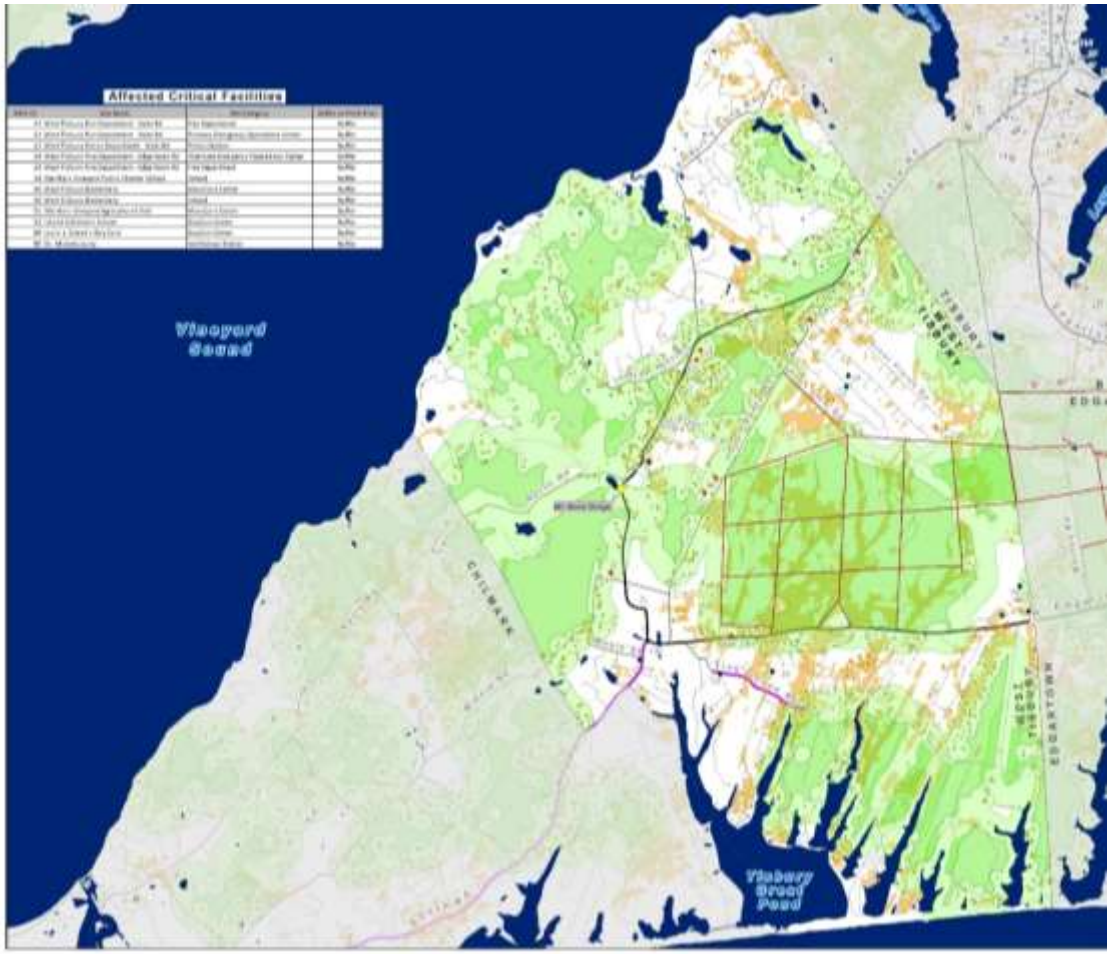
TISBURY Wildfire Vulnerability

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value

	2.19 per building	3.67 per building			2.19 per building	3.67 per building		
Residential	1,286	2,154	587	$246,006,600	1,071	1,795	489	$204,935,651
Comm.			39	$11,439,900			0	$0
Industrial			1	$236,600			10	$2,366,000
Exempt (Municipal, Public, Non-profit)			11	$5,853,600			1	$532,145

WEST TISBURY WILDFIRE VULNERABILITY



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WEST TISBURY Wildfire Vulnerability

Developed Land					Undevel. Land			
Use	# People (other)	# People (July-Aug)	# Buildings	Approx. Value	# People (other)	# People (July-Aug)	# Buildings	Approx. Value
	2.26 per building	3.78 per building			2.26 per building	3.78 per building		
Residential	2,034	3,402	900	$346,541,900	1,351	2,260	598	$230,257,840
Commercial			39	$14,989,500			0	$0
Industrial			1	$215,800			1	$0
Municipal, Public, Non-profit			16	$27,652,100			6	$10,369,538